

THE MAGAZINE FOR WOODEN BOAT OWNERS, BUILDERS AND DESIGNERS



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This is surely a milestone for me: 100 issues of a magazine that was conceived in a boatshop, incubated in a Volkswagen bus, and hatched on a wing and a prayer. It has been a greatjourney, fraught with anxieties and blessed with accomplishments I wouldn't have dared dream possible. It remains—as it was in its first hint of success—a major miracle to me. The years have not been without their frustrations and disappointments, but it has been more gratifying and enlightening than I could ever have imagined to be a part of the creation of such a wonderful magazine. And I say this in all humility, for *WoodenBoat* is fundamentally the product of those who have contributed their words and their photographs, their time and their energy, their subscription and newsstand investment, and their advertising support. The true heartbeat of this enterprise, however, is found in the 106,000 of you, our readers, who have provided the inspiration and encouragement we need to do our best. I am deeply grateful to you.

What is most remarkable about the maturing of WoodenBoat, if such it can be called, is the ongoing sense of *mission* that pervades it. I can well remember the early supporters who could not help wondering if we would soon run out of things to write about with wooden boats. I can recall my blind certainty that we would never run out of such things, but I also know that I could never have outlined even a year's worth of material, except at great discomfort. Even after 100 issues, however, I have the sense that we have only just *began* to cover these subjects with the insight and experience they deserve. There are so many boats, so many people, and so many great stories to be told. And we have failed to cover certain subjects at all. But it inspires our mission, and we are absolutely committed to understanding anew what our readers want and need from *WoodenBoat*, and doing our best to provide it. In that regard, I'd like to call your attention to the reader preference study which we have included in this issue of the magazine (just before the back cover). The questionnaire represents our earnest desire to understand and appreciate the thinking of each and all of you regarding the present and future content of WoodenBoat, and we would be very grateful if you would take the time to fill it out and send it along to us. It is an important opportunity to direct the life of this magazine, and we need and want a measure of guidance from our readers. I can assure you that every questionnaire will be read and considered thoroughly. It is purely an attempt to engage in conversation with as many readers as we can. So, we hope to hear from you, and please accept our thanks in advance.

It is somewhat awe-inspiring to consider what has happened to the wooden boat industry during these 17 years. It has risen from the realm of art with a claim on the past, to embrace science and a claim on the future, as tradition and technology draw closer together. We search in earnest for a synthesis where the romance of wood is enduring enough to risk the love of a boat with a soul. And we are finding it, in everything from the simplest skiffs to the most sophisticated yachts. We are fortunate, indeed, to be part of a rich tradition with a bright future. And we thank you for being part of it with us.

Jon Wilson

Number 100 May/June 1991

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Albert Hickman's Sea Sleds have always been controversial, but a new boat in Mystic addsfurther proof to Hickman's claims. Pages 46-59.

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Photo by Neil Rabinowitz.



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It's a Wrap!

Dear Sir:

I have finally gotten around to writing. Unfortunately, the cause is the condition of the latest issue of *WoodenBoat*. As usual, it looks as though it had been delivered by a Doberman with distemper. I would much prefer a "keeper" magazine like *WoodenBoat* to remain staple-bound so that a brown paper cover (recycled, of course) could be attached, a la *Smithsonian* magazine.

On a more upbeat aside, kudos for the recent how-to articles, such as "Singlehanded Boatbuilding" by Sam Manning, and the series on building the Biscayne Bay 14. The latter answered my questions on how to cut the bevels on a chine that has sweeping curvature.

Last, definitely keep Kasanof aboard. I sleep much better now that I understand the performance differences between marconi and gaff rigs.

Devon Prichard

Yorktown, VA We've just changed printers, and our subscribers will notice that their magazines are—at last—protected with a paper sleeve.

WILD DUCK

Dear Jon,

Ijust read your editorial in WB No. 98 and was quite interested in the idea of establishing a registry for classic wooden boats. Although it may be premature on my part, I'd like to start it off by "registering" my boat on your list.

I own the Murray Peterson 26' ketch WILD DUCK and keep her here in Robinhood Cove, Georgetown. You may be quite familiar with the boat, as she was written up by Roger Taylor in *Good Boats*.

I understand from talking with Bill Peterson that there is a sister boat to WILD DUCK somewhere in Florida. I'd love to find out who owns her.

> John Teller Box 248 Georgetown, ME 04548

Casual, Comfortable Cruising Dear Jon,

It was with great interest and delight that I read Craig Walters's article about the inspirational John Clark and his elegant yacht GIPSYJAC in the February issue of *WoodenBoat*. As my father (Fred C. Wichmann, Sr.) and I own the original L. Francis Herreshoff MOBJACK, I could not help but write you our thoughts on the article and congratulate Mr. Clark on such a remarkable achievement.

We took great interest in many of Mr. Clark's observations and insights to the design and construction laid out in the plans; namely "[the] bare sprit," the construction of the rudder, and her freshwater storage—though I would like to point out that she did in fact carry 110 gallons of fuel in her tin-lined copper tanks, which are still in use today, though they are filled with diesel oil rather than the gasoline originally specified.

As the article's quote from Sensible Cruising Designs mentioned, MOBJACK was designed and built for a gentleman (Mr. George Upton) who lived on Mobjack Bay, Virginia, in 1935. What is not mentioned in Mr. Walter's article-and we thought it would be of interest to your readers-is that MOBJACK, after being resurrected from many years of neglect and surviving at least one hurricane that we know of (Hurricane Hugo), is still nobly and gracefully sailing the waters of the Carolinas and the Bahamas 56 years after her first launching. We hope that she is being sailed in the spirit that Mr. Herreshoff intended: casual, comfortable cruising.

> F.C. "Bunky" Wichmann,Jr. Charleston, SC

Attention, Modelers!

Dear WoodenBoat,

This is written with mixed emotions. While the Nautical Research Guild appreciates the mention of our publication, *Watercraft Modeler's Handbook*, you have listed my home address as the place to send orders, and that is wrong, wrong, wrong! Orders are already coming in, and I have to re-mail them at my own expense. The correct mailing address for ordering *Watercrafl Modeler's Handbook* and the NRG's other publication, *Ship Modeler's Shop Notes*, is 12919 Moray Rd., Silver Spring, MD 20906.

> John L. Fryant Alexandria, VA

A Fundamental Flaw

Dear Jon,

I enjoyed your article about FREE SPIRIT'S transom repair starring Brion Rieff. I love articles that get down to the nitty-gritty. More, more!

I almost wrote to you a few years back when Steve White wrote the article on deck repair using CIRRUS's and FREE SPIRIT's repairs as examples. I felt then, and I feel even more strongly now, that these repairs, along with your transom repair, have a fundamental flaw. They are not consistent with what, in my opinion, is one of the best features of traditionally built wooden boats: Plank-on-frame boats have the advantage over almost all other types of construction because they can be relatively easily repaired. Brion had little trouble getting the old transom planking off. A few screws and perhaps some sawing, and off it comes. What fate will future repairers have when they come to remove

the plywood overlay on CIRRUS's teak decks? As I am sure you are well aware, 3M 5200 is a one-way street. Will FREE SPIRIT's transom come off without damaging the surrounding structure the next time the job has to be done? Will some future boat-repair person be able to remove one of FREE SPIRIT's after planks without damaging the transom which is now an integral part of the planks? I realize that there are ways around these problems, but they are never as simple as they would have been with traditional methods. Don't get me wrong, I think there are many places where 5200 or epoxy are very useful, but I think they must be used consistently within the confines of the circumstances. Certainly CIRRUS's deck repair will last a long time, most likely far longer than the original, but what happens if one of the deckbeams breaks or the house sides need replacing or repairing?

If FREE SPIRIT's transom had been repaired by epoxy-coating the plywood, redleading the sternpost and fashion pieces, and red-leading the forward or faying surfaces of the mahogany outer planking, and then installing the pieces nearly in the same way as they were in the article, substituting a caulking seam for the epoxyglued mahogany plank edges, would this not be nearly as strong as sticking the whole business together? Perhaps it would not last as long as the glued-together transom, but then it might. Playing the Devil's advocate, what would be the scenario if the mahogany shrinks a bit over its broad width, popping open and letting water into the space between the two sets of planking? If the mahogany had caulking seams, they would most likely take up the slack. If you were fed up with caulking seams and their foibles, the seams could he filled with something like Sikaflex or polysulfide, still preserving the repairability of the transom.

I present this not to be dogmatic, but rather to open the topic up for discussion.

I was sorry to hear of the passing of Alan Bemis. Unfortunately, I never met him, but he put into my mind's eye one of its most treasured visions. While "sailing" along Eggemoggin Reach in a 40' fiberglass boat which could not be made to go, I watched Alan Bemis and CIRRUS come sailing along from astern, going wonderfully well with the rail nearly down. He overtook us in short order, waved, and calmly went below when we were safely astern. No autopilot necessary for that team, nor even a line on the tiller, just a perfectly balanced boat with a captain who knew her well.

> E. Barton Chapin III Arrowsic, ME



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I share Bart's concerns regarding repairability. There is no way to have any sort of monocoque structure and ease of repair. My only hope is that the ease of maintenance provides the balance to the difficulty of repair over the long term. -I W

Constantly Appalled

Dear Sir:

When Mr. Durham discusses "appropriate" scales and sizes for ship models ["Letters," WB No. 99], he is simply expressing his own preferences and prejudices in the matter.

I can only restate some of the guidelines, rules, standards, and observations I laid out in my book: (1) Anyone can make a large-scale ship model. (2) Most ship models are pieces of junk. (3) Most of the ship models on the market today are grossly overpriced.

There is no challenge whatever in making a large-scale ship model, with the notable exception of carving. Nearly all ship modelers fail utterly to do even a decent job of carving, because they concen-



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trate on the technical aspects and ignore or are not aware of the aesthetic side.

I am constantly appalled by the horrid monstrosities being created and sold to ignorant "collectors," at prices far above my own superior work. There is no one who has reached the level of accomplishment I have in both the technical and aesthetic areas of ship modeling, and I have had no difficulty in finding good homes for my work, no matter how small the scale. I suggest Mr. Durham have his eyes checked, and leave the creation and collection of the very finest ship models to those who have the sensitivity, discernment, and eyesight to appreciate them.

> Lloyd McCaffery Mill Valley, CA

Do Not Flag!

Dear Mr. Wilson,

1 have now been a regular reader of WoodenBoat for some seven years, during which time my respect and appreciation for your work has steadily broadened and deepened. My understanding of, and ability to care for, my 51-year-old gaff cutter would be vastly poorer without the access to technical expertise and almost poetic perception of aesthetic and practical qualities that your journal and books have given me.

The January/February issue illustrates my point well enough: Arno Day's transom lofting, a tricky little technical problem made as clear as it is possible to do so; an insight into Olin Stephens the man, which fleshed out the legend that he is over here; the almost incredible sparetime achievement of John Clark in GIPSY JAC, even if he is a professional; and even a neat, short-cut way to deliberately make crooked drawers, for heaven's sake! All this is capped, however, by Peter Spectre's delicious piece on the Windermere Steamboat Museum. Here was a lightness of touch, a depth of perception, and an elegance of prose that was pure delight.

I suppose that all this care, knowledge, and skill still lurks in hidden comers of England, but until someone else starts seriously to winkle out and publish it, you have no peers. Do not flag!

Robert G. Franklin Summertown, Oxford, England

Change Should Enhance, Not Debase

Dear Jon,

Last Sunday night, while flying back to Washington from Miami and Ocean Navigator's excellent weekend course in celestial navigation, I had a chance to reflect on the timelessness and wonder of finding one's way around the world with a sextant.

Little has changed since I taught the subject 30 years ago when I was a naval aviator in the Korean conflict. The archaic and romantic stars are all the same, and the precision of the sight reduction tables remains traditional and impressive.

Then it began to gnaw on me that Greenwich Mean Time (GMT) is now being degraded to Universal Time (UT) in the *Nautical Almanac*. I believe that both terms are meant to denote the same thing, and I cannot imagine why it is necessary to change the original, so steeped in history and implying credit where due. I would think that Her Majesty's Printing Office, which co-publishes the *Nautical Almanac* and *Sight Reduction Tablesfor Marine Navigation* in the United Kingdom, would have fought off this bizarre changefor-change's-sake anomaly. I wondered just who is behind the move, and why.

I recalled being surprised and saddened when I sat for my Master's license last year and figured out, during the exam, that a "stand-on" vessel means one that is privileged, and that if burdened, one's vessel becomes the "give-way" craft. While I am patriotic and loyal to my government, I realized afresh that if one is to enrich the language, bureaucrats should not be depended upon to be the initiators nor final arbiters of purposeful creativity.

The life preservers on my boat are still called as such. "Personal Flotation Device" adds nothing and is not euphonious. "PFD" is even worse. And if someone, somewhere, decides that my lovely SARAH MARGARET should be called a "Group Flotation Device," I will resist with equal vigor. If someone, higher up than I, in an anti-sexist frenzy, wants me to refer to her as "it," I will also steadfastly refuse. "Boater" leaves me cold, as does "fisherperson."

Having gotten this off my chest, I suppose the point is that as an editor you have an awesome responsibility to help shape and control our language as it evolves and develops. More and more of the world is coming to depend on English as the medium of communication in art, science, and philosophy. Consider this a plea that you arrange your Style Book so that frivolous, banal, cacophonous, confusing, and irrelevant change is resisted. The language is subtle, full, lyric, and beautiful, and change should enhance and not debase. Brockett Muir. Jr. Laytonsville, MD

Kudos for Kasanof

Dear WoodenBoat,

I have been an avid fan of yours since your inception, and have long wanted to write and laud you with the kudos you deserve for your exceptional and very refreshing publication. One of your contributors, however, has not received the recognition he has earned after all these years. In fact, it was sadly amusing that his special talent was ill recognized by one of your readers responding to "Putting the Matter to Bed."

Qualifying as at least a partial wooden boat owner (my hull may be petroleumbased, but the rest of the yacht is made from that hard, fibrous substance found beneath bark), I enjoy most of your articles. One that I always look forward to and relish, however, is "Fo'c's'le," by that master satirist, Capt. Kasanof. He lends that note of levity which all scholarly publications need, lest we contract a "seriousness inundation" malady. Thank you, David, for your most enjoyable column every two months.

Arthur Kramer New York, NY

Correction: Jim Warren of Ithaca, New York, has kindly pointed out to us that the Sutherland Boat & Coach's K-Boats (Kohinoor class), mentioned on page 26 of WB No. 99, are 16', not 60'—although Jim wonders if that could explain the bad gas mileage he gets when he lows his. Sorryfor the typo. —Eds.





CALENDAR OF EVENTS

EAST COAST

May

1 Oysters & the Role of Ecology in Chesapeake Bay

St. Michaels, Maryland. With Roger Newell. (Chesapeake Bay Maritime Museum, Navy Point, P.O. Box 636, St. Michaels, MD 21663, 301-745-2916)

3-5 Maritime History Symposium

Bath, Maine. With Lawrence Allin, Helen Richmond Webb, Janet West, William Bayreuther, Molly Horvath, Dolly Newcomb, and Michael Palmer. (Maine Maritime Museum, 243 Washington St., Bath, ME 04530, 207-443-1316)

3-5 Boatbuilding Workshop

New York, New York. With shipwright Mike Bull. Reservations required. (South Street Seaport Museum, 207 Front St., New York, NY 10038, 212-669-9416; or Boat Shop, 212-742-1116)

4 Spring Launchings

New York, New York. Volunteer Day and preparation of ships, piers. (South Street Seaport Museum, 207 Front St., New York, NY 10038, 212-669-9430)

8 Sail Care

Philadelphia, Pennsylvania. (Carol Staszak, Workshop on the Water, Philadelphia Maritime Museum, 321 Chestnut St., Philadelphia, PA 19106, 215-925-5439)

11 Annual Circumnavigation of Petty's Island

Camden, NewJersey. (Traditional Small Craft Association of the Philadelphia Maritime Museum, Rod Sadler, 609-966-1352)

11-12 Book Mill Wooden Boat Show

Montague, Massachusetts. Exhibits, demonstrations, workshops primarily for local boatbuilders and enthusiasts. (The Montague Book Mill, P.O. Box 186, Greenfield Rd., Montague, MA 01351, 413-367-9206)

11-12 Sailmaking

Philadelphia, Pennsylvania. (Carol Staszak, Workshop on the Water, Philadelphia Maritime Museum, 321 Chestnut St., Philadelphia, PA 19106, 215-925-5439)

15 Lighthouses in All Different Shapes and Sizes

Bath, Maine, Lecture by Ken Black. (Maine Maritime Museum, 243 Washington St., Bath, ME 04530, 207-443-1316)

17-19 Scrimshaw Collectors' Weekend Shown, Massachusetts. (Kendall Whaling Museum, Box 297, Sharon, MA 02067, 617-784-5642)

17-19 Lyman Rendezvous

Stow, New York. On Lake Chautauqua. (Tom Belfi, 216-885-0645)

18 Connecticut Canoe Day Mansfield Center, Connecticut. (Canoe Day, c/o Sue Audette, 41 Pine Woods Lane, Mansfield Center, CT 06250, 203-456-4906)

18 Springfest

St. Michaels, Maryland. Skipjack races and more. (Chesapeake Bay Maritime Museum, Navy Point, P.O. Box 636, St. Michaels, MD 21663, 301-745-2916)

23 Antique & Classic Replica Boat Show Newport, Rhode Island. At the Museum of Yachting. (Walter Beckmann, P.O. Box 97, Wakefield, RI 02880, 401-783-1859)

- 24 Big Boats Made Small Bath, Maine. Opening of an exhibition of model boats from Down East. (Maine Maritime Museum, 243 Washington St., Bath, ME 04530, 207-443-1316)
- 25 Boats & Boating in the Adirondacks, 1840-1940

Blue Mountain Lake, New York. New permanent exhibit opens. (Hallie Bond, Curator, The Adirondack Museum, Blue Mountain Lake, NY 12812, 518-352-7311)

25-26 Lofting

Philadelphia, Pennsylvania. (Carol Staszak, Workshop on the Water, Philadelphia Maritime Museum, 321 Chestnut St., Philadelphia, PA 19106, 215-925-5439)

25-27 Wooden Boat Festival New York, New York. (South Street Seaport Museum, 207 Front St., New York, NY 10038, 212-669-9430)

31-June 2 Festival of Traditional Sea Music *Hath, Maine.* (Maine Maritime Museum, 243 Washington St., Bath, ME 04530, 207-443-1316)

June

1-2 Small Craft Workshop Mystic, Connecticut. (Helen Packer, Mystic Seaport Museum, P.O. Box 6000, Mystic, CT 06355, 203-572-0711,ext.328)

5 Oarmaking Philadelphia, Pennsylvania. (Carol Staszak, Workshop on the Water, Philadelphia Maritime Museum, 321 Chestnut St., Philadelphia, PA 19106, 215-925-5439)

- 7 Tall Ships on the Chesapeake Norfolk, Virginia. American Sail Training Association ships gather for the Norfolk Harborfest, sail to St. Marys City, Maryland, June 11-13, then on to Fells Point, Baltimore, for a maritime festival, June 14—16. (American Sail Training Association, Box 1459, Newport, RI 02840, 401-846-1775)
- 7-9 Boatbuilding Workshop New York, New York. With shipwright Mike Bull. Reservations required. (South Street Seaport Museum, 207 Front St., New York, NY10038, 212-669-9416; or Boat Shop, 212-742-1116)
- **8-9 Traditional Small Boat Festival** *Bayville, New Jersey.* (Roger Alien, 215-925-7589; or Mike Mangurn, Ocean

County Department of Parks & Recreation, 659 Ocean Ave., Lakewood, NJ 08701, 201-370-7360)

8-9 Refinishing

Clayton, New York. With Mike Mahoney. (The Antique Boat Museum, 750 Mary St., Clayton, NY 13624, 315-686-4104)

13-15 Maritime Heritage Conference Baltimore, Maryland. "Shaping a Common Agenda for the 1990s." (Office of Maritime Preservation, National Trust for Historic Preservation, 1785 Massachusetts Ave., N.W., Washington, DC 20036)

15 Moosehead Rowing Regatta *Greenville Junction, Maine.* (Betsy Rockwell, P.O. Box 262, Greenville Junction, MF. 04442, 207-695-2680)

15-16 Great Hudson River Revival Valhalla, New York. Small Boats Exhibit; Peter, Paul, & Mary; Sweet

Exhibit; Peter, Paul, & Mary; Sweet Honey in the Rock; Suzanne Vega. (CLEARWATER's Great Hudson River Revival, 112 Market St., Poughkeepsie, NY 12601, 914-454-7951)

15-16 Lofting

Clayton, New York. With Everett Smith. (The Antique Boat Museum, 750 Mary St., Clayton, NY 13624, 315-686-4104)

- 17-28 The Boatbuilder's Vacation Philadelphia, Pennsylvania. A busman's holiday building a round-bottomed lapstrake dinghy. (Carol Staszak, Workshop on the Water, Philadelphia Maritime Museum, 321 Chestnut St., Philadelphia, PA 19106, 215-925-5439)
 - 22 Great Northeast Riverfest Scotia, New York. On the Mohawk River. (American Red Cross, 8 South ChurchSt.,Schenectady,NY12305, 518-393-3606)
- 22-23 Albany Wooden Boat Festival Albany, New York. (Wooden Boat Festival, P.O. Box 479, Branchport, NY 14418, 315-536-2258)
- 24-28 Great International Steamboat Flotilla Oswego, New York. (Sam Clogston, P.O. Box 58, Olcott, NY 14126, 716-778-7869)

25-27 Windjammer Days Boothbay Harbor, Maine. (Boothbay Harbor Chamber of Commerce, P.O. Box 356, Boothbay Harbor, ME 04538, 207-633-2353)

26 Hemm'd Thick with Sail Ships New York, New York. Opening of exhibit of paintings and prints of 19th-century views of New York Harbor. (South Street Seaport Museum, 207 Front St., New York, NY 10038, 212-669-9430)

28-30 Boatbuilding Workshop

New York, New York. With shipwright Mike Bull. Reservations required. (South Street Seaport Museum, 207 Front St., New York, NY 10038, 212-669-9416; or Boat Shop, 212-742-1116)

28-30 Antique & Classic Boat Show & Classic Yacht Regatta West Sayville, New York. (Suffolk

Compiled by Mary Lou Dietrich

SOUTH STREET SEAPORT MUSEUM & MARKETPLACE ALONG WITH WOODENBOAT MAGAZINE PRESENT

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Contact:

South Street Seaport Museum 207 Front Street New York, NY 10038 (212)669-9-100

CALENDAR OF EVENTS

Marine Museum, P.O. Box 184, West Sayville, NY 11796, 516-567-1733)

29-30 No Octane Regatta & Workshops Blue Mountain Lake, New York. (Carmen Klein, The Adirondack Museum, Blue Mountain Lake, NY 12812, 518-352-7311)

WEST COAST

April 28-May 4 Folkboat International Regatta

> San Francisco, California. (Yacht Racing Association, Fort Mason Center, San Francisco, CA 94123, 707-874-3090)

May

4 Yesteryear Regatta San Diego, California. (Ancient Mariners Sailing Society, P.O. Box 6484, San Diego, CA 92166, 619-569-5277)

- **4 Woodworking for Women** Seattle, Washington. With Charlie Mastro. Follow-up course May 11. (The Center for Wooden Boats, 1010 Valley St., Seattle, WA 98109, 206-382-BOAT)
- 4 Painting & Varnishing Techniques Port Townsend, Washington. (Northwest School of Wooden Boatbuilding, 251 Otto St., Port Townsend, WA 98368, 206-385-4948)
- 10-19 Alaskan Eskimo Baidarka Building Seattle, Washington. With Svend Ulstrap. (The Center for Wooden Boats, 1010 Valley St., Seattle, WA 98109, 206-382-BOAT)
 - 11 Tool Clinic San Francisco, California. With Simon Watts. (National Maritime Museum Association, Building 275, Crissy Field, San Francisco, CA 94129, 415-929-0202)
- 11-12 Wooden Boat Fair Olympia, Washington. (Olympia Wooden Boat Association, P.O. Box 2035, Olympia, WA 98507, 206-943-5404)
- 11-12 Pedal Power Potlatch Seattle, Washington. (The Center for Wooden Boats, 1010 Valley St., Seattle, WA 98109, 206-382-BOAT)
- 11-12 Matthews Boat Owners' Cruise Bainbridge Island, Washington. Randy Mueller, 8212 Dorotich St., Gig Harbor, WA 98335, 20(5-858-6529)

13-17 Rigging Seminar Port Townsend, Washington. (Northwest School of Wooden Boatbuilding, 251 Otto St., Port Townsend, WA 98368, 206-385-4948)

- 18 Heritage Cup Race Bellingham Bay, Washington. For wooden boats. (Douglas Cole, 4344 King Ave., Bellingham, WA 98226, 206-676-0119)
- 18 Long Beach/Seal Beach Regatta Long Beach, California. (David Smith, Wooden Hull Owners Association, 185 Loretta Walk, Long Beach, CA 90803, 213-433-5494)
- **18-19 14th Annual May Meet** Sacramento, California. Small-boat gathering sponsored by the Tradi-

tional Small Craft Association, Sacramento Chapter. (John or Lynn DeLapp, 916-756-9359; or 731 G St., Davis, CA 95616, 916-758-2421)

- **18-25 Building a Lapstrake Canoe** San Francisco, California. With Simon Watts and Peter Jermyn. National Maritime Museum Association, Building 275, Crissy Field, San Francisco, CA 94129, 415-929-0202)
 - 25 Master Mariners Regatta San Francisco Bay, California. (Ed Witt, 405 Alhambra St., Crockett, CA 94525, 415-787-1308)
 - 25 Spring Wooden Boat Cruise West Linn, Oregon. From Bernert Park to Molala River State Park and back. (Ken Swan, P.O. Box 267, Hubbard, OR 97032, 503-982-5062)
- 25-27 Mission Bay Messabout San Diego, California. (Tony Groves, 11070 Davis St., Moreno Valley, CA 92387, 714-242-0131)
- 31-June 2 Steamboat Meet Klamath Lake, Oregon. (Don & Ruth Mentzer, 1467 S. Stage Rd., Medford, OR 97501, 503-772-6478)
- 31-June 2 Antique & Classic Wooden Boat Show, Parade Lake Arrowhead, California. (Dr. Fay Van, Southern California ACBS, P.O. Box 604, Lake Arrowhead, CA 92352, 714-337-1665 or 714-337-3613)

June

- 1-2 Classic Mariners' Regatta Port Townsend, Washington. Four divisions: big schooner, ocean racer, inshore racer, cruiser. (Bill Higgins, Wooden Boat Foundation, P.O. Box 1535. Port Townsend, WA 98368)
- **1-2 Wooden Boat** Festival Regatta *Newport Beach, California.* (Newport Harbor Chamber of Commerce, 1470 Jamboree Rd., Newport Beach, CA 92660, 714-644-8211)
- 1-10 West Greenland Sea Kayak-Building Workshop Homer, Alaska. With Svend Ulstrap. Traditional Eskimo construction techniques. (AGEYA Kayak Tours, Patty Dolese, P.O. Box 141506, Anchorage, AK 99514, 907-248-7140)
 - 8 Eric Erickson Oil Island Race Long Beach, California. (David Smith, Wooden Hull Owners Association, 185 Loretta Walk, Long Beach, CA 90803, 213-433-5494)
 - 8 Spar Workshop Port Townsend, Washington. (Northwest School of Wooden Boatbuilding, 251 Otto St., Port Townsend, WA 98368, 206-385-4948)
- 8-9 Antique & Classic Wooden Boat Concours d'Elegance Bass Lake, California. Runabouts of the '20s and '30s. Sponsored by the Sacramento Chapter, ACBS. (Brian Wilkinson, P.O. Box 109, Bass Lake, CA 93604, 209-642-3111)
 - 9 Start of the San Diego-to-Maui Race San Diego, California. (Jerry Newton, Ancient Mariners Sailing Society, P.O. Box 6484, San Diego, CA 92166, 619-222-1281)

15 Do-It-Yourself fair tor Boaters Seattle, Washington. (Crow's Nest Marine Supplies, 1900 N. Northlake Way, Seattle, WA, 206-632-3555 or 206-632-4462)

17-22 Lofting Seminar

Port Townsend, Washington. (Northwest School of Wooden Boatbuilding, 251 Otto St., Port Townsend, WA 98368, 206-385-4948)

22-23 Antique & Classic Land, Sea, and Air Show

Port Ludlow, Washington. Sponsored by the Classic Yacht Association and Pacific Northwest Chapter, ACBS. (Monty Holmes, 206-282-4934)

22-23 Owens Rendezvous North Pender Island, British Columbia, Canada. (Paul Witzer, 401-1325 Harrison St., Victoria, BC, V8S 3R9, Canada, 604-595-1437)

24—29 Small-Boat Construction Seminar Port Townsend, Washington. (Northwest School of Wooden Boatbuilding, 251 Otto St., Port Townsend, WA 98368, 206-385-4948)

SOUTH

May

4-5 Traditional Wooden Boat Show *Beaufort, North Carolina.* (North Carolina Maritime Museum, 315 Front St., Beaufort, NC 28516, 919-728-7317)

4-5 Small Boat & Beach-Cruising Meet *Cedar Key, Florida.* (Chris Harkness, P.O. Box 90, Cedar Key, FL 32625, 904-543-5674)

16 Design Seminar

Alexandria, Virginia. Defining an Alexandria-class small boat for the Potomac River. (The Alexandria Seaport Foundation, 1000 S. Lee St., Alexandria, VA 22314, 703-549-7078)

17-19 Joe Wheeler Rendezvous

Rogersville, Alabama. (Steve Tubbs, 205-387-8332; or Dixieland Chapter, ACBS, 5 Keith Rd., Leeds, AL, 35094, 205-699-6337)

18 In-the-Water Boat Show Flowery Branch, Georgia. Sponsored by the Atlanta Wooden Boat Association. (Bob Churchill, 1085 Chartley Dr., Lilburn, GA 30247, 404-921-4341)

June

2 Wooden Boat Show

Lake Travis, Texas. At the Lakeway Marina. (Jim Frechette, 11 Bear Creek Dr., Austin, TX 78737, 512-288-5359)

 Ship Model Exhibition Newport News, Virginia. Through Oct.
 (The Mariners' Museum, 100 Museum Dr., Newport News, VA 23606, 804-595-0368)

GREAT LAKES

May

26 Great Outdoors Festival Toronto, Ontario, Canada. Highlighting canoeing and kayaking. (Harbourfront Corp., 410 Queens Quay West, Suite 500, Toronto, ON, M5V 2Z3, Canada, 416-973-3000)

June

- 21-22 Antique & Classic Boat Auction Algonac, Michigan. Held in conjunction with the Michigan Chapter ACBS Antique Boat Show and the Chris-Craft Employee Jubilee. (Norton Auctioneers of Michigan, Inc., 50 West Pearl at Monroe, Coldwater, MI 49036, 517-279-9063)
- 21-23 Antique & Classic Boat Rendezvous Peterborough, Ontario, Canada. (Mary Lyons, Liftlock Activity Centre, P.O. Box 572, Peterborough, ON, K9J 6Z6, Canada, 705-742-2251)
- **21-25 Inland Sea Kayaking Symposium** Bayfield, Wisconsin. (Greg Sweval, P.O. Box 906, Bayfield, WI 54814, 715-779-3320)
 - 22 Classic Boat Show Suttons Bay, Michigan. Sponsored by the Maritime Heritage Alliance of Northern Lake Michigan. (Tom Kelly, Classic Boat Show, P.O. Box 187, Suttons Bay, MI 49682, 616-271-6637)
 - 29 Antique & Classic Boat Show Charlevoix, Michigan. (Jacquie Merta, 616-547-2101)
- 29—July 14 Birchbark Canoe-Building Course Port Wing, Wisconsin. (David Gidmark,

Box 26, Maniwaki, PQ. J9E 3B3, Canada)

CENTRAL

June

8-9 Greater Cincinnati Antique Boat Show

Dayton, Kentucky. On the Ohio River. (Debbie Jones, 3239 Old Oxford Rd., Hamilton, OH 45013, 513-896-1517)

- 14—16 Upper Mississippi Messabout Lake City, Minnesota. A meeting of admirers, builders, and users of small, good boats. (Bob Brown, 12936 Galaxie Ave., Apple Valley, MN 55124, 612-432-7557)
- 17-28 Building a Lapstrake Canoe Snowmass Village, Colorado. With Simon Watts. (Peter Korn, Anderson Ranch Arts Center, Box 5598, Snowmass Village, CO 81615, 303-923-3181)
- 28-30 Canoe Repair Clinic Duluth, Minnesota. With Alex Comb of Stewart River Boatworks. (Outdoor Program, UMD, 10 University Dr., Duluth, MN 55812, 218-726-7170)

EUROPE

May

4-6 Pilot Gig World Championships Si. Mary's, Isles of Scilly, Great Britain. (Scilly Tourist Office, tel. 072-22536)

25-27 Crouch Rally

Burnham-on-Crouch, Essex, England. (Brenda Jago, Smugglers Cottage, North Fambridge, Essex CM3 6NA, England, tel. 0621-741595)

25-27 Traditional Boat Festival

Peel, Isle of Man. (J.W. Pennington, Graham Cottage, Glen Auldyn, Lezayre, Isle of Man, tel.0624-813503)

June

6-9 Wooden Boat Show Greenwich, London, England. (Lionel Willis, National Maritime Museum, Greenwich, London SE10 9NF, England, tel. 081-858-4422)

6-9 Cowes Classic Yacht Regatta Cowes, Isle of Wight. (Gavia Wilkinson-Cox, 134 Lavenham Rd., London SW18 5EP, England, tel. 081-870-9713)

28-30 Strangford Lough Regatta

Portaferry, Northern Ireland. For Galway hookers and traditional craft. (George Holmes, 15 New Road, Donaghadee, Northern Ireland, tel.0247-883896)

29-July7 Classic Boat Festival

Ipswich, Suffolk, England. (Shotley Point Marina, Shotley Gate, Ipswich, Suffolk 1P9 1QJ, England, tel.0473-348982)





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Since its inception last year in the Northeast, the number and scope of the WoodenBoat Racing Series has been expanded to cover 38 events in five regions in 1991. We're not finished yet — we'd like to locate racing series in the Southeast and Gulf Coast areas, and to help inspire some more races in San Francisco Bay. If you are a wooden boat race organizer

and wish to participate in the Series, please contact Carl Cramer at WoodenBoat, P.O. Box 78, Brooklin, ME 04616, (207) 359-4651.

If you are a boat owner, we urge you to contact one or more of the race organizers listed below to sail and enjoy the excitement, the camaraderie, and the grand spectacle of wooden boats gathered together.

PACIFIC

Northwest

Wooden Yacht Racing Association: For information about participation, sponsorship, or events, contact Marc deRochefort, 2213 Victorian Lane, NE, Bainbridge Island, WA 98110.

May 11-12 Olympia Wooden Boat Festival Race — Olympia, WA Olympia Wooden Boat Association, P.O. Box 2035, Olympia, WA 98507, (206) 943-5404.

May 17-18 The Heritage Cup Race — Bellingham, WA The Heritage Cup Committee, 4344 King Ave., Bellingham, WA 98226, (206) 676-0119. Contact Douglas Cole.

June 1-2 Classic Mariners Regatta — Port Townsend, WA The Wooden Boat Foundation, 637 Water St., Port Townsend, WA 98368, (206) 385-3628.

July 5-7 Lake Union Wooden Boat Festival Race — Seattle, WA The Center for Wooden Boats, 1010 Valley St., Seattle, WA 98109, (206) 382-2628.

October 12-13 Ancient Mariners Fall Regatta — Eagle Harbor, WA Ancient Mariners Sailing Society, 742 N. 68th St., Seattle, WA 98103, (206) 783-6094. Contact Armin Schlieps.

San Francisco Bay

May 25 Master Mariners Regatta — San Francisco Deadline for race applications: May 4. Master Mariners Benevolent Association, P.O. Box 620639, Woodside, CA 94062, (415) 851-7601. Contact Dan Drath.

October 12-13 Drakes Bay Cruise/Race — San Francisco Master Mariners Benevolent Association, P.O. Box 620639, Woodside, CA 94062, (415) 851-7601. Contact Dan Drath.

October 19 Jessica Cup Regatta — San Francisco St. Francis Yacht Club, On The Marina, San Francisco, CA 94123. Contact Craig Swayne at (415) 285-1500 or Anna Peachy at (415) 435-4771.

South Coast

Wooden Hull Owners Association (W. H. O. A.). For information on events or membership, contact David Smith at W. H. O. A., 185 Loreta Walk, Long Beach, CA 90803; tel. (213) 433-5494, fax (213) 439-3588.

Ancient Mariners. For information on events or membership, contact Jim Sutter, 11568 Sorrenta Valley Rd., Building 14, San Diego, CA 92121; tel. (619) 481-0102 (days), (619) 755-4974 (evenings). April 13 San Pedro — Newport Beach W.H.O.A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith.

May 4 Yesteryear Regatta — San Diego

Ancient Mariners, 11568 Sorrenta Valley Rd., Building 14, San Diego, CA 92121, (619) 481-0102). Contact Jim Sutter.

May 18 Long Beach — Seal Beach Regatta

W. H. O. A., 185 Loreta Walk, Long Beach, CA 90803, (213)433-5494. Contact David Smith.

June 1 Wooden Boat Festival Regatta — Newport Beach Newport Harbor Area Chamber of Commerce, 1470 Jamboree Rd., Newport Beach, CA 92660, (714) 644-8211.

June 8 Eric Erickson Oil Island Race — Long Beach W. H. O. A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith.

June 9 San Diego — Maui Race — California/Hawaii Co-sponsored by Lahaina Yacht Club (Lahaina, Maui) and Ancient Mariners, P.O. Box 60582, San Diego, CA 92106, (619) 222-1281. Contact Jerry Newton.



June 15 Heritage Regatta/Nautical Museum Cup — Newport Beach W. H. O. A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith. Or, Newport Nautical Museum, (714) 673-3377.

July 13 Newport West Cup — Newport Beach W.H.O.A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith.

August 3 Corinthian Classic Yacht Race — Oxnard Strathmore Homes, 3401 W. 5th St., Suite 220, Oxnard, CA 93030, (805) 985-1771. Contact Dick McNish.

August 25 Ancient Mariners Race (Schooner Association) — San Pedro/Seal Beach, CA W. H. O. A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith.

September 14-15 Petticoat & Ironman Races — San Diego Ancient Mariners, 11568 Sorrenta Valley Rd., Building 14, San Diego, CA 92121, (619) 481-0102. Contact Jim Sutter.

September 21 Hurricane Gulch Regatta — San Pedro W. H. O. A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith.

October 5 Newport — Dana Point (W.H.O.A. Anniversary Race) W. K. O. A., 185 Loreta Walk, Long Beach, CA 90803, (213) 433-5494. Contact David Smith.

October 6 W.H.O.A. Versus Ancient Mariners Challenge (Dana Cup) — Dana Point W. H. O. A., 185 Loreta Walk, Long

Beach, CA 90803, (213) 433-5494. Contact David Smith.

December 7 Half-Pint of Rum Race — San Diego Ancient Mariners, 11568 Sorrenta Valley Rd., Building 14, San Diego, CA 92121, (619) 481-0102. Contact Jim Sutter.

GREAT LAKES

July 6 Legends of the Lake Classic — South Haven, MI 3382 Scot Pine Way, Portage, MI 49002, (616) 324-0377. Contact Dennis Parker.

July 27 North Shore — Chicago, IL Sponsored by Heritage Boat Club. 4537 N. Keokuk Ave., Chicago, IL 60630, (312) 685-4107. Contact Jack Minton.

August 30 Classic Boat Cruise — Chicago, IL/St. Joseph, MI P.O. Box 341, St. Joseph, MI 49085, (616) 927-2628. Contact Jane Parker.

ATLANTIC

Northeast

WoodenBoat Classic Regatta Series: For information about participation, sponsorship, or to obtain a rating certificate, contact Jim Cassidy, The Wooden Boat Guild, P.O. Box 9501, Noank, CT 06340; tel. (203) 536-6307, fax (203) 572-1907.

July 6-7 New London Sail Fest — New London, CT Marine Commerce and Development Commission, 111 Union St., New London, CT 06320, (203) 443-8331. Contact Mike Lamperelli.

July 13-14 Landing Regatta — Newport, RI Christie's Landing, Newport, RI 02840, (401) 849-3033. Contact Don Classic.

July 20-21 Emperor's Cup — Marblehead, MA Sirius Software, Inc., 215 First St., Cambridge, MA 02142, (617) 577-8222. Contact Gary Gregory.

July 27 Mariah's Cup — Portland, ME

Portland Yacht Services, 58 Fore St., Portland, ME 04101, (207) 774-1067. Contact Phineas Sprague. August 3 Eggemoggin Reach Regatta — Brooklin, ME Brooklin Boat Yard, Box 119, Brooklin, ME 04616, (207) 359-2236. Contact Steve White.

August 10 Yankee Mariner's Cup — Boston, MA Sail Boston 1991, 250 Summer St., Boston, MA 02210, (617) 330-1992. Contact Dusty Rhodes.

August 18 Opera House Cup — Nantucket, MA Opera House Cup, Box 1409, Nantucket, MA 02554, (508) 228-2121. Contact Chick Walsh.

August 24-25 New Bedford Heritage Days Regatta — New Bedford, MA New Bedford Heritage Days Regatta, 65 Acushnet Rd., Mattapoisett, MA 02739, (508) 758-7564. Contact Paul Zychowicz.

Aug. 31-Sep. 2 Classic Yacht Regatta — Newport, RI Museum of Yachting, P.O. Box 122, Newport, RI 02840, (401) 847-1018. Contact Maggie Martin.

September 14 Governor's Cup — Essex, CT Connecticut River Museum, P.O. Box 261, Essex, CT 06426, (203) 767-1643. Contact Tom Wilcox.

September 21 Mayor's Cup — New York, NY South Street Seaport Museum, 207 Front St., New York, NY 10038, (212) 669-9400. Contact Richard Gill.

October 4-6 Race Rock Regatta — Mystic, CT Noank Wooden Boat Association, P.O. Box 9506, Noank, CT 06340, (203)577-8174. Contact Bill Sternberg.



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Carrying the Principle of Fakery to its Logical Conclusion OUR NEW LINE OF MARINE

by David Kasanof

've thought of a great way to make a lot of money selling a new line of marine products. It's based on an insight that I recently had while busting my keister trying to accomplish some wooden-boatish task aboard CONTENT. The insight is that although most boats these days are made of evil-smelling sticky stuff that must be kept out of the reach of children (or at least children whom you like), most people are still attracted to the idea of wooden boats. If that were not the case, then builders

would not go to the trouble of molding fake planking seams into the gelcoat of their confections. They would not put fake grain into the plastic countertops of their galleys.

Now, here's my great idea: Just go them one better. Carry the principle of fakery to its logical conclusion. Give the customer more than just fake seams. For instance, how about fake dry rot? Fake rust stains on topsides?

One would buy plastic molded pieces in selected color schemes showing peeling paint and black "rot" underneath. These could be glued to insets cut out of, say, a beam or stringer. "Nail-sick" topside planks could be simulated by gluing on strips of appropriately simulated rust. The effect could be enhanced by spray scent in, say, cedar, pitch pine, or white oak (if a characteristic oak scent can be isolated).

And let's not forget about the sense of hearing. How about a tape loop of recorded creaking of wooden timbers, to be played as one's plastic boat sails? Naturally, the skipper would have to use some sailorly judgment. You wouldn't want a whole bunch of creaking if you were in a flat calm, for instance. And before we leave the matter of creaking, I cannot forbear mentioning the pleasant sound of lines creaking as they periodically

tighten and relax as they bear on wooden cleats. This effect is especially noticeable on CONTENT because of her size. I think a clever designer could rig up some plastic gadget that could be slipped over one's dockline that would then emit nostalgic creaking noises even when installed on the plastic lines of a 15' daysailer.

AUGMENTATION

HERE'S WHAT WE'RE FAM

Pottenwood -- all sizes, with

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DEVICES FROM

I have noticed something else that is related to this business of the *idea* of the wooden boat rather than the actual wooden boat. The skipper himself sometimes seems to hanker after a more colorful time in maritime affairs, a hankering that manifests itself in the dress code.

It's strange, but ajunk bond dealer who would never wear anything not made in Calabria under normal workaday cellular phone circumstances will show up at the boatyard in Levis that have been "pre-worn" by tumbling them in a large drum filled with industrial diamonds. Why would this man pay extra in order to have his pants brutalized when he could accomplish the same thing by just getting run over by a bus? He does it for the same reason that his boat has a raised poop deck. He likes the idea of tradition. The last thing in the world he really

TE, YELLAN, BLACK

OTHER

wants is to be on an

L'Eggs of

actual Grand Banks schooner loaded with salt cod, but he likes the *idea of it*, the romantic ghost, so to speak.

Well, let's help him with a line of products and services. We could start him off with an eye patch, plastic paste-on facial scar, and assorted fake tattoos. In time, he might purchase one of our simulated wooden legs or a plastic parrot that can be clipped to the shoulder.

The concept is really quite intriguing: a plastic boat, but replete with gadgets to give it the outward hints of a wooden boat tradition, sailed by a modern yuppie who has been outfitted with personal goodies that give his own person the aura of tradition.

The profit potential is endless. I'm currently working on a pill that will produce realistic symptoms of scurvy without real discomfort. In a world where plastic boats have planking seams that do not imply planking, and skippers wear new pants that look old, how can I miss?



by Peter H. Spectre

A living, breathing junkyard Mother Nature takes them all Computer geeks and electronic gizmos And only the Fax Gods know

G eorge Buehler, a designer, boatbuilder, and sailor out in the Northwest, has always been one to cut straight through to the nub of any matter. "You know the easiest way to get to San Francisco from the Northwest?" he once told me. "It's simple. You sail out into the Pacific Ocean 50 miles or so, (hen hang a left; when you've run off enough miles to be at the latitude of the Golden Gate, you hang another left. "

A man of iconoclastic *joie de vivre*, George has just completed a book on backyard boatbuilding, what he calls "a finger-in-the-wind, spread-legged, handson-hip, shaggy-haired and loud-voiced PHOOEY to all those who believe in personality-free boats." George being George, *Buehler's Backyard Boatbuilding* (International Marine Publishing Company, Camden, ME 04843, \$24.95) is as much about certain perceived weaknesses in modern nautical society as it is about how to build wooden boats. This is a sample from the introduction:

"Somewhere our culture seems to have lost that spark of imaginative energy that created it. I was thinking recently that I can't remember the last tree house I've seen. Why don't high school kids build 'rods anymore? And why do so many people stand around with their mouths open, afraid to try anything unless they first take a socially approved class to tell them how?

"How, injust a few generations, did this country's soul go from folks who walked, rode horses, and dragged wagons clear across our continent, to a majority who spend most of their time staring at teevees; whose feeling of self worth is based more on income than on personal accomplishment?

ON THE WATERFRONT

"One reason is that the monthly rnagazines have pretty much stopped showing things people can do for themselves. Bought out by conglomerates, their old-time greasy-knuckled editors replaced by MBA types with no background in the subject, the American hobby-oriented press is, for the most part, pretty damned dull. Where's the inspiring stuff like Haw ta Build 20 Boats ? Stuff like Atkin's articles in the old Motor Boating, and those by Hanna, Chapelle, Farmer, and Garden? And what about all those boat plans and airplane plans and cabin plans and stuff you can really build from the Mechanix Illustrated, which is also gone. Gone? How could that happen?"

Ken Mayne, our correspondent in Northern Ireland, reports that this year's Strangford Lough Regatta for Galway Hookers and Traditional Craft will be held on June 28-30. "The event will be hosted by the Portaferry Sailing Club," writes Mayne, "whose hospitality has always been prodigious, even by Irish standards. There will be the usual attendant subculture of traditional music and dancing in the pubs and streets and on board the boats."

Mayne reports that a group labored day and night in a farm shed near Bangor to restore a 21' Galway hooker, actually a gleoiteog (pronounced "glow-chug"), for the regatta. "Over 50 years old, she began life as a workboat in the harsh Atlantic conditions of the west of Ireland. She was brought cast by artist John McSorley, who sailed her for many years in Strangford Lough until she was badly damaged in the 1989 regatta. In 35 knots of wind, she was all but run over by a hooker twice her size. Such is the enthusiasm for her rebuilding that much of the timber has been donated: the Marchioness of Dufferin and Ava gave two larch trees for the planking.

Traditionally these boats take the surname of their owners. Until recently this one was known as GLEOITEOG McSORLEY, but now she is to get a new one. They're still debating what it will be, but the current favorite is AN TULTADH (pronounced 'an tulta'), which is Irish for "The Ulsterman.' Strangford Lough, after all, is in the province of Ulster."

Information on the Strangford Lough Regatta from George Holmes, 15 New Road, Donaghadee, Northern Ireland; tel. 0247-883896.

Richard Thrift reports from Norway: "At Hopsjoen 011 the island of Hitra off the mouth of Trondheim Fjord, there is a new club of about 40 members called the Night Sailors. Established by Tor Bugten, this group bought an 80-year-old notbat (net-boat), which they are restoring. The NIGHT SAILER, as they are calling it, was originally from the FrOya herring fleet. It is an open boat 32' long, with an ample and shallow draft, ballasted with beach stones. The aim of the club is to find and restore other old workboats of the various regions along the coast, learn to sail them, educate the local youth, most of whom are reared on plastic boats, and eventually appear as a flotilla, like the mighty fishing fleets of old, at coastal festivals. The Night Sailors meet on Thursday nights al (he Landstryker'n Cafe at the Hopsjo brygga, an old restored sea warehouse, where they sit at a long-planked, slightly resinous reserved table."

B ob Wallstrom is researching an article for this magazine on the Luders Marine Construction Company. He would appreciate hearing from anyone with information about the company, its workers, and its boats, as well as sources of plans and photographs. Bob Wallstrom, P.O. Box 828, Blue Hill, ME 04014; 207-374-5404.



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The NIGHT SAILER underway by day.

Henry Smith is looking for his old boat, the sentimental favorite **WILD OATS**, a 26' double-cockpit mahogany runabout. In 1960 the boat was put up for sale at Carter Raymond's business on Route 3A in Cohasset, Massachusetts, and reportedly found a home in the Hull-Marshfield area. Anyone know the current whereabouts of WILD OATS? Henry H. Smith, P.O. Box 366, Garden City, NY 11530.

ark Roeyer, Our Man in Kansas, will be having a one-man exhibition at the Wichita Art Museum, in Wichita, Kansas, from September 8 through November 3, 1991. The show, entitled "Roeyer Boats," will feature the boat as art, or the art as boat, take your pick. Either way, it will be a mixed, provocative bag, as Mark sometimes thinks he's a boatbuilder, sometimes thinks he's an artist, but most of all, he always thinks. If you're in Kansas in the fall, Uncle Pete demands that you check it out.

Meanwhile, Mark Roeyer, the builder, has been rooting around among the offerings of the parts supply industry: "If you haven't

supply industry. In you haven t yet discovered **Small Parts Inc.**, it's worth a look. They sell everything from tweezers to metric nylon machine screws to titanium hex machine nuts and bolts. They have a large, free catalog; I got it for telescope-making supplies, but it's a modelmaker's heaven." Small Parts Inc., P.O. Box 381966, Miami, FL 33238.

Mark also recommendsJerryco. "They

put out a catalog of surplus and junk solenoids, plastic cleaners, 1940s vintage BuShips lead-line capstans, plastic dinosaurs, earthquake-proofing blocks for buildings. Weird." Jerryco, 601 Linden Place, Evanston, IL 60202; 708-475-8440.

Catalogs are one thing, but there aren't very many living, breathing **marine junkyards** around, places where you can sort through a pile of metal and find a rare triple-ought gronicle for your 1968 Neptune Mitey-Mite or a wiring harness for a '73 Thunderbolt Intruder, the one with the fur-lined engine compartment. There's such a place in Patchogue, Long Island, where Henry Terry, the owner, specializes in "rebuilt powerheads, drives, diesels, used parts, computer brokerage, salvage," in short, **Anything Marine**, Roe Place, Patchogue, NY 11772; 516-447-1884.

You figured it had to happen sooner or later. We've got tool carriers shaped like suitcases, carpet bags, steamer trunks, and ice cube trays. Now we have the **Toolpak** ("Behind you 100%")—"hauls like a backpack, opens like a zippered file cabinet, and carries like a bag while unzipped." Interesting idea for the itinerant boatbuilder, from Paktek, 1302 26th Ave., N.W., Suite 250, Gig Harbor, WA 98335; 206-851-2308.

You know those wooden-stock

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Courtesy of Henry H. Smith

Admiralty-style **anchors**, the type they don't make anymore? Well, they do three sizes (10 lbs, 16 lbs, and 24 lbs) in ductile iron, and one size (10 lbs) in bronze. Information from Frank Phillips, Classic Works, P.O. Box 1362, Aliquippa, PA 15001; 412-375-8114.

In our Don't-Shoot-Me-I'm-Only-the-Messenger Department, Joseph R. Tamksy, an avid racer, would like to stimulate discussion regarding the modernization and upgrading of the **Beetle Cat** class. "What I have in mind is a program of changes in construction materials and rig, which if prepared by a sensitive naval architect and instituted over a period of five years or more would greatly extend the life of the class without making obsolete the existing fleet—-just what has been done with such classes as the Star, Snipe, Lightning, and others.

"I suggest, for instance, a new plywood deck, a deeper kick-up rudder, and aluminum spars. Further, it might be desirable to shorten the boom and lengthen the mast, and peak up the sail to catch up with those Sailmakers who are doing so 'secretly.' Finally, I suggest a wider sheet horse, or blocks on the quarter, and boom vangs to reduce leech twist and a certain tendency to broach and capsize when sailing downwind in 15-plus knots of wind.



Happy times on WILD OATS. Anybody know the whereabouts of this boat?

Is there any interest out there in such changes, or am I barking up the wrong tree?"

Address Beetle Cat comments and discussion, not to me (I am, indeed, only the messenger), but to Joseph R. Tamsky, 241 Sisson Rd., Harwich, MA 02645.

 \mathbf{B} rion Toss reports about bad times in the Northwest:

"It has been a meteorologically significant year here in Port Townsend, with a stretch of some of the most severe weather in decades, including one really **foul nor'easter** that dropped a lot of trees and drove a lot of boats ashore. **Port Hadlock**, a small town just south of here, was hardest hit. There, the SONIA, a turn-of-thecentury Irish yawl, had 3' of her stern munched off by a larger vessel whose mooring lines parted; BRYONY, a big gaff cutter, went up on the beach, dismasted and debullwarked; the gaff schooner LOBO had huge chunks torn out of her bow and





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ON THE WATERFRONT

stern; and only brave work by owners and friends saved the gaff yawl ERIN from complete destruction—she got away with only the loss of her bowsprit and stem.

"Some boats were total losses; some can be brought back. All serve to remind me that we regularly put these works of art in harm's way as a natural part of their use. But that exposure to the elements, that noble vulnerability, is part of the reason why great boats *are* works of art."

Larry Montgomery, a **marine sur**veyor, was on the scene at Port Hadlock during the storm and afterwards, and has these comments and conclusions:

"The classic argument of what material is best in a storm is moot: When the wind blows over 65 mph, Mother Nature takes them all. Wood and fiberglass hulls seemed to fare equally well; steel the best. Plywood hulls are the quickest and easiest to patch with available materials; salvage crews also like planked hulls if they aren't too badly damaged.

"Many of the wooden boats at Port Hadlock were either **uninsured or underinsured.** Check your policy to be sure it will cover you in such an event. Remember, if the cost to recover and repair a boat exceeds its insured value, it becomes a total loss; you'll be paid off the face value of the policy, less salvage credit. Be sure the values are in place or be prepared to cover the extra costs in the event of major damages. An ACV (actual cash value) policy means you'll be paid the market value of the boat at the time of the accident; a replacement value policy means you will be paid off at the cost of doing new, without depreciation. If in doubt, talk to your insurance agent and ask a lot of 'what-if' questions.

"Whether you have insurance or not, your duty as an owner is to act like a **'prudent insured.'** Act quickly to get your boat to safe harbor. Contact your insurance agent, but don't wait for the insurance company to tell you what to do. Take whatever actions are necessary to minimize the damage: 'Pickle' the engine, cover holes with tarps, etc. These actions to save the boat, called 'sue and labor' in the trade, are paid above and beyond the repair costs.

"If the damage is extensive, consider getting a marine surveyor to assist you with your claim, make recommendations for repairs, and document the losses. Be prepared to pay these fees up front and hope you can recover them later as part of your claim. Let your insurance agent know what you are doing; take good photographs and **keep** all **receipts.**

"Cope by taking aggressive action to save your boat from further harm, but wait for the shock to pass before making large personal decisions. Try to find the light side. I called one liveaboard sailor I knew at Port Hadlock; he and his family were sleeping on the floor of his office while his boat was being repaired. 'It must be rough,' I said. 'Not really,' he replied. 'Now it's easy to find a parking space at the marina.' "

 \mathbf{B} rion Toss reports good news from the Northwest:

"Barbara and Rick Blacker are nearing completion of their 30' Lyle Hess cutler KIRIN at Carl Brownstein's shop near Shelton, Washington, and Carl himself is gearing up to begin another Hess boat for an Oregon client. The ADVENTURESS, our local sail-training schooner, is hauled in Anacortes for major improvements, including a new mainmast and some new planking. Also in Anacortes, Bill Horwood has completely gutted and will rebuild the interior of the legendary brigantinc VARUA, which will also get a new rig.

"Just outside my door in Port Townsend, **Ed Louchard**, renowned maker of folding knives, has cleared a space and laid down the lines for a 32' sloop of his own design. Knife-making may be Ed's craft, but boatbuilding is his first love.

"As you may remember, in a recent

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Anchor or moor where other boats won't float. Leave the dinghy at home and step ashore. Build her yourself or take the plans to a professional. Either way you can pay as your boat takes shape, so there is no loan to cloud your enthusiasm. Plans have been drafted in the traditional manner and then developed on an up-to-theminute CAD system which ensures dimensional accuracy. There is no lofting, the Builder's Manual gives stepby-step instructions. With five models to choose from, one is just right for you and all the thin water that's out there waiting. Send \$7.00 for brochure describing all five models, \$20.00 for a study pack for each model, to:

Norwalk Islands Sharpies 213 Rowayton Avenue Rowayton, CT 06853

In Australia: Duck Flats Wooden Boats 27 Hack Street Mt. Barker, S.A. 5251 edition of this column I asked for ideas and anecdotes on the theme of how to keep nice places from being trashed by developers, given the interest of the latter in my town, Port Townsend. Dozens of people responded, and I would like to thank them publicly. I now have some solid ideas on how to proceed, and I am sharing those ideas with other people who care about this place and are willing to keep it sound. On the down side, I also have a much clearer idea of how many communities have been damaged or destroyed by short-sighted schemes for 'progress.' Give me a 70-knot nor'easter anv time.'

Correspondent Terry Ridings reports from British Columbia: "In January, the Vintage Registry of British Columbia held a ceremony to recognize boats that are more than 40 years old and had either been built in the province or had spent their days in B.C. waters. The purpose of the registry project is to encourage owners who preserve older vessels. While a few examples of interesting boats might survive in a museum setting, a great many more will survive by encouraging owners to preserve and restore older boats." Vintage Vessel Registry of British Columbia, c/o Maritime Museum of British Columbia, 28 Bastion Square, Victoria, BC, V8W 1H9, Canada.

The work of artist **Buck Braden**, whose boat and ship profile paintings were described in this column (WB No. 92), is now on display at the **Oregon State Maritime** Center and at the **Armchair Sailor** in Seattle, Washington. Buck Braden has a new address: HCR 78, 66 Hale Street, Hoquiam, WA 98550.

We all know about the conquest of the straight world by **computers** and other digital electronic devices, but those of us with a wooden boat frame of mind—or perhaps I should say, a traditional outlook—imagine that



Viking cradle boat built by Lloyd Worthington of Black Rock, Victoria, Australia, for his grandchild. The keel and stem are Pinus radiata, the planking is ³/₆" hoop-pine plywood, the trim and stand are meranti, and the owl-and-pussycat figureheads are Huon pine. The 54" ship took approximately 200 hours to build.

our world is so organic it will never be affected by such stuff. Computer geeks in the fiberglass production plants and the AMERICA'S Cup design studios—of course—but in the wooden boat shop? Whatever for?

More purposes than you would think. I'm amazed by the number of boatshops I've visited in recent years that are outfitted with serious computer systems. The most obvious uses are for **bookkeeping** and **inventory control**, but some are for **computer-aided design**. We've had a continuing discussion of the latter in these pages, but I would like to hear more from those who use computers for the former.



Toll-Free in US & Canada: 1-800-225-5205, Mon-Fri 8am to 6pm EST Toll-Free in Maine 1-800-287-4651, Overseas call 207-359-4647 FAX 207-359-8920 Anytime! Anyone know of programs that are particularly useful for wooden boat shops specifically, as opposed to general small businesses?

Actually, the best small electronic gizmo for the wooden boat shop is a pocket calculator. Not the awkward decimal type, but the new ones that handle fractions. The basic, stripped-down models add, subtract, multiply, and divide, but the Cadillacs of the breed figure board feet, perform metric conversions (i.e., convert metric measurements to feet, inches, and fractions of inches), and the like. Most of the major mail-order tool suppliers sell these calculators, including Bridge City Tool Works, 1104 N.E. 28th Ave., Portland, OR 97232, and Garrett Wade, 161 Avenue of the Americas, New York, NY 10013.

Beaufort Marine Discount has expanded its services to include the Boater's Bulletin Board, an electronic switchboard for computerized sailors on the Intracoastal Waterway. BBB provides E-mail services, navigational programs, electronic classified ads, and, of course, electronic access to Beaufort's parts and supplies inventory listings (smart business folk down there in Beaufort). An operations booklet is available from Beaufort Marine Discount, 421 Front St., Beaufort, NC 28516; 919-728-4077. Computer junkies with a modem can hook up to the central computer by dialing 919-728-1386 and following the logon instructions.

According to the new newsletter *Afloat*, maritime historians who use a Macintosh computer with a HyperCard are being offered a HyperCard-based chronology of Admiral Lord Nelson's life. This consists of seven stacks with more than 130 cards, with the chronology, a glossary of naval terms, portraits of Nelson, and several maps. For a free copy, send a blank Macintosh disk in a reusable mailer and sufficient return postage to Professor Robert P. Keough, College of Fine and Applied Arts, Rochester Institute of Technology, 1 Lomb Memorial Dr., Rochester, NY 14623.

Afloat, by the way, is a newsletter whose purpose is to "stimulate communication between museums, historical agencies, and individuals who are involved in any way with maritime issues." Not a bad idea. For information, contact Professor Keough, whose address is immediately above.

The fax machine, like the straight photocopier, has revolutionized business communications, but not always in the way the company managers originally expected. Sure, the fax speeds up business negotiations, and yes, it makes ordering more convenient, and of course, it allows

far-flung operations to maintain continuous contact with the home office. But while the managers use the fax as a business tool, their employees use it as a toy. Jokes and cartoons, whose origins are impossible to determine, speed around the country in an underground network that keeps the working stiff supplied with a laugh a second. There was, for example, anautical lexicon entitled "Understanding Boats" that made the rounds a few months ago. Our copy came via Daniel Porter of San Mateo, California, who picked it off the Seaway fax, which got it from the Crowley Red Stack tugboat dispatcher in Alameda. "Where it originated," says Porter, "only the Fax Gods know." Here is a sample:

Ahead-the nautical term for "ajohn."

Astern—without humor, i.e., "The captain told no jokes. He was astern captain."

Bunk—a phony sea story.

Dock—nickname for a medical man. Launch—the meal eaten aboard a boat at about noontime.

Moor—number of people needed for a boat party; i.e., "The moor the merrier."

Superstructure—a structure that's a lot better than the one on your boat.

I n the wooden speedboat biz, Ken Bassett and his assistants at Onion

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River Boat Works in Franklin, New Hampshire, are building an enlarged version of Ken's Rascal for a customer in France. All new boats from Onion River arc delivered ready to go: engine, trailer, canvas cover, lifejackets—in short, everything needed to go straight from the shipping container to full speed on the water with only one stop between (for gas). Onion River Boatworks, 55 River St., Franklin, NH 03235; 603-934-3034.

Patrick Owen of New Era Design in Michigan is building a 24-footer for a client who wants to go real fast. Of laminated veneers over a laminated Sitka spruce frame, the boat is expected to do 70 mph in 2 1/2' waves. Power will be either a pair of AMG/Mercedes-Benz 6-liter V-8s, or a pair of Rotary Marine/Mazda rotary engines. New Era Design, 6617 Esch Rd., Manchester, MI 48158; 313-428-8874.

Hodgdon Yachts has launched a 31' speedboat designed by Bruce King. With a plumb stem and a torpedo stern, she looks like a throwback to the 1920s, but that's just looks. Twin 450-hp inboards from Innovation Marine, Arneson drives, designed speed of 70 mph, cruising speed of 40 mph, 60' roostertail at 60 mph she's a modern boat. It would be exciting to see her fight it out with New Era's 24footer. Hodgdon Yachts, East Boothbay, ME 04544; 207-633-4194.



New Era's 24' speedboat under construction.

M odelmakers searching for a project beyond the usual should look into the new plans offered by Arthur Herrick for the 70' McInnis-designed Maine sardine carrier WILLIAM UNDERWOOD. Sardine carriers are shapely, salty workboats and provide a refreshing change of pace from yet another model of HMS VICTORY, the USS CONSTITUTION, or the FLYING CLOUD. Herrick's plans are at 1:24 scale and contain more than enough detail to produce a very realistic model. A set of six sheets is \$40, plus \$5 for shipping, from Arthur Herrick, South

Village, Westmoreland, NH 03467; 603-399-4339.

Jean Boudriot Publications, based in Paris, France, but with a branch in England, continues to publish original books and reprints of intense interest to modelers and maritime historians. The latest to roll from the presses is a facsimile reprint of the rare second edition (1787) *of Naval Architecture, or the Rudiments and Rules of Ship Building*, by Marmaduke Stalkartt. The standard edition is £150; deluxe edition, £200—steep, indeed, especially as the dollar is, as the financiers politely put



ON THE WATERFRONT

it, weak. Jean Boudriot Publications, Ashley Lodge, Rotherfield, East Sussex TN6 3QX, England.

Jay Hanna has discovered a new source of linen rigging thread for modelmakers. Sizes.015" to. 130" are available in several colors from FrederickJ. Fawcett, Inc., 1304 Scott St., Petaluma, CA 94952; 707-762-3362.

An exhibition of the modelmakers' premier **competition** of the year takes place from June 14 to October 26 at the **Mariners' Museum**, Newport News, Virginia. Some of the best models from around the country and the world (there are two entries from the Soviet Union) will be on display. Entries must be delivered by June 2. Mariners' Museum, 100 Museum Dr., Newport News, VA 23606; 804-595-0368.

It's never too soon to start thinking about next year's project, perhaps even a **modelmaking class** if you are a beginner looking for a nudge off the dime or an advanced craftsman looking to pick up a few hints and tips. The **Custom House Maritime Museum** in Newburyport, Massachusetts, held seven classes in the winter of 1991 and plans a similar schedule in 1992. In 1991, the beginners built dories to plans from the Lowell shop in Amesbury, and the advanced class built lobsterboats. Details from the Custom House Maritime Museum, 25 Water St., Newburyport, MA 01950; 508-462-8681.

Meanwhile, **Lowell's** itself, the oldest boatshop in America (dating to 1793), is offering **classes** in full-sized construction. The winter 1991 class built L. Francis Herreshoff's double-paddle canoe, a 16footer based on dory-style construction. Future classes will involve repair, lapstrake planking, sailing and rowing rigs, and more. Details from George Odell, Lowell's Boat Shop, 459 Main St., Amesbury, MA 01913; 508-388-0162.

Dories, classes.... **Dynamite Payson**, with me, Uncle Pete, as his assistant and spiritual advisor, will be teaching **two courses** this year at WoodenBoat School. Both involve the famed **Gloucester Light Dory** designed by Phil Bolger—plywood construction at its most elegant. The dates are June 16-22, and September 29-October 5. Details from Rich Hilsinger, WoodenBoat School, Brooklin, ME 04616; 207-359-4651.

They're building dories out in Michigan, too. MichaelJ. Kiefer of Great Lakes Boat Building Co. reports on a recent beginning boatbuilder's class affiliated with the Traditional Small Craft Association of West Michigan (6033 Bonanza Dr., Stevensville, MI 49127): "The launching of the latest class boat—a beautiful turquoiseand-green 14' modified semi-dory from John Gardner's plans—was a huge success. It was built by three men and a woman. In the meantime, I have been building a steady stream of dinghies, rowboats, powerboats, and sailboats. Upcoming projects include a 22' sport diving powerboat and two sharpies, one 30' and the other 34'. 1 have moved my shop off the river, downtown, to my barn; better facilities and fewer 'hull-thumpers' to waste my time." Michael J. Kiefer, Great Lakes Boatbuilding Co., Rte. 5, Box 120-3, 103rd Ave., South Haven, MI 49090.

he Adirondack Museum will be sponsoring a **regatta** on Blue Mountain Lake for non-powered wooden boats on Saturday, June 29. Writes curator Hallie Bond: "The events were suggested by turn-of-the-century American Canoe Association meets and by events still enjoyed or enjoyed not long in the past in this region: a war canoe race, a hurryscurry race, one- and two-man guideboat races, jousting, a sailing-canoe race, and a parade of boats. In addition, there will be a builders' and restorers' show, and on Sunday, a workshop at the museum on 'The Care and Feeding of Your Old Boat.' " Details from Hallie Bond, The Adirondack Museum, Blue Mountain Lake, NY 12812; 518-352-7311.



n case you were wondering, there is a Society of Boat and Yacht Designers, they are seeking more members, and they are calling for papers on small craft design and construction for their annual journal, the Sextant. Information on membership and submissions from SBYD, 2401 Vista Lane, Anacortes, WA 98221; 206-293-4647.

Simpson Design down in Australia has published a revised catalog of multihull yacht designs, primarily catamarans. One of the best parts of the presentation is the art by Caroline Magerl, Our Cartoonist Down Under. As Simpson specializes in plans for backyard boatbuilders, the catalog contains many points to ponder, including this honest message from Roger Simpson, the principal designer: "Many years ago I used to believe it was better to build the biggest boat you felt was possible. These days, with rampant inflation and dwindling disposable incomes, I would advise going for the smallest." Simpson Design, P.O. Box 2, Hemmant, Queensland 4174, Australia.

Speaking of the Antipodes, I recently received a copy of Bearings, the quarterly journal of the Auckland (New Zealand) Maritime Museum at Hobson Wharf. One of the best museum magazines I've seen, it is about the traditional boat and ship scene, present and past, in one of the

saltiest countries on Earth (rumor has it that New Zealand has more sailboats than people and more boatbuilders than engine mechanics). News, book reviews, feature articleseverything you would expect in a maritime magazine, published by a museum or not. Bearings, Auckland Maritime Museum, P.O. Box 3141, Auckland, New Zealand; available free to members; individual membership, NZ\$25.

In the Grunt & Sweat Department, a perusal of a recent issue of Wayland Wanderer, the newsletter published by the crowd that sells the Sprite Skiff Kit, produced the address of another shop specializing in books on rowing. Pat Smith, The Rower's Bookshelf, Box 440, Essex, MA 01929; 508-468-4096.

The **Sprite Skiff**, by the way, is a light (40 lbs) 15'4 "plywood rowing skiff fitted with outriggers and a sliding seat. It's a slick-looking craft, built with the epoxy stitch-and-tape method, an ideal way to go

The slick little Sprite Skiff-tack-and-tape plywood construction.

for amateur builders who would rather spend more time on the water and less time in the boatshop. Details from Ron Mueller, Wayland Marine, Ltd., 8686 West 68th Ave., 'Arvada, CO 80004; 303-422-6797.

They call it a "the new direction in rowing," and sure enough, the Land Rower Company's new device allows you to face forward while rowing. They also suggest that it "transcends the aquatic environment," and the device, indeed,



BUILDERS: contact Ellen/Afra; Wood Be Boating: PO Box 479, Branchport, NY 14418 (315)536-225

ON THE WATERFRONT



Bill Bradley

Elena Michelle Canler of Chattanooga, Tennessee, outward bound in the rocking boat built by her grandfather, Bill Bradley of Fort Lauderdale, Florida.

does that, too. The truth of the matter is that the **Landrower** is a rowboat on wheels for avid rowers without access to the waterfront. You'll look a little odd weaving your way through the midtown Manhattan traffic, but you'll feel like an Olympic sculler. Land Rower, 4928 South 5th West, Idaho Falls, ID 83401; 208-524-3712.

We erred in our announcement concerning William Wilkinson's retirement as the director of the Mariners' Museum in Newport News, Virginia. We said he would be gone in December of 1990. The correct date is December 1991. The search is on for his replacement.

The fishing schooner LETTIE G. HOWARD, owned by the South Street Seaport Museum of New York, has been pulled out of the water and placed on a barge, where she will be restored in full view of the East River lunch-hour crowd. A team of shipwrights and apprentices hired by the Seaport will rebuild the little Gloucester schooner to her original

configuration when she was launched in 1893 in Essex, Massachusetts.

Meanwhile, the old historic boats that have never been restored, and never will be, are fast disappearing. The four-masted lumber schooner **HESPER**, one of a pair in view of tourist traffic by the bridge in Wiscasset, Maine, **has imploded**. The port side of the bow collapsed one day in late November 1990.

The Thousand Islands Shipyard Museum in Clayton, New York, has changed its name to the **Antique Boat Museum**. The annual boat show and auction, one of the first and best of its type, will be held August 1-4, 1991. The Antique Boat Museum, 750 Mary St., Clayton, NY 13624.

The shipyard at Mystic Seaport Museum has rebuilt the fishing dragger FLORENCE, originally constructed just down-river from the museum in 1926. Actually, the job isn't quite finished, as the restoration crew is still looking for a proper engine. The FLORENCE'S first engine was a 65-hp, 6-cylinder Lathrop Standard; her second a 65-hp, 4-cylinder Bridgeport. Anyone have a loose one of either lying around, or spare parts, or information about where an engine could be found? Contact Nancy d'Estang, Mystic Seaport Museum, Mystic, CT 06355; 203-572-0711.

According to a report in the *Sea His*tory *Gazette*, a new hotel to open on the **Boston** waterfront is reserving space in a "Shipwatching Station" for **maritime exhibits.** The management company would like to hear from curators of maritime museums, marine art galleries, and the like who want to make use of the space. Contact Tracy Osbourne of Gunwyne & Co., 47 Thorndike St., Cambridge, MA 02141.

According to another report in the *Sea History Gazette*, the former presidential yacht SEQUOIA has been seized as part of a f2.7-million **suit** against



"When VALIANT was brought to Marblehead Tradingfor a new deck, we called Boulter."

P. Gary Gregory, **Owner** Ralph Andersen, Marblehead Trading Co.

"When asked to supply plywood and hardwood lumber for yachts like the wooden 12-meter VALIANT," says Fred Boulter, "we know that only the very best will do. That's why we stock the world's Finest marine plywoods — Douglas-fir, quarter-sawn or sliced teak, and Okoume, made to meet strict British standards. We also maintain a huge inventory of solid teak, ash, Honduras mahogany and white oak. Whether your job is large or small, we've got the lumber you need."

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24 **Broadway, Dept. WB,** Somerville, MA 02145 Tel: 617-666-1340 Fax: 617-628-3531 the Presidential Yacht Trust by Norshipco of Norfolk, Virginia. The gist of the suit is that the Trust contracted with Norshipco to do \$3 million in renovations and actually paid a fraction of that amount.

You've no doubt noticed I quote *Sea History Gazette* a lot. Now published once a month (until February 1991, it was biweekly), this newsletter is must reading for anyone trying to find his or her way through the labyrinth of maritime preservation, muscology, historiography, discography, and everything else. *Sea History Gazette*, National Maritime Historical Society, 132 Maple St., Croton-on-Hudson, NY 10520, \$25/year for members, \$35 for everyone else.

The Lawley Boat Owners Association is putting together a register of boats built by the George Lawley yard of Neponset, Massachusetts. If you own or know of a surviving Lawley yacht, contact Dr. Albert E. Hickey, LBOA, P.O. Box 1303, Portsmouth, NH 03802; 617-862-3390.

The National Maritime Museum in Greenwich, England, is proposing to build a full-sized reproduction of King Charles II's KATHERINE of 1660, the first royal yacht built in Britain. The plan is to construct the yacht on the grounds of the museum, in full view of visitors, and then launch her into the River Thames.



The Gloucester fishing schooner LETTIE G. HOWARD being lowered onto the barge where she will be restored.

Finally, word comes that the venerable USS CONSTITUTION, the oldest ship in the U.S. Navy—in fact, the oldest wooden warship afloat in the world—is slated for overhaul some time after July 1992, when she will be made ready for the bicentennial celebration of her launching (October 21, 1797). Rumor has it that she will be refitted to sailing condition. Rumor also has it that the restoration committee has been considering installing rollerfurling sails to make getting underway easier, but I wouldn't believe it for a second. Even in today's restoration climate, when you can turn a hydroelectric power plant into a mall and call it a "restoration," that seems a tad too crass to get past the preservation police. Or is it?



...AND IN THE YARDS

iggins Yacht Yard in St. Michaels, Maryland, recently completed an 85' gaff-rigged mast for the Corinthian Yacht Club in Philadelphia. Designed by naval architect Melbourne Smith, the mast will be used as the club's flagpole. From June through September of last year, Ron Fortucci laid up and shaped the 47' mainmast, 45' topmast, 20' yardarms, and 18'gaff from fir 1x12s. Finish-sanded and painted by Cassie Hawkins, the flagpole was erected in November. The yard is currently rebuilding a 1950s 30' Chris-Craft which has required extensive refastening; new chines, skeg, and transom; the replacement of several bottom planks; and replacement of some of the decking. A log canoe built in the 1930s is also being rebuilt in the vard: owned by the Chesapeake Bay Maritime Museum, it should be back on the Bay this spring for more racing. Higgins Yacht Yard, P. O. Box 727, Carpenter St., St. Michaels, MD 21663; 301-745-9303.

Southampton Yacht Services in South-ampton, England, has a new 79' schooner under construction for a British client. Designed by Bill Dixon at Bursledon, the oceangoing yacht should be capable of extended cruising anywhere in the world. She is being built to both ABS and DOT Marine Directorate Code of Practice for Sail Training Ships standards. The boat's stem and keel are built of laminated mahogany, and her hull is strip-planked with 1 3/4" Western red cedar, then vacuum-bag laminated inside and out with four layers of E-glass and epoxy resin. Deckbeams are laminated mahogany and white oak, and the decking is teak planking laid over plywood. The ballast keel consists of a galvanized steel box section, with a 20,500-lb cast-lead bulb affixed; the keel also serves as a wastewater tank. The yacht will be rigged as a Bermudian schooner. Southampton Yacht Services, Ltd., Shamrock Quay, William St., Northam, Southampton SO1 1QL, England; tel.0703-339119.

Midas Marine Company, also in Southampton, has a new wooden offshore powerboat under construction. Their 32' FINA UNLEADED, built in wood for Neil Holmes and Jim Cox, has an extraordinary record of wins, including the 4-Litre World Championship in Italy and the Class 2 World Championship in England, becoming a double world championship. She also set a 6-Litre record (114.83 mph) and a Class 2 World Water Speed Record (115.13 mph), and has raced in excess of 4,000 miles without repair. Midas Marine is now building a new 38' catamaran, similar to FINA UNLEADED, for Neil Holmes's defense of his title in Class 2 and for a crack at Class 1. *Midas Marine Co., Eastlands Boat Yard, Coal Park Ln., Swanwirk, Southampton 503 7DL, England; tel.0489-583310.*

elkov Yacht Carpentry Company **D** is a small shop in the old Trumpy Boatworks complex on the Eastport Peninsula in Annapolis, Maryland. Larry Belkov and his crew have been building their second Hooper Island 32' Draketail, working with plans developed by Gary Van Tassel from lines taken off an old Hooper by Thomas Gillmer. Van Tassel has incorporated a stepped chine in the design and predicts that with a 80-90-hp engine, the boat will be capable of a top speed of 20 knots, but with a 140-150-hp engine, it should cruise at 20 knots and top out at 25. The engine going into the new boat is a 181-cu in, 145-hp, 4-cyl Chevrolet block engine from Marine Power. Belkov's Hooper Island Draketails are being built with cold-molded construction using WEST SYSTEM products, and are sheathed with 10-oz fiberglass cloth. Belkov Yacht Carpentry Co., 311 Third St., Annapolis, MD 21403; 301-269-1777.

hitney Perry and Dave Baer of Owl Brook Boatworks at Squam Lake, New Hampshire, had a diverse array of work this past winter. Along with the full restoration of a 1918 26'Johnson Laker built in Laconia, they built a new 16' rowing/sailing skiff and restored a 1924 25'Old Town war canoe. AUTOWIN VII, a 1954 22' Chris-Craft Sportsman, received a new keel, after frames, garboard, chine, and transom planks, along with new deck fittings and 15 coats of varnish. A 1940s 26' gaff-rigged Coast Guard surfboat got a new cold-molded cedar skin in preparation for sailing Down East this summer. TALISMAN, a showroom-condition 16' Penn Yan, received her yearly touch-up and varnishing in preparation for her annual appearance at the Antique and Classic Boat Show on Lake Winnipesaukee this summer. The oldest boat in the shop is a beautiful 1890s 20' St. Lawrence River skiff, built by J.R. Robertson Company of Auburndale, Massachusetts. The boat sat in a boathouse for 30 years and is now undergoing restoration. Owl Brook Boat

Works, P. O. Box346, Holderness, NH 03245; 603-536-1370.

Don Metz, owner of Black Duck Boat Shop, a one-man shop in Danbury, Connecticut, is set up to build Dennis Davis's tortured-plywood kayaks and Steve Redmond's Bluegill skiffs, but will build a variety of small craft to order. Don is finishing up a DK-14 kayak that he'll be taking to the CLEARWATER's Small-Boat Builder's Get-Together at the Great Hudson River Revival Festival in June. Black Duck Boats, 53 Blackberry Rd., Dan-Imry, CT 06811; 203-797-8047.

ugh Saint, known for his stunning H Sheerliner runabouts built to a Douglas Van Patten design, is launching the first of a new series of boats called Fairliners. Available in sizes from 25' to 30', the design features a convexsectioned underbody and a look that reveals its Van Patten/Hacker heritage. The first Sheerliner, a 26-footer being built for John Chisholm (former owner of Donzi Marine Corporation), will be powered by twin 350-cu in Crusaders. She's cold molded with Honduras mahogany over sapele African mahogany subplanking. Hugh Saint, Inc., 1014 S. E. 9th St., Cape Coral, FL 33990; 813-574-1299.

Pilots Point Marine hasjust launched a new Bermuda fitted dinghy, built for a racing syndicate to a Brit Chance design. Hans Zimmer, Brian Lenahan, and Evan Whitcomb cold molded the lightweight hull with three layers of cedar and an outer layer of veneer. The dinghy weighs just 200 lbs, has three masts and three booms for varying conditions, and with a rating limited to 1,000, comes in at 999. All of the dinghy's fittings are titanium, her exterior is AwlGripped, and her interior is varnished. With her huge rig and a crew of up to seven, there's some exciting racing ahead for this 14-footer. Pilots Point Marine, 63 Pilots Point Dr., Westbrook, CT 06498; 203-399-7906.

Sea Skiffs, a three-man shop in Wilmington, North Carolina, headed by Nelson L. Silva, has recently launched two 18'Sea Skiffs (their 24th and 25th) based on the design of T.N. Simmons. Starting in the 1950s, Simmons built hundreds of the boats for the next 20 years; many are still around and offer some useful lessons to Silva and his crew as they look for ways of making improvements. The shop recently completed a 20"'high-side" skiff for Long Island resident Ed Small, an avid fisherman who could "hardly wait until spring." Under construction now are 18' and 20' low-sided models, along with a 30' marine ply/epoxy canal boat, which will be equipped with photo-voltaic collectors, a battery bank, and electric motors. Sea Skiffs also does repairwork, mostly on older sea skiffs, but this past winter the crew completed major repairs on a 1961 Grady White lapstrake skiff, refastening the hull; replacing the transom, splash well, and washboards; raising the sheer forward to create a more modern profile; and installing custom cabinets, canvaswork, and electronics. *Sea Skiffs, Inc., 7980 Market St., Wilmington, NC 28405; 919-686-4356..*

n Winchendon, Massachusetts, not far from the New Hampshire border, Jack Bowler's Toy Town Boats is building about 250 small wooden boats a year, ranging from 20' garveys to 16' lapstrake skiffs to 8' prams. Most of the boats are marine ply with oak framing, but Jack's 12' and 14' rowboat models are built with two strakes of W pine and a plywood bottom. Sold unfinished, the boats range in price from about \$1,690 for a 20' garvey to \$860 for a Sag Harbor rowboat to \$490 for a Fisherman's Skiff to \$185 for an 8' Pram. Jack will fiberglass seams upon request. Most of his customers are commercial fishermen in the New England area, but his boats are in use as far south as Cape May, New Jersey. Toy Town Boats was started in 1945 by Jack's father, Gordon A. Bowler, Sr., a cabinetmaker. The two-man shop now builds boats from mid-March to mid-August, and then switches to custom cabinetmaking for the fall and winter months. Tov Town Boats. Inc., 45 Elmwood Rd., Winchendon, MA 01475; 508-297-0486.

an O' War Cay in the Abacos has a long tradition of boatbuilding, and generations of Alburys have built boats on this Bahamian island. Samuel D. Albury helped his father build boats off and on for years, but about eight years ago started building boats on his own, although he still lobsters part of the year. Albury builds about two boats a year on spec, with a buyer usually coming along in time to decide on the finishing details. He will build to order, however, if given a year's notice. The 18' catboat he's just launched shows her Bahamian dinghy heritage, but most of his boats have been runabouts in 16', 18', and 20' lengths. All of the boats have been epoxy/strip planked with Honduras mahogany or white cedar, with dogwood and madeira natural-crook frames and floors. Fastenings are bronze screws and Anchorfast nails. Samuel D. Albury, Man O' War Cay, Abaco, Bahamas. -Jennifer Elliott

We welcome contributions to this column!

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FUNDAMENTALS OF BOAT-BUILDING Greg Rossel - June 16-29, July 14-27, August 18-31 *Eric Dow* — September 29-Oct. 12 One-week sessions: Warren Barker - July 28-August 3, August 4-10 LOFTING Greg Rossel — June 9-15, September 22-28 COMPOSITE BOATBUILDING Bruce Pfund -June 30-July 6 LAPSTRAKE CONSTRUCTION Eric Dow - August 11-17 BUILDING THE HAVEN 121/2 Eric Dow - September 1-14 STRIP PLANKING THE WEE LASSIE Henry "Mac" McCarthy - July 28-August 10 **BUILDING A UTILITY SKIFF** Skip Green - September 29-Oct. 5 OAR AND PADDLE MAKING Frank Shinko - August 4-10 WOOD/EPOXY BOAT-BUILDING Jim Brown and John Marples - July 7-13 FINISHING THE CYCLONE Jim Brown and John Marples - July 21-27 THE PLANKING PROCESS Eric Dow - July 7-13

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JOINERWORK Tim Alien-July 14-20 ADVANCED JOINERWORK Tim Allen — August 25-31 MARINE CARVING Andy Willner - June 30-July 6 **BUILDING HALF MODELS** Eric Dow – July 21-27 BOATBUILDING TOOLS AND TECHNIQUES Harry Bryan-July 7-13 MARINE SURVEYING Giffy Full — June 9-15 Paul Haley — June 16-22 Sam Slaymaker — October 6-12 SURVEYING OF FIBERGLASS BOATS Paul Coble - September 29-October 5 MARINE PAINTING AND VARNISHING George Fatula — August 11-17 ARTS OF SAILMAKING Robin Lincoln and Meredith Elev-September 1-14 **BOAT DESIGN** Mike O'Brien - June 23-29 MARINE PHOTOGRAPHY Kip Brundage - August 25-31 **DRAWING AND PAINTING** *Carol Sebold* — September 8-14 RIGGING Barbara Merry - June 9-15 THE RIGGER'S ART Brion Toss - June 16-22 ELEMENTS OF SEAMANSHIP

John Blatchford and Jane Ahlfeld — June 16-22, July 28-August 3, August 11-17, August 18-24 Ben Ellison and Jane Ahlfeld — July 7-13

ELEMENTS OF SEAMANSHIP FOR WOMEN Eliza Cocroft Bailey and Jane Ahlfeld

- August 4-10

John Blatchford and Ben Ellison -September 1-7, September 22-28 COASTWISE NAVIGATION John Blatchford - July 21-27, September 8-14 ELECTRONIC NAVIGATION/ **COASTAL PILOTING** Gene Spinazola — July 14-20 CELESTIAL NAVIGATION Ben Ellison - September 15-21 CRAFT OF SAIL On board EASTWARD. Roger and Mary Duncan — June 23-29 On board RITA Roger Taylor -July 7-13, July 28-August 3, August 4-10 CRUISING BOAT SEAMANSHIP On board MARY HARRIGAN. Len Hornick — June 30-July 6, July 14-20, July 21-27, August 11-17, August 18-24, August 25-31, September 8-14 COASTAL CRUISING On board BRILLIANT. George Moffett –July 28-August 3, August 4-9 SEAMANSHIP & SAIL TRAINING On board SPIRIT OF MASSACHUSETTS. Bert Rogers August 24-30

ELEMENTS OF SEAMANSHIP II



The photograph for the front cover of our 1991 School catalog should be credited to Kip Brundage. Our apologies for the error.

Special thanks to The Rockport Apprenticeshop of Rockport, Maine, the Mystic Seaport Museum in Mystic, Connecticut, and the New England Historic Seaport in Boston for their assistance in helping develop this year's seamanship program.

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What you should know about

f you've ever scratched your head when a plank failed to fit tightly against an accurately cut bevel or into a carefully cut stem rabbet, you were probably questioning the accuracy of your own work unnecessarily. Most likely, the problem was created during the design and lofting of the boat.

Boat shapes evolved from the hollow log to modern designs under several pressures. The most important of these was the need for stability and seaworthiness, and that the hulls be easilypropelledbyrelativelyinefficient sailing rigs, by oars, or by the early lowpowered engines. Also, hull shape was constrained by the properties of the materials used in construction-in particular, wood.

For example, what we call a "sweet" sheerline is one that is high in the ends to keep waves from coming aboard, while low in the middle to facilitate loading and fishing operations. Boatbuilders know, also, that the sheerstrake on a boat with a particularly nice-looking sheerline is often a nearly straight piece of wood, the strength inherent in a straight piece being particularly desirable for this

structurally important plank. Thus, both function and material characteristics have dictated the shape that we have come to consider pleasing.

Drawings by Kathy Bray

Ed McClave

It's not surprising, then, that the use of materials other than wood for the primary components of hull construction would allow hull shapes to evolve in new directions; nor is it surprising that those shapes often seem less pleasing to a traditionally attuned eye.

ood, in engineering terms, is a naturally occurring cellular, unidirectionally reinforced composite laminate. The three most important components of wood are: cellulose fibers, most of which are aligned with the grain direction; a phenolic resin called lignin, which binds the fibers together; and empty spaces in the form of tubelike cavities (cells), also aligned in the grain direction, that are surrounded by the resin and reinforcing fibers. (Some of the latest modern honeycomb-cored aluminum and carbon-epoxy composite materials are, in terms of engineering, synthetic versions of wood.)

Being cellular, wood has its load-

carrying material (the cellulose fibers) distributed over a large cross-sectional area and separated by open cores (the cell cavities); thus, it has a high degree of bending stiffness for its weight. Its tensile strength is moderately good along the direction of the reinforcing fibers, but is quite poor across the fiber orientation. The compressive strength is fairly good along the cell axis (which is also the direction of the reinforcing fibers), and is relatively poor across that axis. Due to the nature of the fibers (cellulose) and the resin binder (lignin), wood is hygroscopic (it absorbs moisture to remain in equilibrium with the relative humidity of the surroundings), and in doing so it changes its dimension across the fiber direction. To make matters more complicated, this change in dimension is roughly twice as great along the laminations (the annular rings) than it is across the laminations, and there is virtually no dimensional change due to moisture variation in the direction of the reinforcing fibers. Although each of these characteristics has had a profound effect on the evolution of construction, design, and hull shape, it is wood's stiffness that is important



	ATLANTIC CEDAR	GLASS-EPOXY	STEEL
Depth of beam	6.5 "	1.3"	0.3 "
Deflection at 100 lbs load	0.001 "	0.03 "	0.48 "
Breaking load (yield for steel)	3,966 lbs	1,450 lbs	58.3 lbs
Deflection at breaking or yield load	0.054 "	0.439"	0.279 "

to the following discussion.

For its weight, wood is stiff compared to other boatbuilding materials (Figure 1). By "stiff" I mean that a board resists bending along the grain direction. If we take equally wide beams of wood, metal, and solid fiberglass laminate, all having the same weight per foot, we find that the wooden beams can be made much deeper than beams of the other materials, due to wood's lower density. Because of this depth, we find that if we bend the beams with the same force, the wooden beam bends less than beams made of the other materialsdespite wood's having the lowest tensile strength. This excellent ratio of bending stiffness to weight makes wood a good material for building stiff, lightweight structures—boats, for example.

Due in part to its bending stiffness, and in part to its relatively low strength, wood can survive less bending deformation than other materials. We can extend the limits for certain species by steam bending (and nowadays by laminating), but limited bending ability is still a fact of life for wood. These characteristics of high bending stiffness and limited formability have been and still are major influences on the design of wooden hulls.

he curvature that any piece of wood will take is proportional to the moment, or torque on the wood due to the force which bends it-this torque is called the bending moment (Figure 2). The bending moment is equal to the force doing the bending multiplied by the distance from the point of application of the force to the point of bending. The higher the bending moment, the tighter the curvature. As you can see, the bending moment is always zero at the end of a board being bent, even if the bending force is applied right at the end, because the distance over which the force acts is zero. This means that it would take an infinitely large force to bend a piece of wood all the way to its end. If you try to get a plank to curve all the way to its end by pulling it in with fastenings, those fastenings will very likely break, pull through (due to the wood's low crossgrain compressive strength), or split the plank (due to the low crossgrain tensile strength) before the plank will curve. Note that the example in Figure 2 does not have uniform curvature, but that the curvature is a maximum where the bending moment is highest, and the curvature





M = Bending moment

R = Radius of curvature at inboard end



diminishes to zero at the end of the board despite the force being applied there. This concept is important in what comes next.

When a boat is designed or lofted, the lines are laid out with splines, ship's curves, or battens. Some of those lines closely approximate lines along which actual pieces of wood will eventually be bent; some don't. In particular, the diagonals, the waterlines up high at the bow and stern and low near the sternpost area, and the buttock lines near the lower part of the transom, represent lines along which planks must lie.

Figure 3 shows a typical diagonal laid out with a batten (spline) and ducks (spline weights). It's common drafting practice to place ducks beyond the end of the curve. To ensure "fairness" of the curve at the ends, many draftsmen will lift the duck that is at the endpoint and move the duck that is beyond the end of the curve until the spline goes through the endpoint in a fair manner. Mathematically, this ensures that the bending moment, and thus the radius of curvature, varies smoothly upstream from the endpoint, through the endpoint of the curve, to the last duck, where the bending moment and thus the curvature are necessarily zero. In lofting full size, the principles are the

same; nails replace ducks, and the battens are, of course, bigger.

Sounds good, right? Wrong. This technique is absolutely incorrect for drawing or lofting any curve of a wooden hull which approximates a plank line. The line curves nice and fair right through the stem rabbet and across the edge of the transom, it looks great, but the plank can never be made to follow it. Any line that a plank must follow must straighten out at its end, just as the plank will, or there will be a bad fit somewhere. Figure 4 shows a section through a stem rabbet cut to a line drawn as described above; since the plank can't be curved to its end, it bears against the bearding line and simply doesn't fit as expected. The

same thing happens at the transom (Figure 5). Perhaps I should add here that boats whose planks don't fit well into stem rabbets or against transom bevels are likely to be refastened and/or recaulked early. These procedures only make matters worse and cause premature aging. (The refastening causes split plank ends and the recaulking pries the plank ends still further away from where they belong.)

The solution is simple. When lines that approximate plank lines are drawn or lofted, the last duck (or nail) should be at the inner rabbet line (or at the outside face of the transom), not beyond. This will force the curvature to decrease linearly over the last





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interval to zero at the rabbet. Things can be made even easier if a short, straight section or even a bit of a hollow can be incorporated into such lines at the ends of the boat.

Nat Herreshoff may have made his bows hollow for hydrodynamic or aesthetic reasons, but they sure make planking easy. I've put a lot of planks on Herreshoff boats, and in almost every case, when the plank is clamped in to the frame aft of the stem rabbet (or forward of the transom), the end lays right in, requiring little or no force to pull it in tight (Figure 6). This makes it unnecessary to develop high forces with the screws in the plank ends, which, because of their proximity to the end of the plank, are most likely to cause a split. Designers drawing lines with Copenhagen ship curves must be especially careful, since most of the curves that work well for waterlines, diagonals, and buttocks, where they run into the stem and transom, are curved over their entire length. It's easy to continue a nice, fair curve right through a stem rabbet or transombut, pity the poor boatbuilder if you do!

esigners don't necessarily know what the plank lines will look like on the surface of a hull they are designing, so anyone building a boat should be ready to make small changes during lofting (or adjustments to the molds later) to eliminate curvature at the ends of plank lines. It may be worthwhile to run an extra diagonal or two to check the true curvature along a plank line if no convenient line already exists. Along a stem, the waterlines may diverge from the plank lines by a significant angle, so a curve at the end of a waterline doesn't always mean a curve at the end of a plank line crossing the rabbet at the same spot, or vice versa. The fatter the boat, the more difficult it is to straighten out the lines

at the ends, but it must be done. In most cases, a straight run or a slight hollow of about eight times or so the plank thickness in length will allow planks to lay in comfortably at the ends without requiring the use of dangerously high fastening forces.

Many boats have problems with hood-ends lifting, and this can often be traced to improper designing or lofting practice. Not only the person doing the lofting, but those who cut the rabbets, bevel the transom, and plank the boat should be aware of the potential problem at the ends. It can't be solved by the use of force, because no amount of force can make a plank bend all the way to its end.

he difficulty with making and keeping plank butts fair has its root in the same theory-only, in this case, there's not much that can be done by the designer to prevent curvature at butts. A builder must be aware of the problem and should realize that no amount of force will bring the butt perfectly fair; some fairing off of the outside surface of the planking is always necessary at a butt in an area of longitudinal hull curvature. laying out the butts so that as few as possible fall in areas of high curvature (usually through the midsection), and the use of long, glued-up planks to avoid butts in the midsection, will minimize butt problems.

The same principle applies to edgewise curvature of butts in edge-set planking. If the edge-set is "down at the ends," as it tends to be below the turn of the bilge on most hulls (assuming the boat is upright and being planked from garboard to sheer), the butts can never be made perfectly fair in the edgewise sense. Keeping the plank narrow will help (a plank twice as wide is eight times as stiff in bending). Again, avoiding butts in the middle of the boat, where edge-set

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curvature is highest and the planks are widest, is the best solution.

As we become more accustomed to the shapes of fiberglass and metal boats, the possibility increases that designers and builders will start to expect wood to do things that it can't. Great care must be taken not only in adapting designs originally intended for other materials to wooden construction, but in scaling down the lines of larger wooden hulls. Because scantlings don't scale by the same factor as do shapes, the danger exists that some of the curves of a scaled-down hull might be too severe for the materials involved.

ow about the repair situation? If you have to put planks into a boat that has an obvious curvature problem at the ends, your options are limited; you probably can't change anything about the shape of the boat or the stem rabbet or transom bevel. With a plank off

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Box 1246 • Newport Beach CA 92663 • (714) 631-8480 the boat, a batten laid along the plank line into the rabbet will tell the story. If things are right, when the batten is pushed against the bearding line (the back rabbet line), the end should bottom out at the apex line (the inner rabbet line). At the stern, a batten pushed in a few inches forward of the transom should touch the outside edge of the transom.

There is one way to get a plank to curve all the way to the end without using so much fastening force that it splits. The end of the plank is left long and steam-bent over a form to the required curve, right past the intended end, and once it has cooled, the excess is cut off and the plank is fitted into place. This method is time-consuming; you wouldn't want to have to plank a whole boat this way, but it can help when doing repairs. When you can't adjust the curves leading into the ends, pre-bending the planks will prevent hood-ends (or butts) from pulling away if the hull is designed and built with curvature at the plank ends. If the problem is relatively minor, a little shaving away near the bearding line on the stem or transom frame, at the forward side of the transom, or even off the backside of the plank, may ease things. Since frames are almost always bent long and then cut off at the top to the desired sheer, limits on transverse curvature near the sheer aren't as important as they are in the longitudinal case.

efore too long, computer-aided design of wooden hulls will be commonplace. Most computer design and fairing programs use a mathematical representation of a draftsman's spline called a "spline equation." A class of equations known as "cubic splines" are the most popular. These equations model the behavior of a wood or plastic spline and attempt to minimize the accumulated bending moment over the length of the curve (which is proportional to the energy stored in the batten by bending it) while passing through every given point and accurately interpolating all the points in between. In order to solve these equations, some of the conditions at the endpoints of the curves must either be known or assumed. The common technique is to use a "universal" or "user-transparent" method of establishing the end conditions that requires no human input.

The problem here is that the "universal" spline end conditions may, and usually do, allow curvature through the endpoints of the curve (or through the edges of a surface, in the case of three-dimensional splines). As we've seen, curvature at the ends isn't desirable in many areas of a wooden hull (particularly for longitudinal curves), although it is allowable and even necessary in others.

If computerized design and fairing methods are to be truly useful for wooden hulls, the problem of end curvature must be solved right down at the programming level. These programs must identify situations in which end curvature of planks is a problem, and they should apply appropriate end conditions that eliminate, or severely limit, the curvature. At the same time, they should not impose these limitations on other curves, such as transverse sections, that are established by cut or steam-bent members-and thus need no constraints applied to their end curvature. If total user-transparency is not required, a skilled operator could quickly identify the problem areas during execution—if the program were written to allow this.

The "universal" or "user-transparent" spline end conditions are:

1) "Parabolic runout"—This requires the "second derivative" (which is related to the curvature) to be constant over the last interval (parabolic runout), which forces the curve to reduce to a parabola over the end interval. This guarantees that there will be curvature at the end if there is any curvature at the next point upstream.

2) "Quadratic slope" prediction— This technique predicts the value of slope (the "first derivative") at the endpoint, but puts no constraints on the curvature there. A fiberglass or metal hull could be designed and faired by using one of the above end conditions in all cases.

But, when the curvature must be eliminated, or at least severely limited, at the ends of a curve, as it must for wood-planked hulls, different end conditions must be used selectively on those curves that approximate plank lines. Those end conditions are:

1) The "natural spline" or "free" end condition. This is analogous to having the last duck or nail holding a spline at the endpoint, with none beyond. The bending moment and thus the curvature are forced to reduce to zero at the endpoint.

2) Specifying the second derivative at the endpoint. If the value specified is zero, the method is essentially the same as above, but it allows a small value of curvature to be specified at the end.

A lthough they can be worrisome, problems with plank curvature are easily prevented so long as the characteristics of wood are understood by the designer, the lofter, and the builder. The nature of wood must be taken into account from the very beginning in the creation and construction of a wooden hull.

Ed McClave has spent 17 years building and repairing wooden boats, doing associated engineering and design work, and teaching others about these subjects. He is an associate member of SNAME and is currently completing graduate work in ocean engineering.

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Maintenance

myths and realities





hat does it really cost to maintain a cruising-size boat? Are wooden boats much more expensive to take care of? What are the significant variables?

In January of this year, we put these questions to yard managers around the country. We know that many boat owners do their own maintenance and repair work, but to limit the variables in this 'glass vs. wood comparison, we decided to look just at professionally maintained boats. We soon learned to prepare ourselves for very lengthy conversations. It was like asking doctors about the average human being: They are used to treating symptoms, they have seen everything that can go wrong, and they know there are no easy answers. However, a definite pattern of boat health emerged.

The editors of *WoodenBoat* hoped that the results of this inquiry would contradict the notion that wooden boats are much more expensive to maintain than fiberglass ones; they were essentially right. When you get down to brass tacks—and bottom paint and sail patches and oil changes and bedding compound and elbow grease, etc.—the hull material is one



of the less significant variables in the maintenance equation. Yes, given two "average" boats of similar age, similar quality of construction, and similar levels of care and use, the wooden one will cost a little more each year to paint. But the difference is generally less than 20% of the annual boatyard bill, and even a smaller slice of the annual cost of owning the boat, into which we must add insurance, mortgage, and mooring. The very idea of an "average" boat is tenuous: In the real boatyards, there are plenty of middle-aged 35' cruising boats, both wood and 'glass, receiving \$25,000 worth of care and repair every year-and there are plenty of 35footers getting by OK with \$3,500 worth of care.

The belief that wooden boats are more costly is a stubborn one. Even yard managers, who tend to be bright people with deep knowledge of boats and all the complex trades associated with their maintenance and repair, tended to answer off the hip that wooden boats cost a lot more to maintain. Then, as the conversation went further and they enumerated the average bills and reviewed the boats in their care, they'd often realize that hull material was not the determining factor.

Why people think wooden boats are more costly is pretty obvious: Almost all of the really old boats around are made of wood. Nearly every boatyard has a back corner full of terminally ill wooden boats. Truly sad stories abound of people buying a \$5,000 wooden cruising boat and ending up five years later with \$40,000 invested in a boat now worth \$20,000-and the couple is broke and possibly divorced. Add to this our cultural tilt in favor of new technology and the fact that the field of boatbuilding is very fragmented, unregulated, and hard to quantify. Altogether, very fertile ground for myths. Little wonder, then, that anyone who has cruised a wooden boat is enured to the typical dock watcher shaking his or her head and saying, "Gee, that's a pretty boat, but it sure is a lot of work, huh?"

The reality is that all boats are a lot of work and/or expensive to maintain. A century ago, J.P. Morgan, owner of the 304' steam yacht CORSAIR III, made the now-famous remark about the cost of owning a yacht: "If you have to ask, you can't afford it." In the somewhat kinder and gentler 1990s, perhaps we could modify that to: "You ought to ask, but maybe you'd like to sit down first."

e asked boatyards around the country for typical annual maintenance costs for two hypothetical 36' cruising sailboats—each a 15-year-old sloop of high-quality construction, in good condition, with modest quantities of brightwork, electronics, etc.—one built of wood, one of fiberglass. The answers are presented in the chart. The yearly boatyard bill is \$6,200 for a fiberglass boat, \$7,400 for a wooden one; this includes minor repairs of all kinds, but does not include upgrading or major rebuilding work.

Please use our chart on the following page as a guideline, an organizational tool, not as a set of hard facts. Bear in mind that the numbers are only the average of a wide-ranging set of vague averages. Yard managers gave figures starting at \$4,500 and going up to \$14,000. Some said the wooden boat would cost the same as the 'glass one, and some said 50% more! Every

	Fiberglass	Wood
Hauling and storage	1,500	1,500
Systems maintenance	1,200	1,200
Miscellaneous repairs Surface maintenance	2,500 1,000	2,500 2,200
Capital costs and insurance	7,000	5,200
Dockage/mooring	1,200	1,200
Grand annual total	\$14,400	\$13,800

expert qualified his answers heavily, and several simply could not generalize an answer at all. All emphasized the complex variables involved in boats and their owners. But from their explanations of the variables, a prospective boat owner might learn a lot about what he is getting into.

ruising-size boats tend to be quite complex and quite individual. Think of all the peskiest aspects of your home and automobile—power plants, electrical systems, cooking and refrigeration devices, water and septic schemes. Add delicate navigation and communications electronics and a whole web of spars, rigging, and assorted hardware. Pack it all into a compact form that must be waterproof in every direction and strong enough to fall off liquid cliffs. Consider that many boats were custom built to start with, and even a stock boat becomes semi-custom through years of additions, modifications, and repairs. Consider that of all the thousands of pieces of a typical cruising boat, nearly every one is essential to the full functioning of the vessel—or, at least, is in the way of gaining access to essential parts. Consider that some owners will rarely take their boat away from the dock, while others will sail around the world. Some owners want every aspect of their boat to look perfect, while others will tolerate all manner of blemishes and crudities.

This is the perspective of the boatyard professional. This is why he or she can talk all day about the details of maintaining boats but has a difficult time making general statements about maintenance costs or even cost differences between different hull materials. This is the perspective that the owner or prospective owner of a cruising boat ought to learn. Cast your preconceptions, your myths, your generalizations aside. Each and every boat out there has its own unique set of problems and pleasures for you alone. That said, let us tread lightly through a general outline of what it costs and why.

he most cut and dried aspect of boat maintenance in the Northeast is winter storage. Most boatyards can give you a



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fairly accurate price over the phone, though their formulas vary. Some charge by the linear foot, some by the square footage. Some include winter covers, rig pulling and storage, and/or battery and dinghy storage, but most charge separately for these services. At any rate, the base or minimum cost to have your 36-footer hauled, stored, and put back in the water each season will be close to \$1,500, no matter what the hull material is. Of course, there are parts of the country where there is no need for winter storage-places where there is no real winter. Don't, however, count on a \$1,500 savings by keeping your boat in Florida or southern California. She will still have to be hauled regularly for bottom paint and other maintenance, and heat and sun have ramifications to surface maintenance that we'll discuss further along. Besides, the annual decommissioning / rest ashore/commissioning cycle is generally a good thing for boats. Marshall Steele of Blue Moon Marine in Newport Beach, California, says that the biggest problems he sees in used boats come from neglect-engines frozen up after years at the dock, fiberglass hulls

with so much growth on the bottom that the gelcoat falls off, etc. You don't hear these complaints about boats that are stored every winter.

ystem maintenance is a less straight-forward area of boat maintenance. Here we are talking about the tuning, lubricating, and inspecting that keeps all those moving parts moving smoothly and catches small problems before they become big ones-oil and filter changes, winch greasing, instrument calibration, sail cleaning and inspection, and so on. We came up with a figure of \$1,200, but it is quite variable, mostly dependent on the volume of systems aboard. The more engines, electronics, rigging, compasses, heads-all those items that the riggers and mechanics have to check out-the longer it takes. Secondary factors are how accessible these systems are and just how maintenance-free they were designed and built to be in the first place.

> ow we get to the great black hole known as miscellaneous repairs. Here are all the ma

jor and minor repairs and replacements that arise from normal wear and tear, and for "other reasons." How much they will cost each year is very uncertain; that there will be a list of repairs every year is certain. Joe McCarty, who is currently general manager of Robinhood Marine Center on Georgetown Island, Maine, used to captain a 55' well-built, fully equipped sportfisherman aboard which he learned to expect a major system failure for each day of operation. (You should hear his stories about the high-tech vacuum-actuated septic system.) For our hypothetical cruising boats, Joe guesstimated the figure of \$2,500 in annual repairs. All the other yard managers we spoke with concurred that repairs account for a significant piece of the maintenance pie.

The experts were in agreement that the cost of repairs reflects the real variables—design, construction, condition, and use—that make a particular boat and each system aboard it more or less expensive to keep up. For instance, a diesel engine—costing approximately \$8,000 to replace—might



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Below the waterline, surface maintenance is pretty much the same on both fiberglass and wooden boats. Each has its bottom painted yearly, and each should be stripped every six years or so.



last 30 years or may be scrap metal after 5. We can pretty safely assume a lot of things about the engine that lasts: the manufacturer designed and built it well, to start with; the boat designer sized it properly to the vessel and gave it a dry and accessible place to live; the builder executed the design in careful detail; and, finally, past and present owners maintained and used it properly throughout its history. Or, take wonderfully handy but nervewracking roller-furling gear: one manufacturer's equipment might last through 20 years of normal use and maintenance without problems; another's requires new bearings almost every season unless frequently rinsed and lubricated; and, finally, there are certain sailors who can break any roller-furler made. Another example that came up often in our conversations with yard managers was the problem of deck leaks. Do you think that fiberglass boats don't develop deck leaks, or that wooden boats always do? Sorry, but to understand this frequent problem in both wood and 'glass boats-and how to fix it-requires complex analysis of particular designs, materials, construction techniques, and their evolution in various environments.

aintaining a boat's surface is where there is a real difference between wooden arid fiberglass boats. Our hypothetical, traditionally built 36' wooden boat gets an annual topside painting requiring 18 to 30 hours of work, plus materials. About every 8 years the hull must be wooded, seams tended to, and the paint started again-an 80- to 120-hour job. To keep its gelcoat shiny and its colors bright, our 'glass boat requires about four hours of cleaning, waxing, and buffing twice a year; and it will need an extra four hours of compounding every four or five years. At approximately ten years of age, she gets prepped and painted with a twopart paint system—at about \$115 per lineal foot. The paintjob will have to be maintained like the original fiberglass and repainted every six years or so, at about \$55 a foot. Both boats will have their bottoms painted yearly, and stripped every six years or so; likewise, their modest amounts of varnished trim. While the wooden boat has her decks, houses, and spars painted every year or two, the 'glass boat only needs some annual cleaning and waxing and occasional gelcoat touchups on deck. Both boats need regular cleaning of interior surfaces and polishing

of hardware and hatches, and the wooden one will need to be painted out below about once a decade. The net results of this analysis are an average annual cost of \$2,200 for the wooden boat and \$1,000 for the 'glass one.

Many of the variables that applied to repairs also apply to surface maintenance. Regardless of the hull material, some owners are much harder on their boats' surfaces than others. And designers and builders have a lot to do with the paint and polish requirements of a particular boat. Poor choices of wood and/or poorly designed interior ventilation can produce a wooden hull that's a devil to keep paint on. Similarly, because of faulty materials or construction, there are plenty of gelcoats that start to fail and look awful very early in life.

Traditional yachty features like bright Sitka spars, oodles of brightwork on deck, and gold-leafed trailboards were all quite stylish in their time (when maintenance was relatively cheap) but have done much to bolster the notion that wooden boats, per se, are very expensive to keep up. Ironically, many of these features are now incorporated into high-end fiberglass yacht designs, inflating their yard bills considerably.

here are two more significant variables that yard managers brought up in regard to surface maintenance. Stuart Ingersoll at Essex Boatworks in Essex, Connecticut, maintains that while the average figures we are using pretty well represent real yard bills, it is only because the average owner of a 'glass boat tolerates a poorer level of finish than the wooden boat owner. He points out that scratches in gelcoats and urethanepainted surfaces, as well as stress cracks in deck structures, are common on 'glass boats and are all very difficult to repair perfectly, while a wooden boat is receiving a fresh coat of finish—and a like-new appearance-annually or biannually. Ingersoll notes that one of his own customers (with an extraordinarily high standard of finish) has his 'glass boat urethaned every year, making his the most expensively maintained topsides in the yard. At Dion's Yacht Yard in Salem, Massachusetts, where top-quality yachts make up a good part of fleet, Fred

Atkins sees no appreciable financial difference between keeping a 'glass or wood boat looking "Bristol."

Note that both Stuart and Fred are operating in New England. Hal Bowden at Spencer's in West Palm Beach is emphatic about the extra cost of maintaining a wooden boat in the brutally sunny, humid conditions of south Florida. Paint and varnish deteriorate rapidly, and the important part they play in protecting wood against rot and worm damage is even more critical in the South. A wooden boat, especially one built of Northern woods, needs very conscientious care in a Southern environment, and it's expensive-Hal guesses 50% more than maintaining a similarsized, average 'glass boat. So, here we have yet another variable in the maintenance equation, and it suggests a postulate to the level of finish variable discussed above. Indeed, while in some instances it may cost just as much to keep a 'glass boat looking as snappy as a well-maintained wooden boat, a good finish is a *necessity* in maintaining the structural integrity of a wooden boat. (Maynard Bray warns that most of the problems seen in wooden boats—in any part of the country—are caused by an inadequate surface finish, weathering of the finish, and/or drying out.)But on a 'glass boat, it's mostly a matter of cosmetics; the 'glass boat owner can get away with more neglect. In other words, if you don't mind sailing around in a chalky, scratched 'glass hull, you might be able to keep your yard bills low.

he last variable of the maintenance equation is the boatyard itself. Your actual yard bill will be a function of your particular boat's complexity, your standards, and the yard's efficiency how much good work the yard gets done at its hourly rates. Boatyard labor rates vary from the high teens up to \$50 an hour, but levels of expertise, motivation, management assistance, tooling, and inventory vary just as widely—



Regardless of the hull material, some owners are much harder on their boats' surfaces than others. often, but not always, in proportion to the dollar rates. So you, the boat owner, are looking for a yard whose rates fairly reflect how well and how quickly they get the job done. Show a little respect. Boatyard overhead is horrendous, and neither the management nor the tool handlers are getting rich working there. Moreover, boat systems and technology are getting more and more complex, demanding higher and higher levels of experience, skill, and problem-solving smarts. The right yard-an efficient yard with the special skills and knowledge your particular boat needs-can make a big difference.

ut aren't wooden hulls more susceptible to major hull problems requiring expensive rebuilding? Yes, a fair number of wooden boats seem to require major rebuilding, but so do boats of every material. David Jackson of Freya Boat Works in Anacortes, Washington, says,

"Nothing lasts forever; heck, even totem poles go after 80 years." Wood rots, steel rusts, aluminum disappears, and fiberglass...decomposes. Fiberglass blistering and laminate hydrolization repairs comprise the biggest growth area in boatyards. As si/able numbers of 'glass boats reach middle age, and as some of the poorly built boats of the booming 1980s start to reveal their weaknesses, yard professionals are developing new techniques to deal with supposedly inert fiberglass that has lost its integrity. Craig Baumgarden, service manager at Zahniser's Marine in Solomons, Marvland, estimates that 40% of existing 'glass boats will need delamination repair before they are 20 years old-a difficult repair that can easily cost \$10,000 for a 36-footer. These problems are more the result of poor construction than of poor maintenance, though preventative measures are now being developed.

Of course, some major rebuilds

are the result of "operator error," and a couple of vard managers had something to say about these. Greg Tuxworth at Concordia Yacht Company in South Dartmouth, Massachusetts, says that accidental groundings often cause more expensive damage in a 'glass boat than a wood one. An external lead keel will absorb the blow, whereas an internal steel one may dislodge and/or cause major fracturing throughout the backbone. Stu Ingersoll points out that a boat put together piece by piece, rather than molded, is intrinsically easier to piece a repair into. (Stu also told me that, when capital costs and insurance are factored in, wooden boats are usually less expensive to own.)

"OK, then, boats are pretty expensive and complicated to maintain, and they sometimes need very expensive rebuilds. How do I know what I'm getting into, and what can I do to improve the odds?" Time and again, boatyard managers recommended

The repair of blistering and laminate hydrolization onfiberglass boats is the biggest growth area in boatyards today.



It's been estimated that 40% of today's 'glass boats will need







the use of a surveyor. A good one has usually had extensive experience building, maintaining, and operating boats. He can handle all the complexities of design, construction, and condition and give you a thorough, prioritized analysis of what's wrong with a boat and how to fix it. One vard manager told me about a customer who is a marine architect and still has his own boat surveyed every year. That may be extreme, but far too many owners think a surveyor is only useful when purchasing a boat. Yard managers recommend that any type hull be thoroughly sounded out about every five years; it's not a bad idea to have every system checked over at that time.

You can certainly save on maintenance costs by doing some of your own work, but be careful not to underestimate the skills, time, and tools required. There is a great deal of satisfaction to be had by maintaining your own boat, but it will probably take more you more time than it would a professional, and the results may not be quite as good. In some cases, an owner would do best to focus his or her energies toward being a sensitive and skilled operator. Good seamanship rewards one with lower maintenance and repair expenses. You might want to work up a chart of annual costs categories. By consulting your own records, surveyors, yard personnel, and boat-owning friends—including an honest appraisal of how you use the particular boat and how you want her to look you can develop at least a rough budget. Like planning for your children's college educations, this is not exactly joyful work, but it is good, practical planning.

hat is the most maintenance-free boat? Many yard managers enjoyed this question and had obviously spent some time distilling their years of knowledge into their own dreamboats. The hands-down winner: a coldmolded wood/epoxy hull with Dynel-over-marine-plywood decks and cabins, all surfaced with modern urethane paint, equipped with anodized aluminum spars and the most rugged and straightforward gear available. Of course, it goes without saying that everything, every detail, must be put together with a high level of workmanship and then operated by someone with a pretty good feel for all systems and the ability to keep the whole package out of harm's way.

But perhaps this whole practical analysis has left you questioning the very sport of pleasure boating. Therein lies a paradox worth pondering deeply. My own observation is that the most successful, satisfied skippers are supremely practical, competent people admittedly pursuing a sport that has been fairly characterized as akin to standing in a cold shower tearing up \$100 bills. I know a man now cruising in the Caribbean aboard a 50' Herreshoff schooner into which he has put a large percentage of his human and financial resources. The boat is amazingly well thought out and executed, a boat that one surveyor predicts will easily live a century. The man loves and laughs at what he does. When asked about his inspiration, his eyes roll and he smiles, "I should have known from the title ... Sensible CruisingDesigns."

During most of the '70s, Ben Ellison owned, cruised, chartered, and maintained the 40' wooden sloop ALICE. After that, he managed both a modern fiberglass racer/cruiser and a traditional wooden gaff-rigged ketch, delivered numerous yachts, taught seamanship aboard a variety of sailboats, and directed WoodenBoat School from 1986 to 1990. After 12 years of not actually owning a cruising-size vessel, he says, "The desire is once again starting to raise its ugly head."

Damned by Faint Praise by David Seidman

'd like to introduce you to Albert Hickman as I first found him, through this odd quote at the top of a piece of 1940s promotional material: "Truth is like unto a star, appearing somewhat small, but bright and secure."

Now, what would possess a man to include something like that in a brochure? The rest of the pamphlet was a straightforward sales come-on, but that obscure quote sounded so defensive, so utterly desperate, that it caught me by the heart. Obviously, here was a man whose small star was anything but bright and secure.

Albert Hickman and his Sea Sleds seem to be one of those perennial boatyard myths. No one's sure who he was or what his boats were like, but the names seem to linger on as part of our collective unconscious.

In factual terms, William Albert Hickman was one of the first men to achieve high speeds on the water without resorting to high power. He proved that a hull could be made to go faster by forcing air under it, invented the surface-piercing propeller, designed and devised tactics for the world's first high-performance motor torpedo boats, discovered that propellers generated lift, effectively used counter-rotating props before anyone else, built the first high-speed aircraft carrier, and patented the ideas for lifting strakes, sponsons, nontripping chines, and the prop-riding speedboat.

As a man, he remained a mystery. Hickman saw the world differently than anyone else, and was intellectually superior to most of his contemporaries. He kept company with men like Alexander Graham Bell and Henry Ford, was a commentator on political matters and the arts, acted as a representative for his government, and was a popular writer of fiction. But mostly he was an observer. Terminally curious, he had a genius for seeing what others could not. For this, and his often too-direct manner of telling people what he saw, he was left to remain an enigma in the backwaters of naval architecture.

hat follows is the first comprehensive history of Albert Hickman ever to be published, and I hope it will clear up some of the mystery. To say that this was a difficult piece of investigative reporting would be a gross understatement. Hickman worked alone, confided in no one, and shared nothing. Each paragraph represents days of going over oral histories; yachting, literary, and technical magazines; correspondences from people like Lyndon B. Johnson or Howard Chapelle; government records; patents; research papers; and endless legal statements. There was an incredible amount of hearsay and only a disappointingly small core of provable facts. It is from this core that the following story has been pieced together.

For all the outstanding accomplishments of his life, Hickman was essentially ignored by the press. In my research I found surprisingly little about him or his boats. It seems as though he was thought of as an eccentric and an annoyance that most wished would quietly go away. The only one who told his story was Hickman himself, and although editors like Thomas Fleming Day and Charles F. Chapman acknowledged his genius, they printed precious little about his work.

In all fairness, this might have been in self-defense, as Hickman could be an incredibly self-righteous, arrogant, patronizing pain in the ass, as well as a prolific proselytizer of his cause. For, even though he referred to himself as





Something of a genius, Albert Hickman was one of thefirst men to achieve high speeds on the water without resorting to high power. His controversial Sea Sled designs were virtually ignored by the boating press, although Hickman claimed his boat was the "ablest craft afloat for its length." A 13-footer, like the one below, won the 260-mile 1928 Boston-New York race, and another was the onlyfinisher out of 38 boats in the rough, 52-mile Catalina Ocean Sweepstakes the same year.

The Rosenfeld Collection, Mystic Seaport Museum



The life and hard times of Albert Hickman

being "ruinously truthful," Hickman's writings were hardly ever objective in any sense, and, in most cases, were outright pieces of self-promotion. But it was from these writings that most of my information has been gathered. As much as possible, I have tried to temper this with other opinions, but many times there were none. He was that thoroughly ignored.

ickman's early years are as obscure as the rest of his life. The consensus is that he was born in Dorchester, New Brunswick, Canada, in 1877, and soon after moved to Pictou, a small Nova Scotian town on the shores of the Northumberland Strait, which leads out to the Gulf of St. Lawrence. It is here that Albert, as he preferred to be called, was educated and introduced to the comforts of life within a wealthy shipbuilding family. He was later sent to Harvard University, where in 1899 he earned a Bachelor of Science in engineering and was remembered as a sculler of some note. Upon returning to Canada, he became a Commissioner of New Brunswick, served as a lecturer for his government in Britain, and was elected as a Fellow of the Royal Colonial Institute.

It was during these years at the very turn of the century that his self-image was based on security and achievement. He had money, position, and was on his way to becoming a true gentleman of letters. In 1903 his novel of romance and adventure, *The Sacrifice of the Shannon*, was received with rave reviews. From the *New York Sun*, "At last in the great mass of fiction... an original idea and a new condiment." Through his writings you could sense a person of great warmth and understanding, along with good-natured humor and a feeling for Victorian Romance.

It was in this state of well-being that, in the summer of 1907, he and a local Pictou character called Sanford Munsie, "a house painter and paperhanger by profession, and an adventurer by inclination, most especially after dark," one day drew up the lines for a fast boat that was "so simple it seemed ridiculous that no one had tried it before." The boat was to be 20'2" x 3'6", with a flat bottom having a fore-and-aft rocker of 2 3/4. Built solely as a lark, out of spruce flooring, the rough and heavy boat was produced by Mr. Munsie and five helpers in a 30-hour marathon.

She looked something like a crude coffin and was derisively called VIPER, after the fast British warship which had recently run into a farm during a





Left Hickman's patent drawings for the Sea Sled hullform, filed March 12, 1914.

Below left VIPER H, a 20-footer built in 1908 and equipped with a 12-hp engine, reachedaspeedof 18. 18 mph, faster by far than other types of boats with the same horsepower.

fog. Immediately after launching, she was fitted with a 3-hp engine, sent to race against "honest motorboats," and won with a speed of 8 mph. She was then fitted with a 7-hp engine and got up to 14.3 mph, a record speed for that small amount of power. This may not sound very revolutionary today, but here for the first time was a lowpowered, fast planing boat that was suitable for everyday use.

ith the success of VIPER, Hickman's life changed completely. No longer careful and comfortable, from here on he began crawling farther and farther out on a limb to pursue the elusive ideal of a practical, seaworthy, high-speed motorboat. It became an obsessive passion that was to bring him his greatest successes, and his most soul-deadening defeats.

Hickman realized he was on to something with his "flying coffin" and formed the Viper Company, Ltd. to sell boats and finance further experimentation.

Starting in the autumn of 1908, Hickman and Munsie began their research with the similar, but better finished, VIPER II. They realized that the boat's flat bottom was forcing out spray and a considerable wake. In his engineer's mind, Hickman saw it as energy that was being wasted. To prevent this, side plates that looked like straight bronze sled runners were added at the chines and proved effective in trapping air and redirecting spray back underneath the boat. The end result was increased lift and speed from the same power. To Hickman, it was becoming obvious that "the principle of confining air beneath the hull might be of the utmost importance in the development of boats that are to be run at speed."

Hickman was also becoming aware of the properties of water at high speed and how underwater appendages caused a great deal of unnecessary drag. Although it was still an unproven fact, he humorously sensed that "the hardness of water at 50 miles per hour might compare with the hardness of cheese...at rest." So, why drag anything through it if you don't have to?

Independent of Munsie, he began to tackle the design problems of a surface-piercing propeller system that would eliminate unnecessary resistance. To continue with Hickman's cheesey analogy, "Since the water under the boat is as hard as cheese, it seemed easier to cut the cheese with the knife blade alone, rather than with the blade and the handle. So we hoisted the handle—being the propeller shaft, hub, etc.—up out of the sea altogether."

This idea, which is seen today in the Arneson Surface Drive, had been around since 1818. As with so many things, the concept was understood; but no one knew how to apply it. This was where Hickman excelled. He knew how to make ideas work.

He also knew how to irritate people. In the July 1910 issue of *The Rudder*, Hickman launched a beauti-

fully barbed rebuttal to an accusation by Malby, a venerated old-line designer, that his VIPERs were shams, and that he was inadequately versed in theoretical naval architecture. The piece was called "Weary of Theory," and Hickman made his case with deadly elegance. I'm sure he considered it a coup, but in actuality it was the opening of the door to oblivion.

At about the same time he was ripping apart the establishment, he was also running tests on the old VIPER II, this time with the world's first surfacepiercing propellers. The engineering was rough and the props too small, but the boat made reasonable speed, showed a propeller slippage of only 8%, ran unaffected through the thickest weeds, had half the draft of a conventional boat, and ran without the frictional drag associated with fully submerged propellers.

This test validated Hickman's belief enough so that by the end of 1911, he was offering a boat that was specifically designed for these props. The new boat was VIPER IV (the missing VIPER III wasjust a production model of the old VIPER II). She was the same length as the other VIPERs, but a little wider and had V sections in her forward half. With a 25-hp motor, she could make 20 mph, and was rigged with a pair of counter-rotating propellers and Hickman's new side plate rudders.

The rudders were brass plates attached by hinges along their forward edges, one on each side of the boat. To steer to port, the port plate would be Right ASeaSled publicity photo, captioned: Over the top of a big one— 35 miles per hour into a head sea uncomfortable, but with no possibility of divine."



Below right Another Sea Sled publicity photo, taken to prove that Sea Sleds could make light turns at high speeds and wouldn't dig in on the inner bow and pivot wildly.

pushed out by a rod. When going straight, both plates would be held to the sides of the boat and offered minimal resistance, as well as being non-fouling.

At this point, Hickman was satisfied with his surface-drive system, but was less so with VIPER IV. For the next two years he continued to experiment, looking for a hull form that would eliminate pounding, not require massive power to achieve speed, be manageable in a seaway, and not be wet riding—in other words, the exact opposite of anything yet known or available at that time.

hat he came up with, and displayed for the first time it the 1913 New York Motor Boat Show, was like nothing else anyone had ever seen before, or even had the imagination to dream up. As a reporter would later say, "Any resemblance to a boat could not be recognized...."

The new VIPER V looked like someone had taken a perfectly normal V-bottomed boat and cut it down the centerline, then reassembled it so the original sides were in the center and the centerlines were on the sides. Sort of like putting your shoes on the wrong feet. The boat had a tunnel forward in the shape of an inverted V that flattened as it went aft. This was enclosed by two outward-turning bows that seemed to be pulling the boat apart right down its middle.

Hickman called the hull type a Sea Sled, because of its two straight out-

board keels and perfectly parallel sides. The "experts" didn't know what to name it, but found its un-boat-like character an affront to their tamer sensibilities. Even more offensive was the fact that she did everything Hickman said she would, and most things their boats couldn't. As Tom Day, editor of The Rudder, put it, "The trouble is. Mr. Hickman has committed one of the most terrible offenses known to the code-he has knocked on the head and badly damaged a number of elaborate scientific theories. In plain English, he has exploded a bomb under a pile of pet ideas evolved by impractical persons...." And, of course, once again, Hickman rubbed their noses in it with unbridled glee.

There were plenty, though, who liked what they saw. The same reporter that couldn't recognize her for a boat finished his statement with "...but in seagoing qualities she was years ahead of any hydroplane." Here was a boat that, for the first time in history, could be taken in rough water with speed and safety. She was not intended for speed alone, but for usable speed at sea.

Of primary importance was the effect of the tunnel formed by the inverted V and the two outward-turning bows. This collected the bow wave and spray, plus compressing incoming air, which created a pressurized mixture of aerated water that reduced surface friction and generated lift. Because of this, Sea Sleds were drier running, planed faster, and needed less power to achieve the same speeds as a typical V-bottomed boat. They also had greater load-carrying abilities. A writer for the September 26, 1914, *Scientific American* calculated that the best boats of the day could plane with a maximum of 45 lbs/hp, while the Sea Sled could do the same with 70 lbs/hp. As per the sixth edition of *Skene's Elements of Yacht Design*, "...from a weight/speed standpoint the Sea Sled was one of the most efficient hulls ever built."

The boat was also remarkably well behaved. Compared to other planing boats that jumped from one small wave to the next, Hickman's boat ran like a sled on ice. Even in sizable seas, the absence of harsh pounding was well documented. Hickman attributed this to the air being compressed under the hull. But Johan Valentijn, today's most experienced Sea Sled designer, believes it is more likely a result of the sectional shapes of the two bows.

These bows also provided other unique features. Because of their outward-turning waterlines, steering was self-correcting in a beam or following sea. This made the boat almost impossible to broach, and helped it hold a steady course regardless of the relative direction of the waves. In addition, the lateral spread of the bows brought extra buoyancy outboard, which increased initial stability and dampened the boat's rolling motion.

On the negative side, the Sea Sled was difficult to build in wood. The form was hard to frame and plank, and the overcoming of substantial torsional stresses demanded sophisticated (i.e., expensive) construction methods. This all resulted in a heavy boat that needed all the extra lift the hull could provide. It was hard to turn-especially at slow speeds-because of the two parallel keels and lessthan-efficient side plate rudders. They were sensitive to excessive loading aft and could become poor performers under such conditions. But most damaging of all was the Sea Sled's appearance. For all our lip service to the beauty of a form that follows function. the Western aesthetic demands simplicity and unity. The Sea Sled provided neither, and this eventually turned people away from accepting the boat on its merits.

As a test of the Sea Sled's qualities, the famous Charles F. Chapman, then editor of *Motor Boating*, took five friends on a 260-mile ocean trip from Boston to Bar Harbor. He reported in the August 1914 issue that the stock 26' runabout, fitted with a standard surface-drive, carried a full load of supplies, ran through fogs, gales, and large seas, averaged 35 mph, and did a maximum of 45 mph. Even by today's standards this would be a reasonable accomplishment, but back then, when fast boats went to sea for periods measured in minutes and only in dead calms, this was considered somewhat of a milestone. In addition, Walter Bieling of *The Rudder* thought that the Sea Sled was "...the best sea boat I have ever been in."

Hickman was elated. Within a period of just a few years he had come up with two extraordinary breakthroughs in marine engineering and showed himself to be one of the few men in that field capable of taking an original thought through to a working conclusion. Based on the overwhelming acceptance of his Sea Sled, Hickman decided to open a Boston office in 1913 and begin a working relationship with the Murray & Tregurtha Company of South Boston. They were experienced engine and boat builders and a good choice for dealing with the Sea Sled's inherent complexities. Every Sea Sled from then until 1919 was built in their yard; this was one of Hickman's few successful joint ventures.

n September of 1913, Hickman demonstrated his Sea Sled to the Navy as a potential high-speed rescue boat. They were so impressed that they, and the Army, began purchasing only Sea Sleds for high-speed (25+ mph) service in open waters, a policy that was to last to the end of the First World War and infuriated the other builders who were being cut out



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Photo-Boat

Right Hickman's 55' steel-framed wooden Sea Sled aircraft carrier, running light. Designed to reach a speed of 55 mph with a 10,000-lb Caproni bomber on board, it could reach even higher speeds with the bomber's engines racing.



Below right In 1920, Hickman opened a yard in West Mystic, Connecticut, where he began building a series of racers named ORLO.

of a very profitable pie. As a final touch of good fortune, a collection of three of Hickman's novelettes and four short stories was soon to be released under the title of *Canadian Nights*. As before, it was well received.

For the next year, Hickman basked in his successes. But, by the summer of 1914, Europe was choosing up sides for war, and as a citizen of the world, Hickman believed it would not be long before the United States would be drawn into the conflagration. He rightfully predicted that most naval engagements in this war would be brief skirmishes, rather than the more traditional group-fleet battles. With this in mind, and other intentions that were not totally altruistic, he conceived procedures and tactics that suggested "... carrying torpedoes with a destructive charge for capital ships in small motorboats that were so seaworthy, so fast, and so highly maneuverable as to form almost impossible targets for gunfire." And, of course, the small motorboats he envisioned were Sea Sleds. Still, here for the first time was the how-to book of modern offensive torpedo-boat warfare.

Hickman presented his idea to Rear Admiral David W. Taylor, who was then Chief of the Navy's Bureau of Construction and Repair. Taylor saw the merit of such a plan and, as an expert in marine propulsion, was fascinated by the Sea Sled and its surfacepiercing props. The two men were of kindred spirit, and Taylor encouraged Hickman to pursue the concept further. By September of 1914, Hickman had drawn up a full set of plans for a 54' Sea Sled torpedo boat, along with complete details on how it should be campaigned. While the Navy's General Board found the proposal attractive, the new Secretary of the Navy, Josephus Daniels (an ex-newspaper editor with no naval experience, and a staunch pacifist), rejected it on the grounds that we were not at war.

Hickman then took his idea to the British Admiralty's Invention Board, who thought it interesting, but believed that "no fast boat of 50' to 60' length would be sufficiently seaworthy to make it workable."

Frustrated, but also well financed from his rescue-boat contracts, Hickman decided to prove his point by privately building the world's first high-performance motor torpedo boat. With the help of Rear Admirals Taylor and Strauss, the boat was launched and demonstrated to a crowd of U.S. and foreign officials in February of 1915. Also observing was a representative of the British Admiralty, a Lieutenant Hampden.

Once again, Hickman made his point. The 41' Sea Sled, in combat weight with four 150-hp engines and surface props, did 40 mph in the rough winter seas off Boston. And once again, Hickman's point was thought to be of little value. Although many were impressed, there were no takers.

But the war progressed, and by the summer of that year Lieutenant Hampden and two other British officers presented the Admiralty with the idea of a small motor torpedo boat. This was immediately deemed appropriate, and Tom Thornycroft's single-step hydroplane, MIRANDA IV, was chosen as the prototype. By April 6, 1916, the second modern torpedo boat, or CMB (Coastal Motor Boat), had been launched. It encompassed many principles from Hickman's original presentation to the Admiralty, yet from then on the credit would always be attributed to the three British officers.

But in August of 1915, this personal defeat was still almost a year away. At this time the General Board, with Secretary Daniels's approval, agreed to buy a Sea Sled torpedo boat for evaluation purposes. Once again, Hickman was elated. But not for long.

Two months later, Secretary Daniels changed his mind, and called for competitive bids. As so often happens with the inexperienced, Daniels's choice was based solely on price. The winner, to be known as C-250, was a conventional V-bottomed boat built by the Greenport Basin, of Greenport, New York, for \$19,900. This was \$10,000 less than Hickman's lowest bid, and \$40,000 less than the highest bidder.

Once again, Hickman felt he was being brushed aside. Even though his public writings proclaimed an optimistic view for the future of Sea Sleds, his private notes were becoming increasingly dark and defensive. By 1916, with the launching of the first CMB, it was obvious that Hickman was now overly preoccupied with the idea of a Sea Sled torpedo boat and the belief that he was being wrongfully persecuted. For the first time in an otherwise charmed life, self-doubt was rearing its ugly head.

And it publicly surfaced in a fullpage ad in the December 1917 issue of *Motor Boating*. There, crudely scrawled over a photo of his 20' Sea Sled, Hickman had written: "Why do we hear so little about the Sea Sleds these days? And why, at the same time, are the Sea Sled principles being extended to cover all the high-power high-speed boats in the world?" It is true that in the future almost all of his ideas would be used to the great advantage of others, but in 1917 this degree of paranoia seemed grossly inappropriate.

hat made it even stranger was that this was the period of some of his greatest successes. In 1916 he offered a 36' Sea Sled that at 34 mph was the world's fastest cruising cabin boat. In 1917 Daniels approved a contract with Hickman for the building of C-378, the second U.S. torpedo boat. Shortly afterwards, the first U.S. torpedo boat, the V-bottomed C-250, was launched. It was a year late, leaked, pounded badly, and never reached its contracted speed. The boat failed miserably, and Hickman couldn't have been happier. It was also during this same period that he met an extraordinary naval officer, Capt. H.C. Munstin.

Impressed by me Sea Sled's smooth ride and stability, Munstin suggested to the Navy that they contract Hickman to build a high-speed aircraft carrier. His idea was to increase the range of heavy, land-based bombers attacking Germany by launching them from Sea Sleds in the Zuider Zee.

Someone in the Navy Department bought the idea, and by early 1918 Hickman had designed and the Murray & Tregurtha yard built two 25ton, 55' prototypes. Using only 1,800 hp, they made 55 mph with a 10,000lb Caproni bomber on board. With the bomber's engines racing, they could make even higher speeds, which were enough to successfully effect a launch. These boats were Hickman's masterpieces, and they probably took the Sea Sled form to its most effective conclusion. They incorporated the first use (backed by international patents) of planing sponsons, lifting strakes, beveled (non-tripping) chines, and many other details that were to find their way into his future boats and into those of other designers.

Still in his early 40s, Hickman had successfully defended the new ground he had begun to reveal back in 1907. While this should have been the starting point for *the* most productive years of his life, he began to entrench and stagnate. From here on, he was only to refine what went before, never venturing too far beyond, jealously patenting everything he did. He no longer wrote, or delved in any other intellectual activities unless they related to his Sea Sleds. He was a man possessed.



Right ORLO III was Hickman 's last racer. In 1921 Ms 35-footer held the world record of 57, 799 statute mphfar marine - (not aircraft) engined displacement boats. Later, with Liberty aircraft engines, ORLO III made an unofficial 70 mph. Although Sea Sleds were called "displacement" craft, they actually rode level and in contact with the water and were, in fact, planing boats.



Below right In 1925, Hickman leased his manufacturing rights to an independent company, which continued to operate the Sea Sled factory at West Mystic, meeting \$800.000 worth of orders that year. The company employed 125 men and utilized standardized production techniques to turn out three doubleplanked mahogany boats a week.

The Armistice of 1918 brought an end to all military small-craft development. The high-speed aircraft carriers never saw active service, and the contract for the torpedo boat was canceled. Hickman came out of the war a wealthy man but felt poorer for not seeing the realization of his torpedo boat project, which he hoped would irrefutably prove the superiority of the Sea Sled. To continue getting the word out, he went searching for a new arena in which to show off his boats, and he soon found this in racing.

By 1920 he had opened a yard in West Mystic, Connecticut, and started building a series of racers that went under the peculiar name of ORLO. In February 1921, at the Fisher Trophy Series, ORLO II broke the record for marine- (rather than aircraft) engined "displacement" boats, reaching the speed of 47 mph. She lost the race, though, because of her poor turning ability and an engine which Hickman believed was sabotaged. A few months later ORLO III, temporarily running with marine engines, managed to reach 57.8 mph. But she, too, was losing races because she couldn't make tight turns at speed. ORLO Ill's last chance was the Wood-Fisher Trophy Race of 1921. Hickman claimed that the boat was specifically designed for this race, which allowed it to carry two giant Liberty aircraft engines. But right after the boat was completed, he received a notice that the race was being scaled down, and only smaller engines would be approved. Hickman irrationally took this as a personally

directed bit of chicanery, and complained that once again the establishment was afraid of his boats. He raced anyway as an unofficial entry, blew a clutch, and never finished. Soon afterwards, a properly tuned and tested ORLO III made almost 70 mph. She might have been a winner after all.

Two years later, Hickman gave racing another chance, this time in partnership with George Crouch, a math professor at the Webb Institute of Naval Architecture and one of the most respected powerboat designers of this century. They worked together on HarryGreening'sRAINBOWIV for the 1924 Gold Cup Series, and not unexpectedly came up with something totally original. Crouch's hull was double-ended with transverse lapstraking on the bottom; she planed amidships with her pointed stern supported by a Hickman surface propeller that delivered 18% lift and 82% thrust. She was the first prop-riding racing boat ever made, predating those of its claimed inventor, Arno Apel, by 16 years.

Although RAINBOW IV won the series and the hull design had been cleared by the sanctioning body before being built, Greening was forced to relinquish the cup because of a post-race protest. The furor was about the lapstrake bottom, which created a series of small unauthorized "steps" less than an inch high. It was a petty technicality, and the reversal was obviously forced upon an intimidated race committee.

Hickman claimed that he was

robbed, and he was right. From here on he wisely avoided racing, believing that it was not to the advantage of the established order to let him win. Ostracized and feeling like an outcast, he leased his manufacturing rights to an independent company in 1925 and went into partial retirement.

he newly licensed Sea Sled Company of West Mystic, Connecticut, owned by Joseph P. Knapp, with Hickman as a very passive member of the board and supervising engineer, was a success. For the first time, Sea Sleds were being marketed by professionals. The company took care of everything-building, advertising, promotion-and even developed a sizable dealer network. During the next nine years, their two large plants in Groton and West Mystic produced over 6,000 doubleplanked mahogany boats from 8' to 26'. They became quite well known and popular, won their share of outboard races, and were momentarily notorious when thieves robbing the Vanderbilt mansion used a Sea Sled to outrun the police.

But by the mid-1930s, business had dropped off substantially as a result of the Depression, and the leasing company defaulted on its contract. Exercising his right, Hickman rescinded their lease and claimed the assets. There was no longer a Sea Sled Company. But there was still a Hickman, now in possession of the old company's stock of unsold boats, which he hoped to convert into a tidy sum. The timing could not have been better. By request of the Bureau of Aeronautics, the Navy was, for the first time since the end of the war, showing interest in developing a fleet of highperformance small craft as rescue, or "crash," boats. By 1933, the Navy had already bought a 45-footer by Luders for testing purposes. And by 1934 Hickman, insisting on comparative trials, was ready to challenge it—or anything else the Navy could come up with.

n October of that year, Hickman received an order to build a test 45' Sea Sled crash boat for the Navy. To help finance the endeavor, he began to sell off the remaining boats of the old Sea Sled Company. He depended on this income, and to help things he tried to rent space in the 1935 New York Boat Show. Once again, politics were against him. Henry Sutphen, President of the National Association of Engine and Boat Manufacturers (which ran the event) and also President of Elco (a direct competitor for naval contracts), told Hickman that he couldn't display his boats because they were "distressed material." Hickman noted that Sutphen had used the show to empty Elco's warehouses during the Depression, but it was to no avail. Sutphen was perversely obstinate and smugly told Hickman to take a hike.

Although underfinanced, Hickman immersed himself in the project, using an independent contractor to build the boat. As it had many times before, his enthusiasm clouded his judgment. Naively thinking that the Navy would be lenient because of their remembrances of his World War I rescue boats, and in an attempt to meet unusually demanding highspeed turning requirements, Hickman knowingly allowed a lot of design and construction flaws to creep into his 45-footer.

The May 1936 tests at Hampton Roads did not go well. All the problems that Hickman had let slide came back to haunt him. The boat yawed badly, was hard to steer, pounded, performed sluggishly, and showed structural weaknesses.

But no one could have ever said the tests were truly fair. As a matter of record, Irwin Chase, the head designer at Elco, was a consultant to the Trial Board. And Hickman might have never had a chance from the start. But the overwhelmingly poor showing of his boat was undeniable. The Trial Board's report was devastating, and from then on the Nav)' never again seriously considered a Sea Sled.



Right Hickman employed an extensive system of floors and frames in his Sea Sleds in his search for high strength.



Below right During the Sea Sled boom years (1925-1934), over 6,000 Sea Sleds were produced by the Groton and West Mysticfactories, but the Depression brought an end to this prosperity.

In his blind dedication to his cause, Hickman never clearly saw the writing on the wall. For the next 20 years, he persisted in trying to get the armed forces reinterested. And for the next 20 years he was constantly being beaten down in the process. His tenacity and will to overcome was as inspiring as it was tragic, but in the end it was all an exercise in futility.

In 1938, the Navy's Bureau of Ships (BuShips) announced a contest for torpedo boat designs and refused to accept Sea Sleds. When George Crouch advised them that the Sea Sled was the best type for the job, they refused to listen. After Crouch won with one of his V-bottomed boats, he wrote Hickman that the Sea Sled would "...be far superior for highspeed torpedo carrying in either rough or smooth water to that of the best possible V-bottom or hard-chine design."

Also in 1938, Bethlehem Steel's Shipbuilding Company offered to build a 70' Sea Sled torpedo boat at their own expense if the Navy would test it against a traditional boat. The deal was that if the Sea Sled won, Bethlehem Shipbuilding would get the contract for building the boats. The Navy refused on the grounds that the work should be spread among many small builders. A year later, the Navy awarded a \$5 million contract to Elco, a division of the Electric Boat Works (later to be known as General Dynamics), for V-bottomed torpedo boats.

In 1942, under the Lend Lease

Program, Mexico ordered three 75' Sea Sled patrol boats. BuShips intervened and canceled the order. Soon afterwards, the Soviet Purchasing Commission requested 80 Sea Sleds from Hickman, a \$17,600,000 order. Once again BuShips canceled it and turned the order over to a builder of "conventional" boats.

In 1943, Hickman got an order from the Army Transportation Corps for a 78' fast supply boat that was eventually to be tested against two PT boats. On the way to the test area it was run aground, and then accidentally ran over a can buoy. With only surface repairs made, the boat was sent out for testing in rough seas. Afterwards, when the test's report was released, the Sea Sled was said to have had an "ultimate collapse of the structure," with no mention of the grounding or collision. To the contrary, an independent inspector found that the boat's basic structure was still sound except for some minor damage where it had hit the buoy. The incident led to a hearing where the Assistant Secretary of the Navy and Assistant Chief of BuShips said that the boat's officer had lost the log, and then flatly denied that there were ever any accidents. Hickman was understandably furious, yet when the famous columnist Drew Pearson asked for his help in exposing the fraud, Hickman mysteriously backed off.

Although it was a different world after the war, nothing seemed to have changed for Hickman. Now at the age of 68, with failing health and resources, he attacked on new fronts, doing battle in the press and trying to entice the Navy into one more try. All he managed, though, was to further alienate himself from the yachting establishment and get involved in a messy Naval contract that dragged him through the courts and drained his remaining funds. To his credit, though, he never gave up, and persisted into the mid-1950s by licensing builders to manufacture small outboard runabouts.

hese little Sea Sleds caught the eye of Dick Fisher of the Fisher Pierce Company, who, in the fall of 1955, was looking for a boat to build with his new system of foam-cored construction. On a blustery day in October, he and his designer, Ray Hunt, rough-watertested one of Hickman's 17-footers. They measured it, ran it hard, and then approached him with a deal. Hickman's notes of that period show that a tentative royalty agreement was reached around October 30, and that the new boats were to keep the Sea Sled name.

Apparently something went wrong after that. More than likely, Hickman began to demand increased concessions and control. He had protected his patents for so long it was doubtful that he would begin to relinquish them at this point in his life. Whatever happened was enough to turn off Fisher, who then encouraged Hunt to proceed on his own with a similar boat. Hunt took the Sea Sled and added a center "hull" in its tunnel. His reason of record for doing this was to eliminate cavitation; more than likely it was also to prevent lawsuits. The finished "cathedral" shape was revealed in 1958 as the original 13' Boston Whaler. The rest of the story you probably already know.

ickman never survived to see this final insult. With eviction notices piling up in his pitifully tiny Boston office, crushing legal fees against the Navy, and his company in receivership, he died still fighting in the late fall of 1957.

It was a life of incredible promise and stunning flashes of genius, all cut down to nothing for want of recognition by his peers. Where does the fault lie? I'd say somewhere between the fears of those who were less talented and Hickman's own self-destructive passion for total control of his creations and unrealistic vision of the world.

The irony, though, is that his boats were just as good as he said they were. The new Sea Sleds being built today by Dr. Salvatore Iannotti in Florida, designed by Johan Valentijn, are everything that Hickman promised they could be. Fiberglass construction has eliminated torque-generated structural problems and has allowed for subtler modeling of the hull. Compared to a contemporary deep-V, a new Sea Sled makes the same speed with one-third less power, turns in onethird the radius, is more comfortable, less sensitive to weight, and safer at sea. They are not a panacea, just good boats for safe, high speed at sea, which is all that Hickman ever claimed.

With this in mind, the bravado of the quote which first brought me to tell this story now seems lamentably poignant. And after laying out the full scope of Hickman's life, I can't help thinking of another quote, one which now seems infinitely more appropriate. "It takes two to tell the truth—one to speak, another to hear." For most of Albert Hickman's life, no one was listening.

Once a New York advertising executive, David Seidman now lives a poor, but happy, life as a part-time delivery captain and full-time boating writer.



A New Sea Sled from Mystic by David Seidman

ystic, Connecticut, is a town of history where legends, especially local ones, die hard. Anywhere else, if someone like Malcolm Robertson-owner of Seaport Marine, a fairly conservative building and repair yard-began building a Sea Sled, folks would think him a bit odd. But in Mystic, it made sense. It was here, more than three generations ago, that Sea Sleds saw their greatest moments of success. They were good boats, maybe even great; and there are still some people around Mystic who were there to see the truth. So, it's no surprise to find that the only wooden Sea Sled to be built in recent memory has been built here in Mystic.

Why build a Sea Sled? Robertson's answer is vague. But the core of what he finds hard to express is a basic belief—an acknowledged belief, from the town and people who were closest to these boats, that Sea Sleds were all that Hickman claimed them to be. In spite of all the rumors of poor handling and overstated performance came a conviction handed down from those who really knew: the people who built them.

Robertson got the belief from Franklin G. Post, the man he bought the yard from 35 years ago. Post was there at the end, paying \$197 for various bits and pieces and leaving this Sea Sled legacy in Seaport Marine's attic. The belief also came from Chuck Beaumont of Mystic Shipyard (where the Sea Sleds were originally built), who still maintained some curios of the Sea Sled era and presented Robertson with an unused steering wheel for his boat from "stock." But mostly he got the belief from just being in Mystic, and staying in touch with some of the old-timers.

It was one of these, a Lester J. Arnold, Jr., who gave him a place to start. Arnold's father had worked as a draftsman for Sea Sled and had managed to save most of the old plans. keeping them safely sequestered away in his basement. (These designs have since been donated to Mystic Seaport Museum.) Robertson had been drinking about building one of the later Sea Sleds with a non-tripping chine, and Arnold came up with a set of plans for a 26-footer. The boat was a 1926 model, rated for 200 hp and capable of an impressive 42 mph. The only problem was that Robertson had to work around two 454-cu-in Crusader engines, which would not fit into the 26-footer's beam. So he proportionately scaled the hull up to 33' and began building.

The hull is framed in mahogany and planked with two diagonal layers of 14" plywood laid in WEST SYS-TEM brand epoxy. The bottom is then protected with two layers of fiberglass cloth, and the sides with one layer of cloth. Decks are laid teak over plywood. Power is transmitted to the water, appropriately enough, by two Arneson Surface Drives.

Robertson turned out a first-rate Sea Sled. With its 10 coats of varnish and unusual shape, it is an impressive boat. But did it prove to be what Robertson had hoped for?

"I surprised a lot of fellows around here with their 33' Hydra Sports and pairs of 300-hp outboards. I didn't have any trouble at all showing them my stern. The boat has broken 60 mph, and Arneson's computers tell me that with some work, I could get to 75."

Robertson explains that the boat handles well and is exceedingly dry. He attributes a lot of the success to the drives, which can get the boat on



a plane and improve the steering over Hickman's original system from 65 years ago. There were problems, though, from occasional porpoising at the very top end. With so much lift being generated, the boat was only touching the water on a tiny flat area back at the transom. The installation of a pair of trim tabs solved this.

Robertson's Sea Sled has been so successful that there have been constant offers to buy it or to build others. But he's declined every one so far. "This was just for me to find out what it was all about. We did it, and did it right. Put too damn much money in it. But, boy, it was worth it! Hickman really had something there. He was on a different plane from everyone else, and his boats were just what he said they were."

How to Scull a Boat

Text and illustrations by S.F. Manning

otch!" snorted Robbie Weatherford as he swept up an oar from the float. "Ye don't need a notch if ye do it right!" With that he thrust the oar over the side of the float we were standing on and began a vigorous twiddling with it that sent wavelets breaking into the mangrove roots just beyond. I could feel the float depress under the force of his oar. As he yanked it back and forth while demonstrating how a sculling oar should be handled, the loom of that oar stayed right where he'd placed it on the edge of the float. There was no notch or crack or anything there to keep it put.

Happily, I'd remembered my mother's admonition that you never tell a cowboy that you can ride a horse. You say, "Tll try." And try I did for that 75-year-old Man O' War fisherman who'd sculled boats all his life the Bahamian way. But I couldn't get the oar to stay put without restraint where it crossed the edge of the float.

The fact is that I, too, have been sculling boats all my life, starting on a farm pond way back during the Depression. But up North we do it differently, or perhaps I'd never taken notice of how other people scull boats. Robbie's stroke was more powerful than mine. He could make a Man O' War dinghy-boat move as if it were inspired by a small outboard. His oar was straight, narrow bladed, and fully as long as the boat he sculled. Bahamians scull. They do not row with two oars, nor do they usesweeps. It was once common to see a Bahamian sloop or schooner being sculled by a single oar over the stern when the breeze failed. A single long oar is often primary or auxiliary equipment in boats of that region. The sculling notch, if used at all, is very shallow.

hat is sculling? Sculling is a traditional way of propelling a boat or vessel through the water by means of a single oar mounted on, or worked from, the stern. Consider the various types of oars and how they're used. A *paddle* is gripped in the hands and is pulled independently of the boat. A rowing oar is pivoted through a lock on the gunwale or a port in the boat's side and is pulled or pushed from a position just inboard of the pivot point. Small-boat oarsmen normally pull two oars at once over opposite sides of the boat. A sweep is a long rowing oar that is pulled through a pivot point located on the opposite side of the boat from the oarsman. A scull is another name for a short



rowing oar. A *sculling oar* can be a rowing oar, a sweep, or even a paddle operated through a pivot point in a propeller-like stroke that pushes the boat from behind. A breed of oars specialized to sculling has evolved in many parts of the world over millennia. The best known of these are the Bahamian oar, the "slat" of the Chesapeake watermen, the bent scull float oar of the duck gunners, and the yuloh of the Chinese. We'll examine the strokes used by scullers, and then we'll have a look at the various oars.



Allied to sculling, and sometimes described as sculling, are two types of stern propulsion that most boatmen have done at one time or another. The first might best be called "levering." This entails jamming an oar blade straight down over the stern and giving the loom a hearty yank forward. A boat moves convincingly, if erratically, this way. The second might be called "fishtailing." Here the tiller of a small boat is given a quick yank in one direction and then a quick yank in the other, back and forth in a vigorous motion. The effect is to push water with the outboard side of the rudder blade. Dinghy sailors often use this technique to gain steerage in light airs or to move the boat without sails from dock to mooring.

The oar-sculler's stroke is simple in principle, but it is difficult to learn by watching someone do it. Sleight of hand, not easy for a sculler to convey to a watcher, is involved. Basically, the oar is run into the water over the boat's transom, angled outward and downward about 45° , and pivoted atop the transom. The oar is rotated slightly so that the blade becomes a kind of diving plane. The loom is *pushed* against the pivot point so that the depressed edge of the blade cuts a path through the water, angling toward the stern of the boat on one side. When the limit of the stroke is reached, the blade is rotated so that it dives in the opposite direction. The loom is now *pulled* against the pivot point until the blade reaches the end of that stroke. The oar is again





Both edges of the oar are leading edges in this pattern. The oar is swing from side to side like a double edged sword.

The blade is rolated slightly at the end of the stroke, then reversed in direction.

rotated and the first stroke repeated. Since the loom of the oar is bearing against the boat's stern, the back pressure on the blade as it cuts obliquely through the water shoves the stiffly held oar, and the boat itself, forward. Simple enough. But this whole description reads the same whether one leading edge is utilized, or two. Thus my frustration in watching Robbie Weatherford sculling without a notch in which to pivot the oar, and possibly your frustration if you've made the effort before. We'll get back to it.

Why scull, why not row? Well, there *are* times when a boatman finds himself with only one serviceable oar. At other times there might be neither established rowlocks nor deck room to swing two oars or a long sweep. The sculler, usually standing to his oar,

has a clear view ahead and can maneuver through clustered boats, marsh channels, or ice leads where oar room is lacking on either side. The sculler can propel his boat ahead or astern by simply reversing his stroke while standing in the same posture if his oar notch has been closed with restraint at the top. He can spin the boat around within its own length. He can move it sideways if he positions his oar over the side amidships. The sculling oar, like the canoe paddle, is a water lancet that offers tremendous potential for those who can exercise skill. With a suitable oar you can propel a dinghy, a motorboat, a gondola, a barge, a junk, a schooner. It's all been done to practical advantage, somewhere in the world.

Is sculling faster than rowing? For most of us, no. However, on one morning several years back, my wife and I were overtaken and passed by the black skipper of a Bahamian yacht who was sculling a rubber inflatable. Susan and I were doublerowing a Banks dory at a reasonable clip. The Bahamian was working his single (plastic!) rowing oar through one of the oar-grommets in the inflatable's side. The thing was moving fast and forward. It wasn't even crabbing. Now, *there was* skill with an oar. We gaped, as did others.

While Robbie Weatherford made that float gyrate under our feet with his powerful Bahamian sculling stroke, I began to feel the frustration that others have exhibited during my efforts to teach them how to scull at home. Robbie and I both seemed to be doing the same thing: the oar was run into the water and pivoted at the edge of the float while the blade cut a zigzag path toward our feet. His oar stayed put and propelled water vigorously. Mine flopped about on the edge of the float, and the blade stayed pretty much where I'd run it in. I longed for a deep notch, an oarlock, tholepins, or even a lashing over the oar at the edge of the float to show this old man that I could really do it.

Clearly it was the *bottom* of a notch that was important to Robbie's way of sculling. I needed a deep notch with *sides*. Susan and I were home from the Bahamas before it dawned on me what the distinction was, and why it had been too obvious to be seen that day.

The distinction is this. Robbie's Bahamian oar operated like a doubleedged sword being wielded from side to side in a shallow falling-leaf pattern. Both edges of the blade were alternately the leading edge as the oar cut the water back and forth. The flat of the blade was essentially horizontal, with the leading edge depressed slightly to make it dive as the oar moved in that direction. At the end of the zig stroke, Robbie rotated the loom just slightly to depress the opposite edge and make it dive on the zag stroke. His effort, if any, seemed to be in pressing the loom downward on his side of the pivot point so that the upper side of the blade pushed water away from us in the course of each cutting stroke. With Robbie pressing downward on the grip at one end of the oar, and with water pressing down on the flat of the blade at the other, the middle of the loom stayed right where it was on the edge of the float despite the tweaking and rotating that made the stroke work. Had he been in a boat instead of on a moored float, the oar would have driven the boat forward instead of pushing water astern. As the boat's speed increased, Robbie would have added more and more angle to the diving edge of the oar so that it steepened the path of the zigs and the zags. If he didn't, the oar would float up or he would have to increase the frequency of strokes in order to keep up with the moving boat. The Bahamian sculling stroke, as shown me by Robbie Weatherford, is a falling-leaf pattern with the blade cutting both ways in a horizontal mode. It is a powerful stroke, not tiring, and well suited for long-haul propulsion.

The sculling stroke that I'd grown up with looked about the same but was very different in its effect. Here the oar is operated like a single-edged knife cutting a downward, slalom pattern in the surface of the water. There is only one leading edge employed. The flat of the blade floats vertically in the manner of a steering oar, which it essentially is, in this form of sculling. For a power stroke, the oar is rotated slightly so that the lower, leading edge can be slashed across the stern in one direction, rotated back, and slashed the other way. The blade is given considerable twist (toward horizontal) at the outset of the stroke when the boat is stopped or moving slowly, then less and less angle is applied as momentum is gained and the slalom pattern is deepened. At maximumspeed (about 2 1/2 knots for me in a good skiff), the wagging back and forth has narrowed considerably and the blade remains almost vertical on both left and right strokes. The end result is almost fishtailing with an oar in the manner of the rudder scullers. But you can see why use of a deep notch is necessary for this vertical or slalom stroke. The sculler's effort is directed as much sideways as downward on the grip of the oar. Without a notch, the loom slips.

There are merits to both the ver-



Vertical, or "slalom" stroke -



Slalom stroke -Oar positioned Push stroke Pull stroke =>

> water. The force vector of each stroke is more diagonally astern. Today I combine the two strokes. The vertical stroke is an excellent "low gear" for getting underway and for threading the boat through crowded harbors. Then I shift to "high," with the horizontal, to make speed and distance. There are variations, but these are the two basic strokes that scullers use.

> You also can scull a boat in reverse! It's the horizontal stroke, fallingleafed upward rather than downward. You'll need a loop or lashing over the oar's loom where it crosses the transom because you'll be lifting the grip rather than pressing it down to make the blade "climb" astern. Try it. You'll be applauded.

> n midJune of 1983, an informal group of sculling enthusiasts met at Camden Harbor to try out various kinds of strokes and oars. The group was organized by Ben Fuller, then curator of the Mystic Seaport Museum, who was researching an article on sculling for *Small Boat Journal*. The event was hosted by editor Dan Segal and his wife, Judy, who had traveled from Vermont to participate. Lance Lee, then director of the Rockport Apprenticeshop, gave us a

The oar is angled around the corners like a single - edged knife.

tical and the horizontal sculling strokes. The latter is a more powerful propulsive stroke because the force vector against the water is more directly astern. Body weight of the sculler is the main force pressing the loom downward to lever the boat forward. Only a little effort goes into guiding the oar from side to side. Steering is accomplished by loading the oar more on one slash than the other, or by giving it more angle to increase side resistance. A long oar is highly desirable.

The vertical stroke, in my hands, is best for a jackrabbit start in still water, and it is more responsive for intricate steering through congested areas. But it can be more wearing on the sculler over a long pull because arm strength, not body weight, is the main propellant. The fishtailing aspect of the vertical stroke demands side-toside exertion against the resistance of



demonstration of Bahamian sculling done with a proper Bahamian oar. Lance had spent much of his boyhood at Man O'War Cay, where he'd learned to scull under the critical eye of old Robbie Weatherford and other local fishermen. The oar, he pointed out, was always operated from the port side of the transom, allowing the sculler to lean into the oar on one stroke and to pull it back with both hands on the other. This placement allows relief of the right hand for fishing over the side. A shallow notch was desirable. Lance bent to his work with a slow, easy rhythm. He leaned into the oar with both hands on the push stroke; then, thrusting his right arm out horizontally to cause overbalance on that side, he leaned to the right while towing the grip of the oar with his left. The boat he sculled boiled along. He used a straight, thick, narrow-bladed 11' oar.

Dave Jackson of Camden, an enthusiastic duck gunner, showed us how the duck hunters scull. His boat was a camouflaged fiberglass reproduction of the traditional Merrymeeting Bay gunning "float" with pointed bow, flared sides, and rounded bottom. It was fully decked except for a narrow cockpit stretching from about center to nearly all the way aft. The wide transom was pierced on the port side for a tight oar port that accommodated only the loom of his sculling oar. The oar was squaretipped, lightly fashioned, and curved along its whole 7' length so that it arced nearly 3" upward when laid flat on the ground. Dave stretched full length in the cockpit with his head against the headrest on the coaming aft, gun (presumably) at right, and the loom of the oar extending into the cockpit over his left shoulder. From his prone, hidden position, Dave could propel the boat quite comfortably by wagging the oar with his right hand in a shallow figureeight over his chest. Since the oar was slightly bent, it automatically capsized into the proper diving angle of a horizontal sculling stroke each time the loom was reversed with a push or a pull. His stroke was rapid, smooth, and efficient. Steering was accomplished by lengthening the stroke on one side or the other.

Ben Fuller's classic 16' wooden Delaware Bay ducker is a slim, lowsided, half-decked, double-ended boat traditionally meant to be rowed or sailed to the gunning site, then poled close to flocks of birds. In a departure from tradition, Ben added a sculling bracket mounted slightly outboard on an exposed crossbeam just abaft the cockpit coaming. This boat could be sculled right - or lefthanded with a bent oar from a lying - down position. Or it could be sculled while sitting, kneeling, or standing to a straight oar in either a horizontal or vertical stroke. The sculling/rowing/ sailing (and paddling) capabilities of Ben's boat are plain delights to anyone who seeks freedom with an oar. Lines of this common style of American hunting skiff, circa 1870-95, are in Howard Chapelle's *American Small Sailing Craft*.

We didn't have a Chesapeake "slat" to experiment with. Nor was

Rowing with

Rowing with sweep

there a waterman to show us how one might be used. Tradition has it that they operate through a V-shaped notch in the stern of a boat. Ben Fuller, who spent curatorial years at the Chesapeake Bay Maritime Museum, could not remember seeing a sculling notch indigenous to the slattype oar, and he wondered whether it might have been worked against alternate sides of a protruding sternpost. The "slat" I've drawn was done from an isolated oar in a photo. It appears to be a long, flat stave of wood molded in a straight taper from the tip of the blade to the narrowed grip. I can't tell whether the blade end is ribbed on both sides in the fashion of a Bahamian oar, or whether it is ribbed or arced only on the upper side as a yuloh would be. Possibly a knowledgeable reader can tell us. The flat, sectioned loom of the "slat" would make this oar a natural for the horizontal sculling stroke. However, with a deep-V notch, it could be used like a steering oar, too, with a vertical sculling stroke.

No one in our group had operated a Chinese yuloh. Just about everyone was intrigued by the prospect of propelling a large boat with a long, bent oar perched atop a pivot and tethered inboard by a lanyard. Plenty of photographs have shown Chinese women yulohing lengthy and loaded sampans with abandon. Roger Taylor had made and used a yuloh as auxiliary power in a 37' skipjack. But Roger was away that weekend, so we made our own, a 10-footer, from a bent oak plank, and mounted it on a 14'crab skiff with a trailer-hitch ball for pivot. It worked very well-so well, in fact,



Chesabeake

slat our

Bahamian sculling oar (horizontal stroke)

> Bucker sculling oar (bent horizontally for horizontal stroke)

5%

Ducker scutting oar (bent vertically for vertical stroke)

Martin oal

for vertical stroke

that Jim Benson, a bystander, drove home and returned with a homemade yuloh that he gave us. He'd given up on it, apparently not having fully worked out the pivot for it before finding a buyer for his boat. Sad. With a block attached underneath to receive our trailer ball, it turned out to be a better, wider-bladed propeller than the one we had cobbled. Our time together was up before there was opportunity to lengthen its loom to try it out on a lobsterboat.

Despite our amateurish handling of a homemade yuloh in a miniscule craft, the thing seemed to have real potential for someone who doesn't trust his engine. The stroke is easyjust back and forth, with a yank on the lanyard at the end of each pass to capsize the oar into the diving angle for the stroke to follow. The properly timed yank on the lanyard also gives the blade a bit of a kick outward and upward, increasing the power of the stroke considerably. Deft steering with a yuloh would require more skill than we developed that day. The yuloh seemed to be an automatic sculling machine that develops a perfect horizontal stroke without any need for skill to keep the oar from sliding. A full description and diagrams of this implement can be found in G. R. G. Worcester's The Junks and Sampans of the Yangtze, Naval Institute Press, 1971. This authority on Chinese Watercraft notes:

"It would seem that the junks from Chusan, South Chekiang, and Fukien, and indeed many seagoing junks, have generally straight yulohs, which is probably the most primitive variety. The curved yuloh is more generally found on the rivers.... The man or woman at the yuloh holds the rope in one hand and with the other works the yuloh to and fro in a circular manner. If more than one is at the yuloh, the second works the rope while the others work on the loom."

I'm tempted to draw an illustration for Worcester's next paragraph, which talks about eight men on the loom and two on the rope: "... The rope-men throw themselves backwards with great abandon until they lie almost flat on their backs, their opposite members doing the same thing, bringing them to their feet again." But I'll leave this drawing for the future and show, instead, how the oar actually worked during our



trials at Camden. Man! Can you imagine a yuloh the size of a small telephone pole being worked this way by your friends en route to an outer island beach party? What a peoplemixer that would be.

A sculling oar with a shaped blade was brought to our Camden sculling meet by Douglas Martin, designer and manufacturer of ocean rowing craft, based at Kittery, Maine. This oar, with an appended upright grip, has one leading edge obviously intended for use in a vertical sculling stroke. It was mounted through an oarlock at the end of a slim cross-deck timber much in the fashion of the ducker oar mounting on Ben Fuller's gunning float. Those who tried Martin's oar said it was efficient and easy to use. I don't know whether or not the oar was patented. He allowed us to measure it for publication. I offer it here in a dimensioned perspective.

Ben Fuller's subsequent article, "Sculling: A Lesson in One Oarsmanship, Part I," appeared in Small Boat Journal No. 45, (October/November 1985). It is a clearly written treatise on handling a straight sculling oar in the horizontal, vertical, and reversestroke modes. Along with this how-to is a good deal of colorful observation of aboriginal sculling in this or that kind of boat as Ben has witnessed it in various parts of the world. I must here confess that we coined the words "horizontal," "vertical," "falling-leaf," and "slalom" as a means to sort out the various ways that sculling oars are handled. Part II of Ben's article, "Sculling: Putting Your Best Oar Behind You," appeared in Small Boat Journal No. 46 (December/January

1986). It covered the bent oars of the duckers, the yuloh, and Doug Martin's scientific blade.

ow all that remains is for you to learn to scull, if you haven't already. If you have neither boat nor oar, practice the various strokes with your hand in the bathtub. Grip your elbow (the pivot point) with your other hand while you do it. Go out to a dock. Make a "slat" oar. Try it there. It's fun, and who knows, knowledge of sculling may get you home someday if you find yourself up a creek without a paddle.

Sam Manning learned how to scull when he was eight years old. His stepfather, a civil engineer experienced in building harbor works, taught him, and Sam's been at it ever since.

Action of a home made yuloh in a 14' flatbottom skiff -



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I have found this very old design in various forms, including wood, ivory, stone and in illustrations by Leonardo da Vinci, but to the best of my knowledge, we were the first to achieve this apparent endless weave in solid gold. The four strand bracelet requires forty-eight feet of gold wire. All bracelets are individually woven, therefore, no two are exactly alike.

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Letters from the Masters

Edited and annotated by John Streeter

n the following pages are excerpts from two personal tetters written in 1935 between N.G. Herreshoff and W. P. Stephens. These letters have been selected from the correspondence between these two gentlemen that has for years been kept in the vault at the New York Yacht Club. Given originally to the Club by W. P. Stephens's daughter, Eleanor, it remained undisturbed until Commodore Henry Anderson, recognizing its tremendous value to students of history, asked that the letters be transcribed for possible publication. Working with John Streeter, an avid yachting historian, and with the approval of the Herreshoff family, the Club sought and found support for the transcription and supplementary research efforts. The result is that the collection of letters has now been organized and annotated by John Streeter, and The Last Letters from the Master: Nathanael Greene Herreshoff, His Correspondence with William Picard Stephens, will be published for fall distribution in 1991.

Because of our interest in the life and work of Messrs. Herreshoff and Stephens, and especially in light of our two major books, Herreshoff of Bristol and Traditions and Memories of American Yachting, we thought we would excerpt from two of the more personally revealing of the letters, in order that we might all understand these men a little more clearly.

It is ironic that, during their lifetimes of work, the two gentlemen had not met in more than a passing fashion, and that their correspondence and friendship developed when they were well along in years. (N. G. Herreshoff died in 1938, and W. P. Stephens in 1946.) It is also a shame that we have been forced by space constraints to excerpt from these letters, and to edit some of John Streeter's annotations, but we feel privileged to be able to publish these at all.

Jon Wilson



Nathanael G. Herreshoff, in a formal portrait thought to have been made between the years 1915 and 1920.
An exchange between N.G. Herreshoff and W.P Stephens



Courtesy of Eleanor Stephen

William P. Stephens, in a portrait made when he was in his mid-50s, around 1910.

LETTER 13

August 31, 1935

Dear Mr. Stephens:

Your paper on Old Time Boat Building in New York is most interesting, and gives me much information I did not know before. That about the Whitehall boats I am very pleased to know, for I only knew of them by what I had seen since my first cruise to New York in 1860. All I have seen were of the "cutdown" type designed for easy rowing with single or double sculls—very pretty, sharp lined boats.

The breaking up of WHIRLWIND is lamentable, for I believed her to be of fine form, though failed due to minor errors, and by blundering of her managers.

METINA [MITENA] at present has not a good standing in her class; perhaps she may do better when understood and properly sailed.'

The photos of your little craft are interesting, and she is worthy of a better name. Also I am wondering why you call her a "canoe-yacht" when she is not of canoe size and only one of many craft of all sizes that has not a transom?² SNICKERSNEE appears to be quite heavily ballasted for her size.

I am wondering if you have seen anything of my last single-handed cruiser around the Sound, that I had in Biscayne Bay. Her original name was PLEASURE and the last I heard she was called MUMSY, 30 ft. o.a., 24 ft. w.l. 3." For the purpose intended, she was a most satisfactory craft.

Yes, I remember AGNES very well, and also TRITON, her antagonist. TRITON was modeled jointly between John and myself. For ballast, she had cast-iron centreboard logs instead of oak. Most of the rest of her ballast (which was all inside) was of lead, and as originally rigged by a sail plan I made, she had a fore staysail with stay to the bow, and a good, fair-sized jib tacked to near bowsprit end. In her initial trials here, this rig proved most satisfactory, but soon after going to Brooklyn the sailing master induced Mr. Thayer to change the headrig to the then conventional type. I think this was about the first schooner yacht in our section to be fitted with the sensible English type of head-rig.'

Sunday, Sept. 1. In thinking over my remarks of yesterday, perhaps you are justified in calling your little craft a canoe-yacht since you have been so identified with canoes, and her hull has just a suspicion of resemblance to that type of small open boats." Do not you think that as a cruiser and pleasant day sailer SNICKERSNEE would have been better if her hull had been larger and with a

Notes on Letter 13

We here study the longest sustained piece of historical material ever known to have come from the pen of Nathanael Greene Herreshoff, a document of importance to all who cherish the traditions of American yachting.

¹ MITENA is here misspelled, reminding one that by this time Mr. Herreshoff was far more likely to have been told how she fared in the races than to read about her himself.

² Mr. Herreshoff never made any pretense

of keeping up with distant or narrow aspects of boating. The term "canoe-yacht" had been used for half a century.

3 PLEASURE is still sailing on Long Island Sound.

4The conventional American rig called for a single lowerjib, often with a full-length club on the loot, no better than that fitted to the AMERICA in 1851. In the absence of a stay to the stemhead, an accident to the vulnerable bowsprit threatened the loss of the foremast if not the entire rig. Almost all foreign craft of any size divided the lower headsails with a stout stay to the stem—here referred to as the "English type."

5 Capt. Nat not only thought things over before resuming his writing the following day, but it will be noted at the close that he did not finish the composition of this long letter until 15 days later. There is evidence that he worked little less draft and sail area? For anything but racing, I would much prefer placing the weight nearer the hull and use a centre-board. Reduced draft is so much an advantage incruising.6

I am sorry I have no records of the boats and boat sailing in Narragansett Bay. For the early times I only remember a little of what my father told us boys. That about his uncle James Brown's experiment with outside ballast, I have told you. I am not sure, but I have the impression that boat was of the two-masted type, or periagua, and was used principally in trips to Prudence Island, where John Brown had extensive holdings, and his son James looked after them. 7 The sail-boats of the Bay were generally of bold keel type of hull with single mast-"Newport rig" or "Point boats" as the Newporters called them. But there were many with two masts, and I can remember three or four around in Bristol. These boats of Bristol were 28 or 30 ft. long of light draft, having centre-boards. Regularly timbered and plankedthe foremast stepped near the bow and, 1 think the foresail generally was loose-footed with double-sheets. They were used for light freighting and principally in gathering seaweed around the shores and were usually spoken of as "seaweed boats."⁸ My eldest brother, James B.H., designed and had built in 1854 for Hon. John Whipple of Apponaug & Providence, a boat of this type but with finer lines than usual and fitted with tall masts and rather high narrow sails. This boat, SACHEM by name, entered a regatta in Providence River when new, and she handsomely beat the fleet.9 At this period, most of the boats of Providence had become of the centreboard type and their mast and sail were lower than the old type of single-stickers.

By my father's tales, the older boats had considerable depth of body and a dead-rise of 30° to 40° and heavily ballasted, usually all stationary, but in the regattas, part of the stationary ballast was removed and the weight removed was made up by sand or gravel bags and men enough to shift them to windward, and so carry all sail in very strong breezes and make exciting sport.

I can well remember the informal and very interesting races some of these Bristol boats would indulge in. The days selected were when there was the afternoon seabreeze that blows straight up bay and windy, and everyone needed to handle all the sail used. They would start in an imaginary line across direction of wind, with good water between, for then it was considered unsportsmanlike and an insult to get on the weather bow of an adversary or hold her back in any way to spoil her chance for success. Of course, this gentlemanly feature would prohibit an overtaken boat changing her course <u>either way</u> to prevent a faster overtaking boat from taking the lead, but when in the lead, not to change her course to continue to cover the other boat, but attend only to sailing one's own boat. This was quite a different aspect of yacht racing from the present. "

These sails were generally the cause of very pleasant gatherings of those taking part to talk over the events in the rivalry and generally held in the shop of the block and pump maker of the town, but sometimes in my father's boat house, across the harbor at Popasquash. As a little child I can remember the animated talks, but don't [remember] any hard feelings at parting.

At the age of nine years I began to be my brother's [John's] companion to lead him about, or I should more properly say to be dragged about. He had lost his sight a year before when he was 15. At that time he had nearly finished a small sailboat-having fitted up a workshop in which he had quite a complete chest of tools and a very fair foot-lathe for those days. These he had acquired by his own earning in raising peas £ other garden crops, and in laying up ropes from cotton twine, for he had constructed a three-spindle rope-laying machine a year before. After he lost his sight and our family moved from the "Point Pleasant Farm" at Popasquash to a residence in Bristol (1856), my father helpedJohn finish his boat, METEOR, 12 ft. long. I then began my sailing career. John had the knowledge and will and I had the sight; which of course was absolutely necessary in sailing, or going in the water. I was only a light puny boy and it was a tough job for me and real brutal at times, for John had a violent temper when things did not go right. However, with this training I learned to do many things that were very useful while others of my age were playing games." I not only became quite skillful in small boats, but learned to use small tools-directJohn's tools in turning, and at 10 could temper all small tools, [such] as drills-taps & dies, for they had to be made in those days. John, at Bristol and without sight, had fitted up quite a little machine shop in one room and a small boat building shop in an adjoining larger room in an out-building at our new home that was intended for servants in former days, and here I spent much of my younger days in helping John.

After sailing three seasons in METEORJohn wanted a larger boat, and he sold her for nearly enough to buy material for a larger boat—20 ft., which my father and John modeled and built in winter of 1859—60; and under

over the text and recopied part of it.

6 From the building of ALERION III in 1912, all Nat Herreshoff's own boats had been centerboarders. In his later years, he may have done more sailing in shallow Biscayne Bay than in Narragansett Bay, so his tastes had shifted from the deep-draft boats of early years.

⁷ Here "periagua" is used more to suggest the lack of headsail rather than to recall a craft that may have been built a full 140 years before N.G.H. recorded this impression.

8 Note the local differences found in Newport, Bristol, and Providence. These were overlapping areas with the centers separated by only a couple of hours' sailing. Students of such variations can equate the boats he described with Block Island boats and other fishing craft.

What yachtsmen are inclined to overlook is the great cargo-carrying use of surprisingly modest boats—e.g., the transport of seaweed, often to the docks of farms on Narragansett Bay.

9 That James Brown Herreshoff, Nat's eldest brother born in 1834, was the 20-year-old designer of the SACHEM is a reminder of his considerable contributions to marine engineering. With N.G.H. he also developed the coil boiler, which was a factor in the excellence of the Herreshoff Manufacturing Company's fast steam craft. In addition to his achievements in engineering, his successes in the chemical industry brought him a considerable fortune.

10 These were polite, almost courtly, but true tests of the merits of the competing boats—in refreshing contrast to the "slay the foe" tradition, where the yacht is no more than a vehicle to carry the warrior into battle. Nathanael Herreshoff's heart was always with the vessel, not with the man seeking praise for doing no more than pointing the boat in the most logical and advantageous direction.

11 It is beyond the province of any editor to comment on this revealing and touching passage. We can only be grateful that his brother's their direction I had the job of getting sections from the model and of tabulating expanded measurements for the moulds, also making drawings for sail plan.¹² SPRITE was launched June 28, 1860—the day the then-great Steamer arrived in New York.

About a month later JULIA (3rd) & SPRITE made a pilgrimage to New York-principally to see the GREAT EASTERN.¹³ Leaving home one Monday about sunset, we stayed overnight in Newport, leaving there next morning about 6 in a dense fog and light air-took a northwesterly about sunset at Bartletts Reef L[ight] V[essel] and passed down East River at 10 a.m. Wednesday." Anchored at Hoboken close to Com. Stevens' miniature yachts, one of exact model of MARIA at !4th or 1/5th size, and the other the contemplated lengthened and rerigged schooner MARIA. 15 Stayed two days to see the G-E and New York and passed Friday night at dock in East River abreast Blackwells Island. Left next morning at 6 and soon took a fresh southerly and so home at 8 o'clock next morning (Sunday) 26 hours from New York. Some of a trip for 20' and 21 1/2' boats. SPRITE was a very fast boat and was easily the fastest in Narragansett Bay. In her I sailed and won my first race at $12 \frac{1}{2}$ years age. Even when 25 or 30 years old and we thought we were building much faster boats, my brother James acquired her after being laid up many years, and gave us a real surprise. She was given to Mr. Ford some years ago to place her in his Museum at Dearborn and I suppose she can be seen there. "

Even when in my early 'teens, I had the knack of sailing boats & yachts to win, and was in demand in every available race; generally in my brother John's boats, but often in others. The first two boats of my ownership I built myself in Nice, France, in 1874, being banished from home to rebuild my health. One of them is in my boat-house now. 17 Since then I have owned for my and my family's pleasure 28 yachts, the largest being a 93' steam yacht and all of my own design.

Turning again to your last letter mentioning "Tom" Clapham. We met him first in 1863 at Vineyard Haven Camp-meeting. He and his college chums were cruising in his first QUIVIVE, and we in John's KELPIE. Tom Clapham and his chums claimed their QUI VIVE would beat any yacht of her size—to which we took exception! And so an agreement was made to have it out next day. The 55 ft. sloop yacht WHITE WINGS was in the harbor and her owner very graciously offered to lay the course, start us, and be umpire. KELPIE handsomely beat QUI VIVE, very much to Clapham's & his chums' chagrin, and they wanted to try it over, but the result was the same.

The keel-centerboarder PLEASURE was built at the Herreshoff Manufacturing Company in thefall of 1924 for sailing in Biscayne Bay, Florida. Her original rig was sloop, but N. G. Herreshoff converted her to a yawlfor the winter of 1925, making her easier to handle.

This led to Tom Clapham giving John an order for a larger yacht and starting him in the boat-building business—then at 22 years and without sight. 18 And so QUI VIVE 2nd came out in 1864-42 1/2' o a., 38'w. l., rather light draft c [enter] b[oard] as their home was then up the Hoosatonic River. Tom owned her for several years until the family fortune dwindled. In the meantime he married his mother's companion—a young woman of fine ability, and they became a most united couple.

In 1866 I entered the Mass. Institute of Technology for a short special course in Mechanical Engineering (there was none in Naval Architecture at that time). In fall of 1869 I obtained position as draftsman with the Corliss Steam Engine Co. and was with Mr. Corliss for nine years; and it may be interesting to you that I was one of a few that assisted and worked out the design of the then great Corliss Engine at the Centennial Exposition in '76 and had charge of it for starting up at time of opening of the Exposition. My position was below the platform with the engineer who was to take charge after I

blindness and his own innate genius combined to enable such a far-reaching light to shine forth.

12 Beginning with his participation in the building of the SPRITE (1860), N.G.Herreshoff practiced his trade for exactly 75 years. His last major effort was the model shaped to provide the offsets from which BELISARIU'S was built in 1935.

13 The GREAT EASTERN was not only the world's largest steamship when built in 1857, but remained so until 1902, when she was Finally surpassed by the White Star Line's CELTIC.

14 This ranks as one of the fastest passages

ever made by a pair of non-planing small craft. The stretch from Bartletts Reef to any place which can be referred to as "East River" is something over 75 miles—a truly impressive distance to travel in 14 hours in these modest craft.

15"Com.Stevens" wasEdwinA.Stevens, the third commodore of the NYYC (1859-1865), brother of the founding commodore, John C. Stevens. Both had been members of the AMERICA syndicate in 1851. Before that he and brother John had the immense MARIA built in 1846. After the first commodore died, Edwin became the sole owner.

Of the two miniature yachts, the little

schooner must have been found satisfactory because the big MARIA was converted to schooner rig. Note that the two "miniature" yachts, at around 24', were larger than either of the visiting cruising craft from Bristol.

16 The SPRITE is now on display at the Herreshoff Marine Museum.

17"Now" was 1935 and the boat was NGH's RIVIERA, "about seventeen feet long," in which he and his blind brother Lewis made their remarkable passages in Europe in 1874. The 1938 hurricane destroyed RIVIERA and the boathouse that had protected her for much of her 64 years.

18 Prior to this year, 1863, J. B. had been a

left, and where duplicate controls were. After a few days I left for home on a vacation and then I got my first catamaranafloat(AMARYLLIS)toplaywith.19

During all the period while at the M.I.T. and Corliss Steam Engine Co., I was well occupied evenings by making for John all his drawings and many of the models of his craft. The business gradually turned from sail to steam-driven production; John was trying to compete in prices with those doing inferior work, and got in the way of not attending closely to his own shop and workmen, and so got in debt. In 1877 he obtained some good orders for fair sized vessels, and was anxious for me to join him; and so, after he agreed to my precepts which in outline were-To attend strictly and fully to our own business, To improve the quality in every way of our products, Not to borrow any money for capital, nor spend money on the plant until we had earned it. Let our advertising be the work we have turned out. John's creditors were good, and decided not to pinch him and so Ijoined himJanuary 1, 1878. 20 Having some good orders and plenty of work to do, for this was the recovery

season after the Civil War, we buckled to and were able to get the old place on its feet. It may be amusing to record, one of John's orders was from a man out west contracted with U.S. for some important mail route across prairies and had visions of a steam-carriage for the route instead of horse-drawn carriages and had offered John a good sum for a successful one. I designed and we built one the following winter that ran all night, but it had not power enough for rough roads or hills. We were too busy with marine work, so simply dropped doing anything more with the steam carriage.21

There is another amusing thing that occurred while I was at Corliss's; Benjamin Davis of Providence built for Harvey Flint, also of Providence and a most worthy young man, a 25 ft. cat-boat that was very fast and in 1875 and 1876 was winning every race about the Bay. It got to be given out in boating circles, "The Bristol boats were no longer in first place and Providence had it." Being in Providence, I heard this remark too often. There were a couple of bright young men of Providence who were much interested in boat sailing—George &

skiff and small-boat builder using progressive methods, but he had not been commissioned to turn out vessels deserving the designation "yacht," other than what was built for the family, notably his own KELPIE (1862), 26'9" LWL.

19 AMARYLLIS was surely the world's first really successful catamaran. She won the prize in the Open Centennial Regatta at the western end of Long Island Sound, beating the sandbaggers after the breeze came in. Her sometimes alarming behavior prompted improvements, so TARANTELLA was built in 1877 with hulls 6' longer, making her 31' overall.

20This agreement, never disclosed, was understandably misconstrued to be a downthe-middle equal partnership. This it apparently was not. Even though N.G.H. came into the business at a time when creditors were being difficult, the firm was J.B.'s and he never relinquished effective control, even though Nat had the right to curb certain actions. It has been pointed out that in 1899 they drew equal salaries of \$125 per week. How the Herreshoff Manufacturing Company stock was apportioned between the two stockholders might be learned from the probated will of John Brown



Frederick Gower. In the fall of 1876 I made an agreement with them that I would build a 25 ft. Cat-boat and they were to take her after she had won in the first general regatta of the Providence Yacht Club in 1877 or had won 2 out of 3 match races with WANDERER of Harvey Flint. I designed and John built for me the GLEAM, and, incidentally, this was the first craft to be built on the system I had worked out-of making a complete mould for each Umber over which they were steam-bent and floor timbers attached. The upper end of each mould carried up to a base-line and knee-clips attached to secure to a leveled up floor and bottom up and after bevel fairing the planking is screwed on-thus having the form very exact to design; which is far from the case in the ordinary method. This method has been used by the H.M.Co for all craft under about 75 ft. x 15 ft. o. a., nearly 59 years. The N. Y. Y. C. 50 footers were planked bottom up. This system was expensive for unit construction but it was carried out.

The first meeting of GLEAM with WANDERER was the early general Regatta of the Providence Yacht Club.

There was great excitement in yachting circles and there was a large gathering of people & boats at Rocky Point to see the contests. The day was with very fresh southerly wind & light rain—course windward & leeward fully 15 miles. GLEAM beat WANDERER 8 min. and WANDERER was 8 min. ahead of the next boat, so Gowers became owners. Later, the Providence Y.C. held another Regatta over same course in a fine clear day S. S. W. mod. breeze and the Gowers asked me to sail GLEAM. The result was same-8 min. and WANDERER 9 or 10 min. ahead of the next. Fred Gower later became interested in telephones with Bell & others, and went to England, and had GLEAM shipped there—where he lost his life in ballooning, and it is very interesting that GLEAM became property of Geo. A. Cormack later and now Secretary of New York Yacht Club but then a young man inEngland.22

You probably know of GLORIANA's career, but not her origin. Commodore E.D. Morgan first came here in summer of 1890 in his 40 footer MOCCASIN (or TOMMYHAWK, I forget which) to see the shops, and I

Herreshoff, but no writer seems to have searched and printed his findings.

21 Before a practical internal-combustion engine could be built, the inducements to make a steam-powered road vehicle were great With the powerful design, engineering, and manufacturing capabilities of the Herreshoff team, they had a far better chance of building a practical steam automobile than the Wright brothers in their bicycle shop had (at a comparable stage) of putting together a mechanism that would fly through the air. But if the Bristol brothers pursued the building of a road vehicle, the death of Edward Burgess in 1891 would, in all likelihood, have resulted in the AMERICA'S Cup being carried off to England in 1893, thus anticipating the loss to the Australians by 90 years. 22 George A. Cormack became more of a figure in American yachting than his appointed office of Secretary of the NYYC suggests. As his financial resources dwindled, it was quietly arranged that he be permitted to live in the 44th Street clubhouse without any charge in recognition of his elegant presence as official host. This place he held for many years and, as a true Englishman, he had an infallible

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The cat-yawl CLARA was built in 1887, and she carried these fully battened batwing sails for a period before converting to traditional gaff-headed sails.

had the privilege of showing him about and having a very interesting talk. On leaving I said I was about to take a little sail in my cat-yawl CLARA and would he like to go with me and transfer to his 40 footer down the Bay. He took the wheel and he was astonished the way we held to the 40 footer in beating to windward. He soon came again and ordered a 27 ft. steam launch and also a 27 ft. cat yawl with fish-well (PELICAN) for his brother-in-law and soon after a 29 1/2 ft. cat-yawl (GANNET) for himself. The launch was ready early in November and PELICAN 11 th of Nov. 1890 and CLARA was kept afloat to try her out. With fish-well corked and lead in bottom she appeared quite able to hold CLARA. A little later Royal Phelps Carroll met Mr. Morgan on train and mentioned he was thinking of building for the new 46 ft. class and Mr. M. told him he better try Bristol, so he came here and contracted for a 46 footer. The design was worked out and we were about ready to begin work when we had a letter from Mr. Carroll informing us he hadjust become engaged to marry and he did not see how he could support a yacht and wife at the same time and

asked if we would release him from the contract and if so what the expense would be. In reply we congratulated him and said we would cancel the contract without expense if he wished. Later, about 1st Feb 1891 we had a call from Com. Morgan, when I showed him the model & plans for the 46 footer made for Mr. Carroll. He appeared well pleased and about a week later he gave us an order to go on and build this craft which in time Mrs. MorgannamedGLORIANA.23

In the afternoon sailings outside of Newport GLORIANA had shown her ability to beat BEDOUIN-70 ft. cutter even up. This so impressed Archibald Rogers he disposed of BEDOUIN and ordered from us a 46 footer in fall of 1891 (WASP). Mr. Morgan saw the plans and a little later we heard he had sold GLORIANA.24

In late summer of 1892 Mr. R.P. Carroll gave us an order for an 85 ft. w.l. sloop for ocean cruising which was originally intended for a moderate sail plan. Later, he expressed the desire of taking the craft to England and have a try with the English yachts, and it was decided to have a larger sail-plan. Mr. Carroll, perhaps unwisely, informed his British friends of his intentions and this awakened the

British yachtsmen; they had no outstanding yachts of that class, and three were immediately started-BRITAN-NIA, SATANITA & CALLUNA (it being supposed VALKYRIE was already secretly under way for a Cup challenger) and any of them out-classed our NAVAHOE for racing before shewasafloat.25

Including NAVAHOE with our orders for steampowered craft we had before us a fair winter's work, but a little later a challenge for the "America Cup" was received, and Archibald Rogers came to us to build for his syndicate a defender which we could not refuse. It was unfortunate that he insisted on this 85 ft. w.l. yacht being keel and not to exceed 14 ft. draft, but I did as well as I could. 26 However, with Mr. E.D. Morgan and his friends there was serious doubt of this light draft keel boat doing the trick, and this led to Mr. Morgan forming another syndicate of his friends and insisting we build another defender with centre-board and do our very best to get her out in time to tune up; and he gave her management to C. Oliver Iselin. All this extra work of designing and superintending the construction put a

eye for which visiting gentlemen deserved attention and which could be bowed in and out with minimal ceremony. On the practical side, Mr. Cormack was in the afterguard of RESO-LUTE in 1920 and of course served on many committees.

23E.D.Morgan, W.P.S. 'schoiceforgreatest American yachtsman, was to become vice commodore of the NYYC in 1891 and commodore in 1893. He had ordered Burgessdesigned 40-footers in successive years without getting a reliable winner. TOMAHAWK (1889) had been followed by MOCCASIN (1890), the sloop against which the smaller CLARA went so well. What Capt. Nat does not bring out is that Morgan was a compulsive boat buyer who

bought 12 or 13 Herreshoff Manufacturing Company yachts and launches over the years (not to mention Burgess's largest schooner, CONSTELLATION, 134', and Watson's finest early steam yacht, MAY, 240'). In addition to the steam launches he owned and the PELI-CAN and the GANNET he had acquired in 1890. Mr. Morgan had already ordered the 98' fast steamerJAVELIN fur delivery in 1891 when he picked up after Carroll and contracted for GLORIANA. By the summer of 1891 he had five or six Herreshoff boats mixed in with his other holdings in Brenton Cove, Newport.

What is difficult for many to understand is that no one thought of the Bristol brothers' yard as a source of fast sailing yachts in the

1870s or '80s-in spite of SHADOW'S many victories, largely scored in Massachusetts waters. It can therefore be seen that the whole era of Capt. Nat's winning racers, Cup defenders and all, was ushered in by a steam yacht buyer noticing the high qualities of CLARA. No broader change in yachting ever grew from one short sail

 $24\,\,E.\,D.\,Morgan\,was\,soknowledgeable, he$ recognized from the model that WASP would be a distinct improvement over his new and unbeaten GLORIANA, which he promptly sold. It took real wisdom to see that Capt. Nat was about to make another big advance in his second attempt at major race yacht design. Parenthetically, it should be noted that in the severe tax on me, but we got through all right!

It was learned that at time of challenging, Dunraven already had the challenger behind closed doors, so we were asked by our clients to exclude all strangers and news reporters from our shops. This turned out to be annoying and a nuisance, for we were continually pestered by those young men who were sent out to gather news to fill up their columns by unprincipled persons and to steal information and even drawings if they were not given voluntarily. And if we protected shops and rights too well the young pen-wielders would attempt to belittle us and our products in their writings whenever possible. Even today this attitude is noticeable and carried on by a new generation of reporters in their columns-being instructed that way as we never advertised in the papers our business. I am sorry to see that you claimed to be one of this tribe of reporters for your historical writings and your appetite for gathering historical facts, which I so admire, is quite another matter. Perhaps your training as a reporter gave you a feeling to disparage or ignore in your writings any products of the Herreshoff Manufacturing Co. 'though getting merit from the owners and all others interested.

I hope you will excuse the rambling of the long epistle which I have been penning while sitting up in bed, a little, for several days. Perhaps you will find some historical facts that have come to me that are worth recording. I do not care to have my writings published in the periodicals but you may quote from them what you think useful, only giving credit to the source from which facts are obtained.27

Although it has been a little annoying by reporters' falsehoods published as well as many of the 2nd class sailing masters' tales and misrepresentations, because not getting "rake-offs" that they did get from many other shops, 28 I feel very content by many yacht clubs voting me to Honorary membership. They include the Boston Yacht Club in 1887 (or '88?), the New York Yacht Club and 6 or 7 others. Also the American Society of Mechanical Engineers. Brown University gave me a diploma as Master of Science in 1898, and I have diplomas from a few more Societies.

I hope you are keeping well and have been able to get some pleasant sailing, as the summer went on.

I am

Very truly yours,

Nathanael Greene Herreshoff September 15, 1935

LETTER 14

Dear Mr. Herreshoff:

The conditions which you picture on Narragansett Bay are so different from those prevailing about New York and Boston at that period that I am at a loss to account for them; for one thing, the winds were stronger and more true, and there was more deep water; the yachts were not driven to mud flats for their anchorage; so deeper and abler models prevailed. I think, too, that the local body of yachtsmen was more closely knit socially, there was less commercialism and no professionalism, making an ideal yachting community.

Evidently you do not approve of the name SNIKER-SNEE, but it appealed to me for three reasons: I can find no other yacht of the name; it is a very ancient sea term; and it suggests quick cutting, as a vessel does in the water. I have done many bad things in my time, but only once have I given the same name a second time to a boat; I have the greatest dislike to the practice of stencilling the same name on a series of vessels. To me, any vessel is much more than a mere combination of wood and metal; she has a personality of her own which deserves recognition by an individual name.

My first Rob Roy canoe, 1 14 [feet] x 26 [inches], in which I cruised to Philadelphia and back in 1876, was named JANETTE, after a pretty young Scotch girl of my own age; she died only last year; I still have the little red flag, my first private signal, which she made me. I repeated the name on a new canoe of my own design; patterned, as far as I knew how, after Baden Powell"s NAUTILUS, which I built in the following winter; I thought that she was a schooner, but I now consider her a ketch, a term unknown in those days. I gave her masts the same rake as those of AMERICA, 3 inches to the foot, so when the wind fell light the fore boom swung in and hit me in the head. - In digging through a great pile of old papers I have found my log of this cruise, which I am sending you in a mailing tube, as this old paper is very brittle and will not stand folding. 3

SNIKERSNEE comes from two very old words in Low Dutch, "snick" and "snee," both meaning to snip, nick, or cut; its direct meaning is a sailor's knife. George Borrow in his book, "The Bible in Spain," tells of a fight in a Spanish inn, in 1835, with what he calls "snick and snee knives," and Marryat uses the same term in his "Snarleyow." Thackeray uses the word in a humorous sense in his poem "Little Billee," and in "The Mikado" W.S. Gilbert makes Koko "draw his snikersnee."

actual racing, the well-handled GLORIANA stayed fairly close to the new vessel.

25 Mr. Carroll was a man of odd tastes and quick temper, but it is more than curious that he ordered an 85' LWL cutter, of all rigs, for "ocean cruising." Surely he had racing in mind—and so did N.G.H., in all probability.

26 Not long after 1893, the idea of an owner, even someone with Mr. Rogers's experience, dictating in this manner to Capt. Nat would be laughable. The prescribed but inadequate draft of barely 14' was nothing but the maximum depth over the cradle at the end of the ways. Before the beginning of the 1895 season, the restricting ways were extended into deeper water so the more perfect DEFENDER could draw a lordly 19' and use every foot to advantage.

27Mr. Stephens adhered to this stricture and wrote that portion of his *Traditions and Memories of American Yachting* headed the "The Herreshoffs of Bristol"—a rich ten chapters without mentioning that the major source was his direct correspondence with Capt. Nat. He would gladly have printed his indebtedness to the master designer, but the prohibition was honored, even though Herreshoff had then been dead several years.

28 The prejudice of professional skippers against the most important American yacht yard, for the simple reason that it refused to give them a percentage of all expenses incurred in repair and commissioning, was widespread. Managers of other yards, when talking to yacht owners, claimed to have firm prohibitions against "rake-offs," but there were numerous ways of charging paints and supplies so that cash or its equivalent got to the poorly paid captain.

Notes on Letter 14

1 To this day in Britain, "Rob Roy " defines the decked sailing canoe advanced to instant fame by Capt John MacGregor, who published *A Thousand Miles in the Rob Roy Canoe* in 1866. It should be remembered that in mid-Victorian days the name "Rob Roy" would not only have been associated with this small, swift, advenNothing has given me so much trouble in my thirty years with the Yacht Register and the work which I still do on the NYYC. records as this senseless duplication of the same name.

As to the canoe-yawl and canoe-yacht, canoeing took root about the English coast in 1866, with local branches of the Royal Canoe Club on the Humber and the Mersey. These rivers, virtually arms of the sea, with 20 feet rise and fall on the former and 30 feet on the latter, were not fit waters for craft 14 x 18 or 14 inch planking and weighing less than 100 pounds. They were soon displaced on both rivers by larger and more able craft, of the same general model but from 16 x 4-6 [4'6"] to 18 x 5, half-decked, with some ballast and often a small lead keel, a tent over the boom giving "accommodation" in cruising.

As you know, the word "yawl" has a meaning entirely apart from the rig, its original form is "jol" or "jolle," of unknown but presumably Scandinavian origin; we still have the term "jolly-boat." These early canoe-yawls were actually yawl-rigged, usually with main and mizzen but sometimes a jib as well; some keel and some centerboard. The Humber Yawl Club, an outgrowth of the Royal Canoe Club, was composed of young men who owned these craft, many of them designing and building their own boats; in the early days of the Club they would sling six or eight or more of the craft aboard a steamer at Hull, lower them the next day in Holland, and make long cruises in Dutch and German waters.

As readers of "Forest & Stream" some of them wrote me and began a friendship which still continues with those who are still alive. I was strongly in sympathy with the class of small cruisers and the work of the Club and joined it forty years ago. By degrees the canoe-yawl developed into a deeper and somewhat larger craft, with a permanent cabin instead of a tent, really miniature yachts, and long ago I proposed the term "canoe-yacht" to distinguish them from the older and lighter type. SNIKERSNEE, designed in 1897 for the H. Y. C [Humber Yacht Club] book, as an American's idea of a British type, was my first attempt at a sharp stern, but I did not then know enough to run it out enough to improve the appearance and ease the planking of the counter. I still like this stern for a large yacht and can see no objection to it; certainly it gives a logical and consistent ending with every opportunity for a clean run and good buttocks; while the construction is light and strong.

In my early days in the New York Canoe Club I made the acquaintance of the early "cutter-cranks," and as my interest turned to yachting I naturally became a violent five beams to seven. I recognize the many advantages of the centerboard type and I think that I did full justice to it in the paper which I read before the Society of Naval Architects in 1895, 4 but personally I have been always more deeply interested in the development of the keel type; there are many others, not the least our old friend Commodore Munroe, who have similarly devoted themselves to the centerboard type. I have a later design of an improved SNIKERSNEE with longer and more shapely overhangs, especially aft, and generally better lines than in the first attempt, but I never have been able to build her. Perhaps it is because I never could hope to be wealthy enough to own a large yacht that I have been so deeply interested in such small craft as I could design, build, sail, and care for alone?

partisan of the cutter, which was then progressing from

I know PLEASURE, she was owned a few years ago by my friend Frederick Gade, who had a high opinion of her; she is a fine little single-hander, much more roomy and comfortable than SNIKERSNEE. As to three feet of draft, when I did take the ground if it was not too cold, I could shove her off by my shoulder under her bowsprit. When I started to design her I took Kemp's "Yacht Architecture" (the big quarto), a large atlas, and other books, and piled them on the floor to a height representing the top of the locker cushion; then I dropped my drawing table, which raises and lowers, until it just touched my head when seated on the books; this gave me the distance from cabin floor to cabin top as the basis of the midship section.

The ethics of yacht racing seem to have been on a very much higher plane on Narragansett Bay than about New York, where a man often had to go ashore at a waterside "hotel" after a race and fight for a prize before he got it. John Sawyer, who was referee and stake-holder in many of the old sandbag races, once told me that they used to get him into a hack and to the railway station before his decision was publicly announced.

Your early experience with boats and tools is most interesting to me, as we shared the same tastes and aspirations; but I was much less fortunate in having no means of realizing them. My father was an artist, with no knowledge of boats or tools, and though he in no way discouraged my ambitions, he could not afford to provide all that I wanted in the way of both books and tools.

What I wanted most as a boy was a canoe and a footlathe; the first canoes were imported from England and quite expensive; in those days a plain foot lathe for wood turning cost about \$75.00 and a small engine lathe, also

turous craft, but first with Rob Roy MacGregor, the hero of Sir Walter Scott's widely read historical novel.

To fully appreciate the impact of the canoe movement upon W.P. Stephens, who was to become the dean of American yachting journalists, one has to accept the fact that it took an unsuspecting world by surprise in the late 1860s much as board sailing—wind surfing has seized the imagination of young sailing enthusiasts just 100 years later. The young William Stephens went straight to the forefront of the movement and was soon known to its British proponents.

By 1885, Stephens was the recognized

eventually appeared in a dozen editions, of which the later ones included 50 plates. John Gardner, the greatest living authority on the subject, has declared that Stephens's *Canoe and Boat Building For Amateurs* was the most influential book ever written in the field. As late as 1933, Mr. Stephens was still the man to write to when England's most enterprising sailor, Uffa Fox, started his successful campaign to win the International Canoe Trophy. The story is told in his *Sailing, Seamanship, and Yacht Construction* (London, 1934), still enjoyed by modern canoeing enthusiasts.

American authority and wrote a complete

treatise on the subject of canoe building, which

Note that in listing the dimensions of JANETTE, the length is given *in feel*, the beam in *inches*. She was his first Rob Roy, built in the winter of 1875-76.

2 Here Stephens touches on the persistent fallacy that raked masts, projecting a racy quality, promise swiftness. As can be seen in the sail plan, the masts stepped in AMERICA had such extreme rake aft—a one-in-four ratio—that a plumb line from the head of the foremast would meet the deck about twothirds of the distance from the fore - to the mainmast, a configuration accepted only because of her fame. This heavy cocked-alt rig caused a number of problems. First, there foot power, upward of \$300. My father bought me a foot lathe, second hand, for \$20.00, with a crude wooden bed; I replaced this with a longer bed on which I could turn the shaft of a paddle 4-6 to 5 ft.; I have kicked many a mile, turning as large as a six-inch hickory head for a maul. I never have used an engine lathe, but all of the fittings for my canoes and small craft were worked out with a few hand tools on this old lathe.

I obtained my first canoe by building her myself, first "stealing the trade" by deliberately "snooping" about the many boat shops which lined the East River from the Battery to the Harlem River. There was no other way in those days; some simple articles on boat building were published in "Forest & Stream" early

in the seventies, but the first book on the subject which I had was written by myself in 1883. Tom Fearon, who was a good boat builder, praised it very highly, and Scott Matthews many years later told me that as a boy in the South he drove into town every week to get "Forest & Stream" and read my articles on boat building; and that it was these articles which first awakened a desire to build and gave him his first knowledge of how to build. 5

On a Saturday I would go into the city and start at South Street, near the Battery, going into a shop and asking the price of a canoe, rowboat, a pair of oars, or a paddle, and talking as long as I felt it safe; meanwhile watching what was doing:—the moulds set up on a plank with ribbands run around them, spiling the plank, etc. During the week I practiced what I had seen in my father's carriage house, going in on Saturday for another lesson, of course not in the same shop, as I never ventured to visit a shop oftener than once in six months. Had I been caught "stealing the trade" it might have gone very hard with me, as some of the builders were hard nuts. Later on I knew most of these builders and found them very good fellows; the workmen as a class were confirmed drunkards, but good mechanics.

In default of books and personal instructions I had to depend on watching men at work, and I soon found that if I watched from a distance, not putting my nose under saw or plane, and asked only a few intelligent questions, I usually received a civil answer; in this way I learned to

whet a plane fron, set the cap, and adjust the fron in the plane. Lacking books, I fell back on catalogues, of which I still have a great collection, some over fifty years old, of lathes and tools. In default of the elaborate mechanical toys which boys have today, my playground was among the numerous mills, grist, saw, felt, etc., within a radius of some five or six miles of Rahway: I knew all of them. I have had at one time seven waterwheels running in a brook, with dams and races, and a crude model of a gristmill and sawmill; the old kind with the big saw in a vertical frame. I also had a railroad, about 30 ft. long, with station and turntable at each end, switches, and a locomotive of my own construction moved by clockwork from an older toy. Unfortunately, in this work I had no advice or assistance, but had to rely on myself.

When it came to naval architecture, I was as badly off as in mechanical work; I had the lines of the Rob Roy canoe but did not know what they meant! I did have Peake's "Naval Architecture," written in the forties, and Thearle's "Naval Architecture" and "Theoretical Naval Architecture," but they might as well have been written in Greek as in English, as when I fell foul of such terms as "fashion timber," "cross seam," "harpin," and "cants," I was hard aground at once.

The Scientific Course at Rutgers in the early seventies was not much to brag about, it was in its infancy and with new instructors and inadequate equipment; but I was well grounded in descriptive geometry. 6 When I discov-

was the difficulty of getting adequate spread for the shrouds of a foremast which entered the deck only a small distance from the sharp bow. Furthermore, in all but strong breezes, AMERICA'S main boom had to be guyed out. On top of that, provision had to be made to get full use out of the boomless foresail.

The second problem with raked masts was the bothersome necessity to "boom-out" certain sails. There was firm British prohibition against this practice. Thus it was far from an improvised protest against the formidable invader: the rule had been in the books—on the Thames, at least—for more than a hundred years. The Royal Yacht Squadron committee graciously waived the rule to let Commodore Stevens enter the temporary flagship of the NYYC in the race on August 11, 1851. To the surprise of many of today's sailors, AMERICA did much of her best work off the wind with her squaresail set—for example, during her fast transatlantic passage and in her second and last race in England under U. S. ownership, against TITANIA.

3 This log of JANETTE, of high interest, still resides with the family.

4The paper W.P.S. presented was entitled "The Centerboard—Its Influence on Design, Its Value, and Its Proper Use." It was read at the third general meeting of the Society of Naval Architects and Marine Engineers, held in New York on November 7-8, 1895.

5 Scott Matthews (1869-1956) became a skilled builder who moved with the times, mastering business techniques and such aspects of mass production as could be applied to power cruiser manufacturing. The Matthews 38-footers and others were widely popular and set a new standard for low-speed amenities afloat at a fair price. The wood construction was high grade.

6 W. P. S. here does an injustice to Rutgers University, from which he graduated as a Bachelor of Science in 1873. Three years later he was awarded a Master of Science degree.

of Eleanor Steph

CSV



ered by some chance that the lines of a vessel represented only some simple problems in projection and rabbeting of planes the rest was easy. Later on I found in a second-hand bookstore a copy of "The Shipwright's Handbook and the Draughtsman's Guide," by L. H. Boole, who began his apprenticeship with William H. Webb in 1837 and was later in the employ of Donald McKay. 7 This book was a great help after I had learned the technical terms. Gary Smith once told me that after finishing his education with Capt'n Bob Fish he paid Mr. Boole \$25.00 to teach him the meaning of the lines of a design.

I fully intended to go to sea in the engine room or even the fireroom, but the depression continued until 1880. While at home in the winter I always built a canoe, and as canoeing was becoming better known and more popular by 1880 I sold a canoe I hadjust built and started another; so when the call came to go back to my \$7.00 per week in the shipyard I decided to stick to boat building.

On my first visit to Bristol, in 1885, I saw steam yachts up to 100 feet building in the way you describe, then entirely new to me. I first learned to build boats keel down, on plank stocks, but when it came to duplicating models in canoes I built a table or low bench with cleats across for each mould, and in a few minutes I could take off one set of moulds and screw in place another set for a different model, ready to lay the keel on top. 8

What you say about GLORIANA is most interesting, I had heard in a general way of GANNET and PELICAN, and that the model of GLORIANA was for R.P. Carroll, but the intimate details are very interesting. I think that E.D. Morgan was one of the great characters of American yachting, he and William E. Iselin, whom I still see occasionally, are an honor to the sport. I never have known what you really thought of my discussion of GLORIANA and the imaginary design which I made? This was not a fake, but the result of some two months of hard work in the fall of 1891; when so many were going off half-cock over the "GLORIANA bow. "9 I never saw her out of water, but I had a good photo of her in drydock, showing the forward keel profile; I also had a good photo of her at anchor, beam to, and upright, from which I could scale off the spars. I saw her sailing many

times, well heeled down, and I was aboard her twice, but with no opportunity to take measurements. I did have the official measurements as published, length, breadth, draft, and sail area; but these, as I now know, were not correct.10

I never shared the general opinion of the "GLORIANA bow" as an element of speed; but I laid her wonderful performance to general excellence of design and construction, the saving of useless waterline forward thro the rounding of the entrance, and to the sail area thus gained under the Seawanhaka rule.11 I would like to know whether you tried to incorporate in her any of that gain in un-measured length thro heeling which it is the aim of the quarter-beam measurement to prevent? Do you remember that I happened in at Bristol, in company with John Hyslop, just as you were about to launch WASP? I thought that you were taking a risk in holding the lever over the rope to check her. At that time we, of course, talked measurement and you gave us a formula including displacement; I had some such idea in the back of my head, as a preventive of both fin-keel and skow, but had not been able to crystalize it.12

When I drifted into canoe and yacht building in a very small way, purely through love of it, I was new at the craft, I had no capital and no business experience, and I never have had any business gumption. In 1883 I was asked to start a Canoeing Department in "Forest & Stream," and I was very glad to put in a little of my time in this way. In the following spring Kunhardt went off on one of his wild hunts for a fortune, and I was asked to take his place in charge of the Yachting Department. I was very glad to do this, both because I needed the money and because I was by this time deeply interested in the work; especially the cutter fight. I would be ashamed to tell you how little I was paid for the double job for twenty years.

I had met the New York "Press Gang" since 1880, when they came to report the races of the New York Canoe Club, and I have known all the prominent yachting writers for more than fifty years past. Many of them were both honest and competent, and we were good friends in spite of differences in our yachting beliefs, but many were mere hyenas, who would turn on their own kind, reporters, and double-cross them as soon

In spite of such status as degrees granted him, he was too keen a student to fail to note the widespread shortcomings of college-level science courses 40 years before he reminisced with Capt. Nat.

On the other hand, to say that Stephens was "well-grounded in descriptive geometry" is an understatement. He developed extraordinary skills in taking off, judging, and representing the lines of all manner of craft.

While not receiving a degree from M.I.T., Herreshoff took a special three-year course in mechanical engineering that so reinforced his natural talent that he went straight to the forefront of steam power design.

7 William H. Webb (1816-1899) was the outstanding American naval architect of the 19th century. He made a considerable fortune and founded the Webb Institute of Naval Architecture. When the Society for Naval Architects and Marine Engineers was incorporated in 1893. the first name on the application was William H. Webb. He was made the first and only honorary member.

Webb was credited with the design of more than 150 vessels, sail and steam. Eight of his clipper ships made the run to San Francisco in under 100 days—as compared to the seven, including FLYING CLOUD, built by Donald McKay. [See page 119.]

8 This upside-down method of constructing cances and other small craft was well set forth in Stephens's own perennially popular *Cance and Boat Building—A Complete Manual* for Amateurs, and in the canceing section by W. Baden-Powell in Dixon Kemp's A Manual of Yacht and Boat Sailing (4th ed., 1895), far and away the most authoritative and widely read treatment of the subject in the 19th century and well into the 20th.

9 W.P. Stephens reconstructed the lines of Herreshoff 's famous 1891 winner, GLORIANA. When he called his work an "imaginary design," it was just a playful disclaimer. Stephens's drawings were, of course, as precise as his extraordinary skill could make them. Quite possibly he obtained the help of John Hyslop, the NYYC official measurer. For all practical purposes, they remained the accepted lines of GLORIANA for half a century. It is ironic that Nat Herreshoff neither prepared nor had traffic with the lines of his own boats or any others, and thus could hardly have faulted Stephens's set if he had wanted to! Back in 1891 he must have considered Stephens's activities bald espionage, nothing less.

Eventually, the indefatigable scholar Howard I. Chapelle published (*Yachting*, March 1955) the definitive lines of Herreshoff's GLORIANA using the actual table of offsets from which the molds were made and the precise centerline construction plan. Oddly, these lines are absent from Chapelle's *The Search for Speed Under Sail.* Only two other Herreshoff boats were studied in this manner.

10 While it was true that many erroneous figures for racing yacht measurements were printed, they were for the most partjournalists' guesses, based on waterfront gossip.

as they would a yachtsman or designer. Too many, I am sorry to say, were drunken sots; a disgrace to their calling.

A yachting writer should possess some sense of honesty and common decency, and he should first of all be a practical yacht sailor, familiar with handling and with the rules. He should have a thorough knowledge of yachting history, as the present means nothing unless compared with the past; he should have some knowledge of the principles of yacht design and also of construction. One of my chief opponents in the old days was Captain Roland F. Coffin. He pounded me every week in "The Spirit of the Times" and the "New York World," and I hit back as hard as I could in "Forest &

Stream."13 We met constantly at the races and were very good friends, I liked him personally and respected him as a writer; he was the best descriptive writer of a yacht race whom I knew. He had an intimate knowledge of yachting history, and I go back to his writings today for many facts of the past before my time. Where he fell down in the sloop vs. cutter controversy was in his very limited knowledge of the technicalities of naval architecture and yacht design.

Of course I knew Kunhardt very well, and was a disciple and follower before I began writing. He was an able chap, well informed on design but extreme in his views, rash in his statements, and not reliable. Once after I had succeeded him we were discussing the publication of some item when he said "If you hear a thing, print it; if it is true it is news, if it is not true you can contradict it next week, <u>and that makes news.</u>" This was good advice to a young writer, but I never acted on it. One of the ornaments of the profession fifty years ago was "Bum" McKay, as he was generally called, the then aged son of the great Donald; the man who stole the champagne from his father's store room the night before the SOVEREIGN OF THE SEAS (or the GREAT REPUBLIC?)

11 The improved but still naive Seawanhaka Rule measurement system prompted some design reforms. This measurement formula simply determines rating by multiplying the length (waterline) times the square root of the sail area and dividing the product by two. In practice the tax on sail area was so light that over-canvassing was virtually compulsory. From 1883 on, it exercised a strong influence on yacht design for the next 20 years, with hang-over effects for another 20. Inevitably, long, full bows made possible rule-beating reductions of waterline length and thus produced an entire generation of expensive, short-lived boats which tried to pound themselves to pieces closehauled in a moderate sea. GLORIAÑA, in the 46' class, was the first large American racer to take strong advantage of that current measurement system, but she represented a healthy advance in a good direction. She was whittled away forward to a degree that made her measure 2', or 3' shorter than she would have been if her stem had not been tucked



W.P. Stephens and SNIKERSNEE in the backyard of his Bayside, New York, home in 1943. His access to Little Neck Bay had been cut off by the recently constructed Cross Island Parkway.

was launched. He was a man of fine physique, tall and commanding, with a beard, heavier but somewhat of the type of your brotherJohn, but at times just a drunken wreck, as his nickname indicated. It was he who wrote in 'The Evening Telegram'' that it was a good thing that Boston was building a yacht (PURITAN) to defend the Cup, as after the trial races she could be utilized to carry brick down the Hudson River. In writing this he only echoed a feeling only too prevalent West of Hell Gate at that time.141 think that you must admit that today, more than ever in the past, with so many yachts on the beach and the leading yachtsmen sailing small boats, yachting needs all the publicity that the Press will give it; and if such is the case it comes down to the honesty and competency of the individual writers.

I know that when I took up this work I was not qualified except as to the sloop-cutter controversy, there I could hold my own; whether I became qualified later is not for me to say. I wonder sometimes how I had the temerity to attempt to describe a big yacht race, or to analyze and criticize a Cup yacht; I would not dare to do either today. Fortunately, I am now much more interested in studying the past and trying to learn from it; and

under. In other words, she was really a 48footer racing lesser craft, with the further benefit of light spars and a high ballast ratio, all done to Bristol standards.

Yacht design was in such a state of flux in 1891, it is misleading not to point out that the same season GLORIANA made her great name, the striking out of bows was in vogue outside of the 46' class. Watson's DORA went fast in British waters, while William Gardner was represented with the notably modern-shaped separate spade rudder, and much cut away below. Gardner or the owner, or both, insisted on finishing off the overhanging bow of SMUGGLER with a rather fanciful clipper stem so the similarity to GLORIANA was disguised.

12 In this important paragraph, W.P.S. leads off with a warm-up question about GLOR-IANA and "quarter-beam" measurement taken at the "I/I0beam waterline." That admittedly difficult concept was later embodied in the Universal rule to curb the full, flat overhanging bow, which grew from waterline measurement and the fin-keel movement.

It was there in Bristol that Nathanael Herreshoff was first heard to say he had in mind a rating formula that would take displacement into account, along with a basic length and a sail-area measurement. In words addressed to the NYYC official measurer, with a reporter (W.P.S.) allowed to listen in, the basis for the Universal Rule was set forth long before it was adopted and 15 years before yachts were being built to it in any number.

13 ForquiteafewyearsthepolemicsofCapt Roland F. Coffin, the skimming-dish champion, and the counter blows by Stephens were the most entertaining reading yachtsmen could find in the off-season. When not engaged in debate, Coffin made excellent sense, applying to the yachting panorama a measure of historical perspective.

14 The scorn with which some New Yorkers greeted the news of an AMERICA'S Cup defense candidate being built for Boston yachtsmen is duly noted in standard accounts in recording what I can for the benefit of the coming generation.

From my point of view it is a very fine thing to have the designs of such yachts as ENTERPRISE, RAINBOW, SHAMROCK V, and ENDEAVOUR published for the good of yachting, and I do not believe that the publication of these designs will tend to harm either challenger or defender when the next match comes. I think that if George Watson had built THISTLE in the open someone whom he could trust would have commented on her obvious lack of lateral plane, and of its disposition in a yacht of her midship section. I would not have dared to do it, but before the last water had left her keel in Erie Basin Drydock the question of how she could go to windward was in my mind. If Watson had carried her sternpost and rudder down three feet, in a triangle below her straight keel and in undisturbed water, she would not have slid to leeward, and she was as fast thro the water as VOLUNTEER, with more finely moulded lines and far smoother surface, though her mainsail (they did not have eight or ten in those days) was probably inferior.15

I am about to haul out after the most unsatisfactory season I have ever known, I have done very little sailing as I was too tired; I think that I spent too much time in the very hot sun in getting the boat ready. I am troubled greatly with insomnia, and after lying awake for hours when I turn out at 6 A.M. I am too tired to do more than doze over the morning paper for a couple of hours before I have strength to go to work. You may lay this to an uneasy conscience, but I attribute it to a different cause; the worry and overwork of my last five years with Lloyd's.16 In 1927 the question arose of giving me some assistance, which was badly needed, and of training someone to succeed me. I suggested that a young man, preferably one interested in yachting, should be sent out from the London office to work under me and to attend races and visit the designers and the yards, as I have always done. As a permanent member of Lloyd's staff, a young Englishman would remain with the Society, while a young American after several years of my training would be tempted away by higher pay offered by a yacht broker.

of the 1885 PURITAN-GENESTA series. That it was the alcoholic son of the eminent clipper ship builder Donald McKay who put the highest derision in print is not so well known.

15 One has only to look at the lines, or better at the rigged model, of the THISTLE to accept Stephens's statement that he and an army of others felt she sailed in dire need of more lateral plane. The Scottish beauty would have been much improved—possibly victorious—if Watson had found the courage to finish off her design with 3' more keel. However, this would have brought the cutter's draft to almost 17', a horrendous depth in her day, when even her designed draft of 13'10" put her within inches of being the deepest single-masted vessel in the world. Despite the plaudits when a change is made, innovation comes hard to naval architects, and in THISTLE Watson was already at the size frontier. To make her not only the largest but also by far the deepest draft cutter of her day seems, almost tragically, to have been beyond even George Watson's courage in the winter of 1887.

16 *Lloyd's Register of American Yachting* was published by the English insurance society and was closely patterned on the British edition. No



This advice was not taken, but an "assistant" was selected in the person of a Scotch draftsman, then 56 years old, with no knowledge of yachting or interest in it; and, as it proved, as lazy and dull as he was ignorant. He happened to be a friend of the Scotch surveyors in the New York office and needed ajob. I was obliged to carry this dead weight for five years, doing his work as well as my own, and with the certainty that he would be put in my place as soon as an opportunity offered. This actually happened in 1932 and I was reared, on a very small pension. The joke was on Lloyd's when this gentleman died suddenlyjust as the real work began on the 1933 Register, leaving no trained person to take my place. Five years of worry and over-work under these conditions affected me badly, and though I have recovered from the immediate worry and have accepted the situation, I feel the effect in the form of insomnia.

Whether I am able to sail for another season depends on several things: whether I maintain my present health, which my doctor tells me is good for my age, whether I can get into the habit of eight hours natural sleep every

boat was a yacht unless fully entered in the annual listing—dimensions, builder, and all such data, together with a full-color cut of the owner's private signal. Mr. Stephens was thelogical editor of the first compendium of listings, and he held the position for 30 years.

17 It was that great yachtsman, Clifford D. Mallory, the first president of the North American Yacht Racing Union who, when night; whether we have normal spring weather in May, as we have not had for three years, so that I can be afloat and sailing in the mildJune weather? I would like to sail for another season about the Sound. I enjoy the use of a small boat and I have friends in every port between Bayside and Newport; I may say, in Bristol as well, from whom I would receive a cordial welcome.

I started to write a letter but have almost written a book; I live a very quiet life here; and though I have many friends among the younger yachtsmen there are very few with whom I can talk of the old times to which I look back, as I know you do, with so much pleasure.17

Yours sincerely,

W.P. Stephens

"Don't just .sit there. Sail something!" John Streeter not only laid down this dictum long ago, lie has succeeded, to a rewarding degree, in living within this philosophy, still sailing (often singlehanded) from the Wadawanuck yacht (Hub at Stonington, Connecticut, of which he was the first secretary hack in 1926.

president of Mystic Seaport Museum (then called The Marine Historical Association), became so interested in this collection of letters exchanged between N.G. Herreshoff and W.P. Stephens that he ordered the first transcriptions. Curiously, the copies made in his New York office seem to have all disappeared. Had they not, an edition of this correspondence might have been published a generation ago. While such a treatment would have spread much enlightenment, a number of aspects could not have been handled with the freedom granted by the passage of time. The fact that the senior C.D. Mallory recognized the significance of this body of historical material is but one instance of his high and lasting concern for the preservation of America's maritime heritage.





by Mark Malone

ost of us are familiar with the fiberglass boats that have been built from classic wooden boat designs: Friendship sloops, Herreshoff 12 1/2s, Ingrids, and many others. But now that coldmolded wooden boat building in its myriad forms is so much in vogue, I wonder if we will begin to see a number of wooden boats being built from well-proven 'glass designs. Cold molding's flexibility allows it to reproduce the tight compound curves many fiberglass designs require, and coupled with its unparalleled rigidity, this opens wide a relatively new body of existing designs for reinterpretation in wood.

Steve White and his crew at Brooklin Boat Yard (Maine) recently turned out such a boat. Her name is VORTEX, and she is the first (to our knowledge) wooden Swede 55 in the world.

She is finished now and has sailed her first season with considerable success. In retrospect, it is amusing to think that in the beginning, Steve and Laurie White imagined that building a fast cruising boat for themselves might make a nice weekend and afterhours project. Nice, indeed. Seven thousand man-hours later, VORTEX lies prettily at her mooring, her beauty and detail announcing to all, "I am no weekend project" From a photo taped to the refrigerator door, her transition to wood and epoxy and paint involved a dilating commitment from her builder.

As modern designs go, this is an unusual boat in that she is designed purely for efficiency. The "55" in her name does not refer to her overall length, but rather the number of square meters of rated sail area she



This new cruiser/ racer sails smoothly and easily at 10 knots, tacks through 70° or less, cleans up in the races, and proves that some designs forfiberglass are worth a second look—in wood.

carries. Boats such as this—designed for level competition based solely on sail area—allow the designer a very free hand. They tend to be long and narrow, with low freeboard; in these respects, the Swede is no exception. Similar in shape to the Skerry cruiser, she is 52'6" long, with a beam of 10'. Her maximum freeboard is only 43 ".

The Swede 55 was designed by Knud Reimers in 1975 for construction in fiberglass. Thirty of the boats were built by Fisksatra Varv in Vastervik, Sweden, over the next seven years, a fairly good production run for a boat of this size. They proved fast and weatherly as cruisers and have acquitted themselves well around the marks both here and in Europe.

I suspect, though, that even with all this success, Reimers may not have been entirely satisfied with those boats. For one thing, they turned out to be several thousand pounds heavier than he intended. The builder had made the hull scantlings a bit heavier than designed, and then appointed the interiors with large quantities of teak cabin furniture and a teak interior liner. As built, the fiberglass boats sit some 4 " below their designed waterlines (such changes tend to make a designer hot under the collar). Since Reimers at least once referred to the Swede 55 as his favorite in a long career of designing, perhaps it is fitting that it be tackled once again.

A fan of long, narrow sailboats, Steve had read an article about the Swede 55 in *Nautical Quarterly* (No. 6), and had tracked down CORSAIR, one of the earlier Swede 55s to be brought to this country. CORSAIR's owners ended up moving the boat to Brooklin Boat Yard for her annual winter storage, and Steve and Laurie enjoyed some cruising time aboard her. In November 1984, Steve contacted Knud Reimers and told him he wanted to build a wooden Swede 55.



Reimers was delighted. He had a few ideas about how the performance of the Swede could be improved. Among them, not surprisingly, was the admonition to keep the boat as light as possible. He also told Steve that he suspected the boat would be a bit faster if the keel were deepened 4" and the lead weight increased 650 lbs, for a total of 8,200 lbs of lead. Reimers was in his 80s then, but had still been fiddling with his pet design. (Come to think of it, was there ever a designer who considered any design truly finished?)

Before construction began, Steve lofted the Swede's lines on Mylar film and then began modifying the drawings to suit cold-molded construction. Interestingly, he lofted only the body lines and the bulkheads that were not on stations. I would have thought that there would be a price to pay in hull fairness, but VORTEX's fair hull proves this is an acceptable shortcut (although not for amateurs) if the building crew is knowledgeable and talented enough—and if the designer has done a careful job of providing an accurate set of offsets. A new interior layout was designed, based on the original bulkhead positions. And a new sheerline was drawn; the wooden Swede would have a real wooden toerail, not an aluminum extrusion bolted to her deck.

Construction began in earnest in November of 1988, squeezed in around the busy yard's normal workload. The hull was built upside down, with strip planking comprising the first layer, the strips laid over permanent bulkheads at some stations and over molds at others. I've always thought that using bulkheads as molds wherever possible would save time building a hull. And indeed it does, up to a point. There are fewer molds to make up, but the early installation of permanent bulkheads slows down the sanding and finishing of the interior surface. I wonder which method is really faster?

The 3/4" x 1 1/4" cedar stripplanking was followed by a layer of 1/8" mahogany veneer, laid perpendicular to the centerline, then two additional 1/8" layers laid on opposing diagonals. There are no longitudinal stringers to collect water on their tops, and the backbone is flush and flat where it meets the bilge, leaving no bumps or crevasses where water might collect. All gluing was done with WEST SYS-TEM brandepoxy.

VORTEX has some interesting structural details. Her wooden keel, for instance, is laminated mahogany, but one of the layers is marine plywood. Steve had noticed that on some of the older high-performance finkeeled boats he came across in his repairwork, the laminated mahogany keel had cracked along the grain lines under stress caused by the ballast



weight If excessive flex had caused the cracking, he reasoned that the crossgrain strength of a layer of ply might take a bit of the burden off the mahogany. We'll see if he's right in 20 years or so. I imagine he is.

Beneath the cabin sole, there are seven bronze floors bolted and bonded athwart the keel, running up the inside of the hull. The two farthest forward and aft are bolted to the main bulkhead and the bulkhead at the division between galley and saloon. The others are attached to the bunk fronts. The bunk fronts, in turn, run fore-and-aft between the two bulkheads and create a longitudinal girder in the center of the hull. Here, too, the idea is to distribute stresses created by the deep, heavy ballast keel.

There are four watertight bulkheads in the boat. The two main bulkheads are foam-cored, with 1/2" plywood facing on both sides; the others are solid ply. All joinerwork is bonded to the hull to provide maximum strength and rigidity. VORTEX's deck is a single layer of AA marine-

grade fir plywood, made by Simpson, scarfed to length. Her coach roof is laminated out of three layers of light gaboon plywood, and the cabinsides are made up of 1" solid teak, bolted and bonded to the deck.

She is a nicely finished-out vessel, modern in every detail but without the sterility so commonplace in modern high-performance boats. Below, the boat has a bit of the feeling of a new Maine summer house; all the woods visible in the interior are local to Maine. The deckbeams and sheer clamp are spruce, the trim and drawer fronts are locust. All are blonde woods finished satin, so the interior is light and cheerful, with none of the funereal atmosphere of bright-finished interiors made of darker woods.

I like the interior, but for those used to beamier boats, I suppose it must seem a bit spartan. There is the usual V-berth forward—in fact, a large and roomy one. Just aft, the head is full width-unusual in a 52' boat. But instead of crowding a head and passageway in the same space, this allows



VORTEX's interior is light and cheerful. Most of herjoinerwork is bonded, to the. hull to provide maximum strength and rigidity. Her roomy, full-width head (right) does double duty as a passageway.



a large head and a cleverly arranged shower.

The main cabin is pure vanilla: two long settees, with a galley aft portside and a chart table aft to starboard. True, this does not constitute a palatial interior. but what's there is nice and solid. There is none of that spongy feel to the interior joinery one often encounters on a boat where weight-saving has been paramount. There are no flimsy lightweight plastic lighting fixtures or bits of trim that might look more at home on a house trailer. Still. her cold-molded construction meant that with no great effort made in the direction of weight savings, she came in a ton or so lighter than her 'glass step-sisters.

There is a very small after cabin accessible only from the cockpit. It has just sitting headroom and no floor space, the entire sole being covered with cushions forming an extra-large berth. The cockpit is a two-part affair, separating the helmsman from the main cockpit with a crossbar supporting the mainsheet traveler. The mainsheet winch, genoa sheet winches, and running backstay winches are within reach so the driver can tweak to his or her heart's content. That crossbar, by the way, houses two stereo speakers that produce an arresting, seemingly sourceless sound qualitylest we forget that this boat was meant for pleasure.

Beneath the cockpit sole, there is a Westerbeke 27 turning a folding prop. Can you imagine a modern production boat of similar scale with an engine so small? The little motor pushes the boat at 7.2 knots all out and 6.5 knots at cruising revs. So who needs a bigger engine?

The rig is rather small, too-a dainty 800 sq ft, in fact. Two can handle it without much trouble. But then, the rig doesn't need to be very big, because VORTEX only weighs 18,000 lbs and has little wetted surface on a 41'waterline. She is seven-eighths rigged. Hence, the headsails are small, smaller in fact than those frequently seen on 40-footers these days. She has running backs and double spreaders. True, the bendy rig does have an extra line or two to tweak, but tweaking on a boat like this brings such delightful results, one doesn't really resent the extra work. The spar was made up by Metalmast in Connecticut and then

Modem gear and a divided cockpit designed far both comfort and function make VORTEX a pleasure to sail, even with a shorthanded crew.

shipped up to Brooklin overland on a very long trailer.

All of this amounts to what seems to me is the nicest advantage of a fine, easily driven hull: The boat's various systems can be so small and simple, so easily controlled. There are compromises here, for certain, but as a whole, the dance of compromise that resulted in VORTEX has been danced subtly and well.

Yes, it all fits together. This could be a cruising boat, and not nearly so extreme as she seems at first glance. I will be the first to admit that she is a different sort of cruising boat, but wouldn't most cruising sailors—given the choice—like their boat to sail smoothly and easily at 10 knots and tack across 70° or less?

Her performance to date has been little short of spectacular. Bearing in mind that no one had the slightest idea of what to expect of this design at anything close to her intended weight, I think all who have sailed on her have been impressed. Already, I've had a few rides on her I won't forget. Once, heading upwind with full main and a blade jib, we overtook a large auxiliary motoring at full tilt dead into a stiff breeze. We were tacking across 65° and bashing along at about 8 1/2 knots. What delight! All this on a sunny afternoon with Jimmy Buffett on the stereo. OK, we had a sailmaker on board tugging at a line here and there, but the point is, this is a very fast boat.

And graceful. She makes extraordinarily little fuss as she moves through the water. At 8 knots, she leaves only the faintest quarter wave behind her. Several times I've had the peculiar experience of going below while the boat is reaching along in smooth water at 8 knots or so, and slowly, while chatting with someone down there, losing the sensation of movement. I had to poke my head out of the companionway to assure myself that we had, indeed, not stopped. The cabin is nearly silent. You can only just make out the sound of the water rushing past her hull by listening for it. Very civilized, and another result of her fine, fair hull.



Steve campaigned her a bit last summer and has shown a good deal of transom to his competitors. In the Eggemoggin Reach Regatta (Brooklin, Maine), she crossed the finish line first, but Steve disqualified himself from winning because, in his opinion, the old Off Soundings rule they race under cannot fairly rate fin-keeled boats.

In the New Bedford (Massachusetts) Heritage Days Race, she was the first boat to finish that completed the correct course. There seems to have been a bit of confusion there; a third of the fleet missed a mark.

In the Museum of Yachting's Classic Yacht Regatta (Newport, Rhode Island), Steve entered VORTEX with the intention that she should be an unofficial participant. He knew VOR-TEX did not really fit the Museum's criteria for a "classic boat" in that she was designed some years after the rules allow. However, some miscommunication between the various committees arranging things resulted in her being an official entry. All this wouldn't have mattered much, except that VORTEX won Class B, was first overall in elapsed time, and first overall on corrected time. When called to the podium to receive his various awards, Steve tried to explain and surrender his claim to them. By then, though, the mistake had attained the patina of policy and VORTEX was required to keep her silver. We should all have such troubles.

As I write this, it's the end of VORTEX's first summer and I'm looking at her from a stretch of quiet water in Center Harbor. What fantasies she calls to mind! Sitting in the cockpit of my own boat (which suddenly seems very short and squatty to me), I let my mind wander, and in a moment I am at VORTEX's helm, reaching past the Rock of Gibraltar. I have one eye on the knotmeter (which reads 12 knots) and the other on the blue horizon ahead. I am on my way to *the* Italian Riviera. Or Sardinia. Or both—it's my fantasy—we'll go where I like.

Mark Malone is a screenwriter who lives in New York City.



Redesigning the Swede 55

by Art Paine

acht designers are often asked if particular boat has been "deigned for wood," or for "cold molding." The fact is, it's a rare design that can't be built from any number of materials. We've seen many older designs reinterpreted in fiberglass, but why would anyone be tempted to go back in time to the material of yesteryear, as the Whites have done? Now that VORTEX is out there showing her stern to almost every vessel in sightincluding her fiberglass sisters-I believe you can make a good case in favor of wood construction (without even alluding to waterlogged nonisophthalic resins or, heaven forbid, blisters).

Considering Wood

The limiting factors involved in a boatbuilder's choice of material involve the physical properties of the stress-bearing surface of the hull. Every material that can be formed into a watertight surface will exhibit a ratio of strength to weight. Strength can be analyzed according to factors such as tension, compression, shear, stiffness "modulus," etc. Wood is very strong for its weight in all the applications common to boatbuilding. Any competent yacht designer can easily measure off the hull surface area of a design and apply this to an existing weight study, or even to an educated guess of the proportion of weight that must apply to the hull, in order to advise on the wood option. I think it's safe to say that only with very recent fiberglass "composite" designs ("cored" with balsa, foam, or a honeycomb material) would there be reason to doubt that the design could be built in wood.

Certain hull shapes are more easily fashioned out of wood than others,





Choosing a Design

Given that there was a world of available yacht designs in existence that could easily be converted to coldmolded construction, how did the Whites settle on the Swede 55? When I asked Steve that question, he said that while most people factor in dozens of criteria when selecting a boat, he and Laurie agreed that for them, just two were important—speed first, beauty next. They wanted a boat that could really go—up and past the 10knot figure. That cut down on the choices drastically, because above all else, you've got to go long to go fast.

Long and skinny would produce the speeds over 10 knots that the Whites wanted, but they were also looking for a boat that wouldn't seem out of place where they live, which happens to be dead center in the sanctum sanctorum of wooden boat heaven. One design whose looks really appealed to them was the fiberglass

VORTEX's Accommodations



Swede 55. Despite the fact that the boat had never been built in wood, it was, in fact, derived from a whole generation of traditional wooden cruising and racing boats in Sweden.

The Development of the Swede 55

The original progenitor of the Swede 55 were much smaller sloops intended strictly for cruising. As early as the turn of the century, Sweden had a cadre of summer rusticators who cruised under sail among the "skerries" (small islands) along Sweden's rockbound coast. Their "Skerry Cruisers" were large on deck space and scant on interior appointments. Even before they began to be raced, the boats had evolved in the direction of extreme length and narrowness. Freeboard was very low. These factors, taken together, point to the fact that the waters they sailed were generally protected from ocean-scale seas, and the summer breezes were fitful most of the time. Early drawings show that the boats were never intended to accommodate an overnight party of more than two. Their cockpits were small, necessitated by low freeboard that made a roomy. self-bailing cockpit out of the question.

Inevitably, whenever very similar boats ply limited waters, a sort of Darwinian competition among the species ensues, speeding up refinement of the type. Competition also seems to spawn racing rules, and though rule-bashing seems to have been the order of the day in the yachting press ever since the inception of the IOR, any observer will have to admit that the Swedish rule under which the Skerries were handicapped led to the development of an improved species. Limiting crew to two was probably the original inspiration for what has to be one of the simplest and most successful racing handicap rules in history. The boats

were already long, light, fast, and easily handled. Not wanting to alter a good thing, the measurement rule was tailored to the boats as they were, limiting only sail area. Was it any surprise that the extremes of length, narrowness, and low freeboard were tested further? Although eventually a few circuit breakers had to be added to the "Square Meter" (of sail area) Rule in order to hold outright radicalism in check, it's still clear that the rule encourages good shorthanded boats by minimizing the physical exertion of sailing without discouraging speed in any way.

Because a sail area of around 22 square meters encouraged a hull of moderate proportion and thus cost, at a size ideal as a weekender for two persons, the "22 and 30 Squares" eventually became the most popular racing classes in the Baltic. This spread of sail on the typical deepkeeled sliver produced a boat that was so easily driven on the momentum of its self-generated wave system that it could glide through the wind shadow of the hundreds of skerries. Very close-winded, with tiny jibs that could be tacked instantly, the boats could handle a sudden header



The hull wasfirst strip planked over molds and permanent bulkheads. The two main bulkheads are foam-cored; the others are solid ply.

The exterior layers of cold-molded veneers extend from the sheer down to and over the deadwood, adding strength along the centerline.





by the captain's belated utterance of, "Ahem, hard-alee!" I suppose I'd be remiss not to mention that some intrepid seafarers, Uffa Fox notable among them, made some high-speed trips across the infamous North Sea without incident in "22 Squares."

The fact that sail area was the primary rating factor naturally encouraged designers to milk the maximum drive and minimum resistance out of the finite limits on the supply side. High-aspect-ratio sails with hollow masts that curved at the top into the theoretically perfect ellipse began to drive costs of the popular 22- and 30-Square-Meter racers to an extreme. Rating rules that fail to limit cost (virtually all of them) are destined to fail in the long run. Cost of construction was a major reason for the demise of the wooden meter boats after World War II

Knud Reimers was the designer of choice during the salad days of the European meter boats, and in 1975 he drew an enlarged Skerry boat for production in fiberglass. Because it had 55 square meters of sail, it was called the Swede 55. The boat encompassed all of the fine aesthetic and performance attributes of its forebears, but was large enough to enclose quite comfortable accommodations for parents forward and quarters for a couple of progeny aft in the little bunkroom that was cleverly fitted down around the rudderpost. Although the boat was better suited to the spartan European style of sailing "on holiday," a few boats among the production run of 30 ended up in the United States. The Whites had the opportunity to sail one on their home waters and felt that it perfectly suited their qualifications for a high-speed cruiser that might be capable of standout performance around the classic regatta circuit.

The Redesign

Almost a generation of fiberglass boats was built very heavily with mat and roving—bulletproof, but heavy in the ends. Many of the hulls were more flexible in panel strength than the wooden boats they were replacing. By 1975, when the Swede 55 arrived on the scene, the state of the art had improved, although only a few de-



Seven bronzefloors are bolted and bonded athwart the keel. Two are bolted to bulkheads, and the others attach to berthfaces, creating a longitudinal girder.



Moved outside to be turned over in the Travelifl, VORTEX gleams with a coat of slick VC-17 bottom paint, a Teflon-based formula with powdered copper, distributed by Courtalds Coatings. signers of Grand Prix racing boats had started experimenting with lighter composites. The Swede 55 (and the smaller Swede 30) were top-notch fiberglass boats for their time, but Knud Reimers had based his design work for them upon years of experience with highly refined, wooden racing yachts with light scantlings. Although the fiberglass Swede 55 was fast, her designer knew she would be even faster if built of a lighter, stiffer material.

I don't think there's a designer living or dead who wouldn't jump at the opportunity to take his or her one favorite boat and, after cruising and competing in her for a few years, go over the concept with a fresh eye and a clean-slate budget. In a sense, that's what happened when Reimers got that first overseas phone call from Steve and Laurie White.

Steve knew he could build a lighter boat in wood, and was in substantial agreement with Knud Reimers regarding the changes that would be made. First, he would try to lighten the boat as much as he could, consistent with reasonable strength. Second, some of the weight savings could be applied to a heavier keel. And third, they would lower the VCG of the design by dropping the ballast a few inches. Most of the other changes were minor ones that would give the boat a "custom" wooden appearance to make her stand out from the fiberglass models.

Steve began the hull with strip planking, using locally available cedar, and then sheathed it with vertical and diagonal 1/8" mahogany skins. Carefully bonded and filleted bulkheads located no farther than 7' apart provide backup to the stiff wood skin. Even though this construction created a significant weight savings, Steve feels that the hull is so brutally strong that at least one 1/8" lamination could have been skipped.

Like any other laminated plywood hull, VORTEX required a far less massive backbone than a traditionally planked boat. In order to eliminate the theoretical weakness of having all the wood grain oriented in one direction in this critical stress-bearing member, the builder incorporated a layer of plywood in the lamination schedule. The athwartships veneers in this plywood layer help distribute any strains from one side of the hull to the other as well as inhibit any tendency for the backbone to split. External laminations continue as part of the skin from the sheer all the way down over the deadwood to the lead keel. By fully encasing the layers of deadwood, water intrusion is retarded and the veneer's fiber strength is applied more or less in the direction of stress, overcoming any tendency of the heavy ballast to hinge off the underbody.

The bonding of all bulkheads to the inner hull is a standard construction technique for any boat that is predominantly strip planked. It was relatively easy to make several of these in VORTEX watertight, so they could serve as collision bulkheads.

The Performance Payoff

If there is one condition in which the Skerry Cruisers have performed marginally, it's been in light air. But by judiciously avoiding weight and windage in the rig; employing double spreaders, mid- and check stays; and sparing little expense in the Mylar headsails, Steve supercharged VOR-TEX's light-weather performance. But the only real surprise with this longlegged boat is that she's so easy to sail. Much of this is due to the fact that welldesigned, modern hardware really shows its stuff on a boat with moderate sail area. VORTEX is capable of surging along in heavy air with the knotmeter needle doing a metronome imitation between the number 10 and 15—without anyone doing acrobatics.

Although I gather it was the Whites' intention to keep the boat, they have fallen victim to their own success. There is no further necessity to tune and tweak VORTEX to the point where she'll win most of the classic regattas in her area. In her first season, she already did that! The process of taking an unknown and combining it with the skills of designers, builders, and sailors has been so much fun that Steve and Laurie and their crew at Brooklin Boat Yard are ready to do it again. There are plenty of good designs well worth trying—in wood.

Art Paine is a yacht designer who also captains yachts in the summertime and manages a wide, variety of boatbuilding/restoration projects during the winter months. He lives in Bernard, Maine.

WoodenBoat Design Competition In Search of the Perfect Skiff

We would like to thank the 149 readers who took the time and creative effort to respond to our call for entries

in the Perfect Skiff contest. The quality of their designs is tremendous, as you will all witness when we announce and publish winners' entries later on this year. The judges have their work cut out for them!

John Vieira, Jr. (MA), Thomas Hill (VT), W.H. Sands (MD), Robert Steward (FL), T.C. Martin (Australia), C. Raymond Haig (RI), A.J. Watty (Canada), Robert Tabb (MD), Wayne Oliver (New Zealand), Hohn Holtrop (CA), Jim Michalak (IL), Mr. and Mrs. Howard Williams (Canada), D.B. Munro (Canada), Kenneth Brown (MI), Douglas Gait (Canada), J.B. Farmer (KY), Harold Bryan (Canada), Brad Rice (WA), Ed Frost (NJ), Gabriel Heyman (Sweden), John Hedberg (Sweden), Goran Hjort (Sweden), D.W. Murray (Scotland), John Teitscheid (FL), Charles Perkins (WA), George Cooper (MA), Dennis Rushforth (WA), John Hesp (England), B. Migchelsen (NY), Luc Casaer (Belgium), Philip Bolger (MA), Seward LaShomb (CA), Tom Doane (MA), David Train (VA), Steven Rogak (Canada), Douglas Peterson (CA), Marc Pauls (MO), Jefferson Chappie (New Zealand), John Thomson (NY), Don Kurylko (Canada), Charles Strayer (FL), Karl Stambaugh (MD), Ronald Noe (CT), Walter Scott (FL), Robert Stephens (ME), Peter Watson (NY), Kurt Langford (AZ), Gene Medenwald (KS), Joseph Grez (PA), Robert Siegmann (FL), Steve Latham (Wales), Al Morgan (FL), Geremy Snapp (WA), Rob Denny (Canada), Danny Greene (Bermuda), Roger Simpson (Australia), David Becker (OR), David Webb (CA), David Brown (OH), Ken Swan (OR), Stephen George (WA), John Millar (Australia), Claudio Linhares (Brazil), K. McNeil (Canada), Edward Taylor (FL), Ed Stone (SC), Gerry Stengard (Canada), David Harrod (CA), Phil Jacobson (FL), Alan Craig (England), Jack Bowley (Canada), H. Douglas MacNary (TN), Gerald Crawmer (NY), Paul Wilson (Canada), George Hume (CA), David Baumgartner (MO), James Hollett (Canada), Ron George (CA), Chris Morejohn (USVI), Karl Zipf (DE), Tom Simmat (Australia), Robby Robinson (MA), Eric Sinn (MA), Andrew Cole (MA), Gibb Elliott (MA), Jason Bungert (MA), Mark Bowen (MA), John Kimball (MD), Andy Bullock (Australia), Harry Nash (WA), Charles Miller (IL), William Platt (PA), Willard Cutler (MA), Mark Smaalders (WA), Leo Newberg (MD), Jon Persson (CT), Delbert Cox (CA), Tom Ardito (CT), Tim DeKorte (CA), Richard Anderson (NJ), Eric Risch (CT), John Hackland (FL), Richard Hunt, Jr. (FL), Joseph Dobler (CA), David Scarborough (VA), Bob Ivano (MA), David Dowhos (Canada), David Stimson (ME), Tony Verga (IL), W.K. Nelson, Jr. (MT), Jim Thayer (CO), Susanne Alternburger (MA), William Butterfield (OR), David McLallen (NY), John Brooks (ME), John Harris (DE), Stephen Weld (MA), John Brady (PA), Michael McEvoy (NY), Kees Prins (WA), Mark Choquette (ME), Manfred Taus (NM), Jochen Robiller (MS), Graham Byrnes (NC), Klaus Schmitt (NY), Charles Gary (ME), Martin Devine (MA), Ron Haralson (Canada), Koichi Mitamura (Japan), Robert Webb (WS), Dennis Brown (WA), John Miser (IL), John Toates (CT), Carl Chamberlin (WA), James Denton (VA), Graham Langdown (Australia), William Kennedy (Canada), Michael DeRidder (New Zealand), Tom Feinthel (MN), James Pegues (TX), Jaques Chevallard (Canada), Michael Kroemer (CA), Clive Anderson (England), Douglas Taylor (CA), R.K. Greeven (New Zealand), Simon Fishwick (England), Jan Hedberg (Sweden), Christopher Krasemann (Canada), and Chris Ring (TX).

STRIP-BUILDING A DOUBLE-PADDLE CANOE

by Henry "Mac" McCarthy Construction photos by Gary Crowell

y first experience with canoeing was on Tupper Lake in the Adirondacks. My father used to take me out on the lake early in the morning. We would look for deer, then watch the flag being raised at the camp where we vacationed. As this is one of my earliest memories, I guess you could say I have always loved canoes.

Eleven years ago, when I started building canoes, I made several cedar strippers 16-18' long. They were all right, but not really what I wanted. What I wanted was a lightweight, good-looking canoe just big enough to carry one person anyplace there was enough water to float it. My search led from John Gardner's articles in National Fisherman. to Atwood Manley's book, Rushton and His Times in American Canoeing (Syracuse University Press, 1977). It was in Manley's book that I first found the Wee Lassietype canoe. I knew I had to have one, so I built the little canoe. I enjoyed paddling it. So did two of my sonsand so did a little 78-year-old lady, who bought it on the spot because she could pick it up by herself. In a very short time, I had built four Wee Lassies-each a little different. I was thoroughly hooked.

Since then I have built a lot of Wee Lassie-type canoes. Most of them were 10'6" in length, but some a foot longer (no wider) for the person who weighs more than 175 lbs or wants to carry more than 40 pounds of gear, or just plain has longer legs. I have modified the original design; the boat I build now is asymmetrical, with the stern sections fuller than the bow. I did this in an effort to increase ease of paddling in shallow water.

With a double-bladed paddle you can go upstream in shallow creeks. A regular canoe paddle becomes almost useless in these conditions, unless you use it as a *pole*, which will destroy a good paddle in nothing flat. A double paddle requires only as much water as the canoe needs. You don't need to worry about pickup times, or ferrying cars back and forth. Just pad-

dle against the current for as long as you want, then drift back downstream.

You sit down low in the Wee Lassie, but it is easier to get in and out of than a sea kayak because it is undecked, which also helps to keep the weight of the finished boat down. Because your center of gravity is low, the little craft is surprisingly stable. I have paddled hundreds of miles in a Wee Lassie, and have never been dumped, except when playing in the surf at Lido Key, here in Sarasota, Florida. The Wee Lassie handles rough water well, but, as with any small boat, reasonable care should be taken.

If there is anything better than one Wee Lassie, it has got to be a pair of Wee Lassies, cruising along in company with each other. I have often felt that there would be less husbandand-wife bickering on "canoeathons" if each person had his or her own canoe. It is nice to look over and see how pretty the other Wee Lassie is, and know that your boat looksjust as neat.

From the pine barrens of New Jersey, to the mangrove tunnels on the west coast of Florida, I have found many fantastic places to slide a Wee Lassie into the water for small explorations. When you can glide up close enough to an otter to hear the crunch of his jaws as he eats a crawfish, you

An affordable

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boat

know you have the right boat.

A light doublepaddle canoe is not expensive, doesn't require a lot of room for building or storage, and is not too difficult to put together. Working from a set of my patterns, an eighth-grade class turned out a present-

able little canoe. You don't need to be an expert woodworker to do the job.

You need a small, well-ventilated area to work in, or the ability to slide the boat outdoors for some of the sanding operations. To rip your strips, you'll need the use of a table saw. The only other expensive tools required are sanders (a dual-action sander would be the most helpful) and as many small clamps as you can find for clamping the rails. With a small assortment of hand tools-a hammer, a small handsaw, a sharp block plane, and a staple gun-you are on your way to a very enjoyable experience. There is no heavy lifting, no steam bending, no complicated lofting-none of the things that can bog down the amateur or one-time builder. Because of the canoe's small size, you finish each operation before it gets tedious or boring.

am going to try to show you how to build one of these little craft. For less than \$300 for materials, and 60 to 80 hours of your time, you can create a boat you will be proud to be seen using for years to come.

The man who wrote *Small is Beautiful* must have had this canoe in mind. She is functional, simple, and good-looking. If I could have only one boat for the rest of my life, it would be a Wee Lassie.



Materials

2 sheets 1/2 x 4' x 8' particleboard—for strongback and molds

- 2 planks 1 "x 4 "x 10' + two sawhorses—for strongback
- Approx. 50 strips 1/4" x 3/4" x 12' Western red cedar-for the hull
- 1 piece 1" x 6" x 10' spruce—for inner stems and paddle
- 1 piece 1" x 6" x 10' mahogany or cherry—for rails, seat frames, thwart
- 9 yards 4-oz fiberglass cloth, 50" wide

1 gallon epoxy and hardener

1 quart spar varnish-for UV protection

Approx. 60' of cane—for seat

Miscellaneous nails, glue, staples, throwaway brushes and pads, spreaders, and roller covers

Further Reading

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- Moores, Ted and Merilyn Mohr. *Canoecraft*. Ontario, Canada: Camden House Publishing Ltd., 1983.
- O'Brien, Mike. "Double-Paddle Canoes: Simple boats, honest value." *WoodenBoat* No. 90 (Sept./Oct., 1989): 56-62.
- Snaith, Skip. Canoes and Kayaksfor the Backyard Builder. Camden, Maine: International Marine Publishing Co., 1989.

Tools

- Table saw (or the use of one) —to rip strips, rails, etc.
- Sabersaw or bandsaw —for cutting out molds
- Staple gun—for holding strips in place while glue dries
- 7 " disc sander/polisher
- —for rough-sanding hull 6" dual-action sander
- —for finish-sanding hull, etc. Block plane (sharp)
- Chisel (sharp)
- Razor knife and extra blades C-clamps
- (the more the better) Spring clamps
- (the more the better)



The author developed his canoe from the lines for J. Henry Rushton's WEE LASSIE (shown in these drawings). The original Rushton boat rests al, and plans can be obtained from, The Adirondack Museum, Blue Mountain Lake, NY 12812. Full-scale mold and stem patternsfor McCarthy's modified Wee Lassie are available for \$15 from Feather Canoe, 3080 N. Washington Blvd., Sarasota, FL 34234.



1. First, cut out the largest mold shapefrom the pattern sheet. Lay out one side on the plywood, thenflip it and mark the other side. Because the stem patterns overlay the mold patterns, trace these before the paper gets all cut up. Being careful to keep the patterns square with the plywood, trace the patterns for all of the molds. If you prefer doing your own lofting, simply pick up the shapesfrom thefloor.



2. Cut out the molds with a sabersaw.



3. Build a simple strongback with 1x4s and inexpensive particleboard. Use 2 x 2sfor deals. Mark an accurate centerline on the strongback. Drill holes in the stem molds to make roomfor the clamps that will hold the inner stem laminate. If you prefer doing your own lofting, simply pick up the shapes from the floor.



4. Cover the edges of the molds with mashing tape to keep the strips from bonding to the plywood molds. Be especially careful on the stem molds. Notice the definite notch at the sheerline, where you will begin laying on the strips.



5. Laminatefour pieces of $1/6 \ge 58"$ spruce on each stem mold. Leave these clamped overnight. Before stripping the boat, remove the rough stems and bevel their sides so the strips will layfair and have good gluing surfaces.



6. After beveling, re-clamp the inner stems to the molds. Now you are ready to start stripping.



7. The first two strips are laid on, starting at the sheerline and working toward the keel lint. The strips are edge glued to each other, and glued to the inner stems. Check often to see that everything is aligned and fair.



9. Use a 1 1/4" No. 18 headed nail, available in any hardware store, to fasten the strips to the molds. They have more holding power than a 1/2" staple. Some strips on the Wee Lassie take a fair amount of pressure to hold in place. The thin nail leaves only one hole, which is easy to Jill with a toothpick after the nail is pulled. I use little blocks of cedar (about $1/8 \ge 3/8 \ge 1$ ") under the nailhead tofacilitate pulling the nails later.



8. A notched 2x4 holds the strips temporarily while you run glue or plane a slight bevel on them. I plane a bevel on the strips where needed rather than using systems that involve using a shaper, or other expensive equipment to interlock the strips. I think keeping it simple is important.





11. Keep your strips cutflush at the inner stem as you go up with the strips. I use a Japanese Dosuki saw that cuts on the pull stroke, and has veryfine teeth, for this and any other handsaw jobs on the boat. One cut with this saw through a finished joint, and you have a perfect fit.

10. Use 1/4" staples in between the milds to keep the strips tight and even with each other. Apply enough glue to get a good squeeze-out, then be sure you clean up the excess before it hardens. I keep my stapler lubricated with light oil to keep the glue from sticking.



12. This is the way the hull should look when you are about halfdone with stripping. At this point, beveling becomes important. A sharp block plane and a little care will produce a goodjob. Keep thejoints between the strips as tight as possible.



13. As the bends become tighter, use clamps to help hold the. strips at the stems, until the glue sets. You have four or five difficult strips on a Wee Lassie, then the pressure eases off.



15. This photo shows how I handle the transition from stem to keel line. By running a center keel strip, you can control the fairness of the keel area. Without it, butting strip to strip, you can end up with a very unfair keel line. Cutting the strips into the keel strip takes time and care. I do as much of it as I can with the table saw, and the rest with the Dosuki saw, right on the boat.



17. Use a tack puller to loosen The nails and staples. A pair of nippers will pull the nails out, and the staples usually just pop out with the tack puller.



14. A short stealer strip is needed near the heel of the stem. This is the hardest area to strip on the whole boat.



16. After trimming the stripsflush with the inner stem, J laminate thin ('l/16") strips of mahogany or cherry to make an outer stem. I use the same thin nails I used to hold the strips to the molds. Clamps and shock cord will help. Let this set up overnight.



18. I use a Makita sander/polislier, with a 7" disc, at slow speed to rough-sand the hull. I use 24-grit to start. Wear a dust mask, and be careful to keep the disc asflat to the work as possible; you don't want to gouge or dig into the wood. Basically, all you want to do at this stage is knock off the high comers of the strips. Slow and easy is the ticket.



19. After rough-sanding the hull, break toothpicks in halfandfill all the nail holes. I tap the toothpicks in with a hammer, and then break them off. Epoxy willfill the tiny staple holes.



20. No matter how good you are with the disc sander, board-sanding is the best way to make sure that the hull isfair. The abrasive paper that auto body shops use on airfiles is just rightfor this. The process is good exercise, and it doesn't create the dust that power-sanding does.



22. After you are satisfied with the sanding, give the bare wood a coat of poxy. Let this dry, and sand it lightly—just enough to rough it up; don V sand through to the bare wood. Cutfiberglass cloth to length, and drape it over the clean hull. I smooth all the wrinkles out by hand before I wet out the cloth.



21. After board-sanding, finish with a dual-action sander. I have a Porter Cable variable-speed with a contour disc that doesfine. Start with 40-grit, and follow up with 80-grit stick-on discs. Be sure you wear a face mask.



23. Begin welling out the cloth in the center of one side. Make sure you wear gloves. I work the epoxy over the cloth with a spreader, available at any auto paint store. Workfrom the center toward the ends, and from the keel down. Don't try for a finished appearance; simply get the epoxy spread as quickly and evenly as possible.



24. When the cloth is completely wet out, 1 use my gloved hands to work out any wrinkles. Using scissors, trim the cloth at both stems. Don't try to wrap it around the stems or rails; that won't work. Thefollowing morning, sand lightly, and cut some strips of cloth on a bias. Recoat the entire exterior with epoxy, and wrap both stems with at least two layers of bias-cut strips. When the epoxy has cured, repeat this whole operation. After the last coat sets up, pop the boat loosefrom the molds. Lift up on one end, then the other. If you have used masking tape on the molds, the hull should pull loose easily.



25. Now, use the disc sander on the interior. The main purpose here is to eliminate any sharp edges on the strips that would leave voids under the cloth. When you havefinished sanding, vacuum the hull, and you are ready to coat the interior with fiberglass and epoxy, proceeding as you did on the exterior.



26. Drape the cloth inside the hull, and smooth it out as best you can. Pour the epoxy along the keel line, and work it up both sides and toward the ends. You are trying for a good, even wetout, without drips or puddles. Work out any bubbles with your gloved hands. You want the texture of the cloth to just show through, but you don't want any white (resin-starved) areas. Let the epoxy set up.



27. Epoxy and clamp the outer rails in place. Let them set up overnight. Epoxy 3"-long blocks of the rail material, spaced 4" apart, flush with the top of the sheer strip. Thefollowing day, clamp the inner rails in place. When plating the blocks, take care to center one block on each side 43" backfrom the stem, so that there will be solid wood where the thwart goes in place.



28. Notch the thwart to lock into the rail. Run two $1 \frac{1}{2}$ #8flat-head wood screws in through the rails to secure the thwart.



29. Laminate the deck supports out of thin strips.



30. The deck itself is stripped and 'glassed. Use your imagination—all kinds of designs and inlays are possible. Seal the bottom of the deck with epoxy.



31. Use a router with a 1/2"-round over bit on the rails, deck, and thwart. If you have no muter, a plane will do. Follow up with a dualaction sander. Prepare, and 'glass the decks the same as you did the hull. Make sure the underside of the deck is well sealed with epoxy.



32. This is a detail of the finished thwart and rails.



33. The seat support is epoxied in place along the centerline. Two screws hold the caned seat to the support. I do not anchor the ends of the seal frame, as this sets up stress when someone really heavy drops into the boat.



34. Now sand everything in preparation for varnishing. I use about three coats of a good spar varnish to protect the epoxyfrom ultraviolet rays.



Henry McCarthy has paddled canoes for most of his life, and he has built themfor nearly a dozen years. Mac will teach students how to build his Wee Lassie here at WoodenBoat School this summer.

The Cosine Wherry

One man's approach to boat design



Design and commentary by John A. Hartsock

t was at a dinner in Vancouver, British Columbia, one evening in 1976. One of the guests, an Englishman, was a hydrodynamicist. I asked him why attack submarines had bulbous bows. His answer—I don't recalljust how it applied to the question—was, "Of course, displacement should follow a cosine curve." This was the key to something for which I had been searching.

I learned to row with the Sea Scouts while growing up in Palo Alto, California, studied chemical engineering at Berkeley, and learned elements of programming a computer in the 1960s. By the early 1970s I was convinced it should be possible to loft a superior rowing boat entirely from a set of equations. But I had made a mistake early on by working from water-lines, much as a draftsman draws lines on paper. That night in 1976, I realized I should have been working from displacement.

My reasoning went something like this: Work is force through distance, and force is mass times acceleration. Acceleration is both linear and angular. A moving hull forces water to accelerate, both linearly and angularly. The elements of water will take the direction of least resistance. They will follow a three-dimensional curving path relative to the hull before returning to rest. Displacement, unlike waterlines, is three-dimensional....

The term "cosine" comes from trigonometry. As shown in Figure 1, the cosine of an angle is the ratio of the adjacent side of a right triangle to the hypotenuse. Transitions are very gradual when cosine is plotted against angle. This is my reason for using a cosine curve for displacement when applying trigonometry to boat design. As shown in Figure 2, waterline length is the horizontal axis and the area of sections the vertical axis. Displacement is represented by the area under the curve.

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	18058 6-1/8" planer kit wicase	DELTA TOOLS	JS100K Freud plate biscuit jointer	JP-155 6 1/8' jointer/planer
6527 NEW SawZail vispd 8 amp	5005BA 5-1/2° circular saw	34-444 Table Saw Complete	1581VSK Bosch top hdie ig saw with	R500 2-1/4 HP plunge router
wicse & Quick Loc Cord	6510LVR 3/8" dnll rev. 0-2100 rpm 24104 85	w/1-1/2 H.P. motor & stand	case 8 30 Bosch blades 305 185	TS-254KAbove saw w/acc. kit &
0399-1 12V cdiss dril kit comp	6013BR 1/2" dnll rev. 6 Amp	605.00	1582VSK Bosch CLIC barrell gnp jig saw wicase & 30 Bosch blades 305 185	B&D 73-770 carb blade
0395-1 9.6V cdiss. drill w/cse	5402A 16" crcular saw-12 amp	34-445-34-444 Table Saw	BIESMEYER FENCES	RA200 8-1/4" radial arm saw
0219-1 9.5V cdiss. ordi w/cse	9401 4" x 24" belt sander w/bag318 165	complete w/30" Unifence	B-50 50° commer saw lence	RE600 3 HP plunge router
0234-1 1/2" drill 4.5Amag0-850rpm 209 112	4302C V spd orbital jig saw	049.00	WEDGE SMART LEVEL	BE321 3 x 21" v/sp belt sander
0244-1 1/2" drill 4 5Amag0-600rpm 209 112 0222-1 3/8" drill 3 5A 0-1000 rpm 179 102	LS1440 14" Miter saw	37-154 DJ15 6" Jointer	Model Description List Sale	SC160 NEW 16" bench scroll saw 260 145
0228-1 3/8° drill 3.5A 0-1000 rpm 169 99	LS1030 NEW 10° Mittre saw	w/3/4 H.P. motor 1049.00	SM-TR4 4 FT level wisensor 150 135	TFD170VHK 9.5V colss drill lot
0375-1 3/8" close quarter drill 208 125	36128 3 HP plunge router sq/base377 189		SM-TR6 6 FT level w/sensor 180 162	JM100K NEW Biscuit jointer wicase
6539-1 Cdis. scrdrv 190 rpm	2012 12" portable planer	28-283 14" Band Saw	and free case Special Sale 99.95	RS115 NEW 4 1/2"visp indm orb sndr134 79
6540-1 Cdis scrdrv whits & cse	MIL-ROUTE	3/4 H.P. motor	JORGENSEN I-BAR CLAMPS	LAMELLO BISCUIT JOINTERS
3102-1 Pimbrs rt angle drill kit	MR1/MR-R1 System	735.00	Model Size List Sale 7224 24' 27.11 16.95	TOP 10 "Simply the Best"
5399 1/2" D-hdle ham dhil kit	MR1/T1 Router table	70-200 NEW 20*	7236 36 29.10 17.95	STANDARD 10 "Protessiona's Choice" 499 399
6511 2 speed SawZall w/case 224 129	SENCO AIR NAILERS	Drill Press	7248 48° 31.96 19.75 7260 60° 35.60 22.85	PORTER CABLE
6750-1 Drywall gun 0-4000 4.5A 154 89	Model List Sale	739.00	7272 72 37.30 25.29	Model List Sale 590 1-1/2 HP router 54 225 12/
6507 15C Saw2all w/case	SFN2 Fin naler 1.5* -2.5*	17-900 16-1/2" Floor	ADJUSTABLE HANDSCREWS	691 1-1/2 HP router D hole
6014 Orbital sander 1/2 sheet 209 118	SN325 Nailer 1-7/8* - 3-1/4*	Drill Press	Jaw Open Box	695 1-1/2 HP router/shaper 310 194
8977 Var. temp heat gun	LS2 Pinner 5/8" - 1	365.00	Item#Length Cap List Sale of 6	351 3" x 21" belt sand w/c bag 225 120
5371-1 1/2" visp ham. drill kit	SKS Stapler 5/8' - 1-1/2"	40-601 18" Scroll Saw	#1 10° 6° 21.30 12.99 71.49	352 3" x 21" belt sand w/bag
3107-1 1/2" v/sp rt angle drill kit	LS5 Pinner 1 + 1+1/2	699.00	#2 12 8-1/2 24.45 15.95 81.89	361 31 24 beit sand wid bag 290 168
3300-1 1/2" visp mag rt angle drill	BOSTICH AIR NAILERS	100000	#4 16 12 40.30 24.89 146.85	362 4" x 24" belt sand wibag
5660 Router 1-1/2 HP - 10amp 325 189 5660 Router 2 HP 12 Amp 355 219	N80C-1 Utility coil nailer 845 419		STYLE 37 2-1/2"Throat 1/4" x 3/4"	315-1 7-1/4" top hole orc saw
6215 16° chain saw	N805-1 Stick nailer	DELTA	JORGENSEN	ABUR - AUT
6365 7-1/4" circular saw	T36-50 Shealth & decking stapler		law Boy	9315-1 315-1 comp. w/cs & carb bid 225 12
5368 7-1/4" circ. saw with the officer 214 125		#34-080	Jaw Box Item# Length List Sale of 6	9315-1 315-1 comp. w/cs & carb bid225 121 617 7-1/4" pushhandle saw
	N60FN-2 Finishing nailer	#34-080 10" MITRE BOX	Jaw Box Item# Length List Sale of 5 3706 6 9.30 6.29 35.65 2712 12 10.30 6.79 25.65	9315-1 315-1 comp. w/cs & carb bid225 12: 617 7-1/4" pushhandle saw
biade & case	Ni2D1 Coliforning name Org History T31 Brad name 270 155 CWC100 1 HP Pancaka Commission 45 290	#34-080 10" MITRE BOX XTRA SPECIAL 195.00	Jaw Box Itemat Length List Sale of 6 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 41.69	9319-1 315-1 comp. w/c8 carb bid225 122 617 7-1/4" pushhandle saw
biade & case	N60PN-2 Finishing nailer	#34-080 10" MITRE BOX XTRA SPECIAL 195.00 List 289.00	Jaw Box Item# Length List Sale of 5 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 41.69 3724 24' 12.42 7.99 45.25 970 797 19.56 9.66 11.37	9013-1 375-1 comp. wick & carb bio
blade & case239 135 0235-1 1/2' drill kyls. chuck mag215 125 6016 1/4 sheet pad sander84 49 5145 4.5' grinder 10,000 rpm59 95	NS0PH2 Consider mathematical and the second se	#34-080 10" MITRE BOX XTRA SPECIAL 195.00 List 289.00	Jaw Box Item# Length List Sale of 6 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 41.69 3724 24' 12.42 7.99 45.25 3730 30' 13.85 9.05 51.19 3736 36' 15.15 9.95 56.65	9013-1 315-1 comp. wick & carb bid
biade & case 239 135 0235-1 1/2° onli kylis, chuck mag 215 125 6016 1/4 sheet pad sander .84 49 6145 4.5° grinder 10,000 rpm .59 95 6142 6145' wircase & access .97 125 6749-1 Drywall gun 0.2500 4 5.4 .189 125	NS0FN-2 Consider mathematical and the second s	#34-080 10" MITRE BOX XTRA SPECIAL 195.00 List 289.00	Jaw Box Item# Length List Sale of 6 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 41.69 3724 24' 12.42 7.99 45.25 3730 30' 13.85 9.05 51.19 3736 36' 15.15 9.95 56.65 PONY CLAMP FIXTURES Lots Lots Lots	9019-1 315-1 comp. wick & carb bid
blade & case 239 133 02351 127 011 kyls: check mag 215 125 6016 1/4 sheet pad sander 84 49 99 55 6145 4.52 render 10.000 rpm 159 95 514/2 61/35 wecase & access 197 125 63742 61/45 wecase & access 126 45.4 189 125 6377 7.14" worm drive saw 295 169 125 169	NS0FN-2 Centroling half Centroling half Centroling half	ASH-080 10" MITRE BOX XITRA SPECIAL 195.00 List 289.00	Jaw Box Itemal Length List Sale of 6 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 41.69 3724 2.4' 12.42 7.99 45.25 3730 30' 13.85 9.05 51.19 3736 36' 15.15 9.95 56.65 PONY CLAMP FIXTURES Lots Lots 36.49 X034'* bick ppe clamps 13.10 7.89 84.89	9019-1 375-1 comp. wick & carb bid225 121 9617 7-1.4 pushkandie saw
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biade & case 239 133 0235-1 122 125 125 6016 1/4 sheet pad sander 84 49 6145 4.5 reinder 10.000 (pm159 95 5142 6145 wicase & access 197 125 6374 1.45 wicase & access 197 125 5749-1 Drywail gun 0.2500 4.5. 183 125 6377 7.1.4* worth drive saw	N30PH-2 Enrishing naite 653 313 N80PH-2 Enrishing naite 270 155 339 T31 Brad naite 270 155 339 CWC100 IHP Pancake Compressor 445 299 SKIL SIZZLERS 5850-02 1/2" EMH hammer drill wicce 255 335 38100 10" Miter saw 203 209 38105 3810 w60 tooth carb blade 230 144 273-04 12 visglo conflex sinill wides. Z batt 5 xtra special 5 piece bit sell. 210 135 160-502 EWB Benetit Inder wides 200 140 5	NOTICE MARKEN	Jaw Box Itemat Length List Sale of 6 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 31.69 3724 2.4' 12.42 7.99 45.25 3730 30' 13.85 9.05 51.19 3736 36' 15.15 9.95 56.65 PONY CLAMP FIXTURES Lots Model List Sale of 12 503'4' black pipe clamps 13.10 7.89 84.59 52/12' black pipe clamps 10.93 6.30 69.50 BOSCH Model List Sale List Sale 51.20	9019-1 315-1 comp. wick & carb biol225 121 9617 7-14/2 pushihandie saw .155 111 9617 7-14/2 rushihandie saw .255 121 9141 4-12/2 Tim saw .215 121 9548 X HD bayonet saw wicase. .201 121 123 9527 Recip saw vispeed &A
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biade & case 239 133 biade & case 231 125 125 6016 1/4 sheet pad sander 84 49 6145 4/5 rencet 10,000 pm 159 95 6142 61/45 wicase & access 197 125 6377 7.147 worm drive saw 295 169 PONY AIR PALM NAILER LPN672 Air Nailer wiglove Sale 94.99 FREUD SAW BLADES 58° Bore - Industrial Grade CARBIDE TIPPED SAW BLADES	NS0PN-2 Convergence <	DUT NOTICE.	Jaw Box Item# Length List Sale of 5 3706 6 9.30 6.29 35.65 3712 12 10.30 6.79 38.59 3718 18 11.37 7.35 41.69 3724 24' 12.42 7.99 45.25 3730 30' 13.85 9.05 51.19 3736 30' 13.65 9.05 51.19 3736 30' 13.85 9.05 51.19 3736 30' 13.65 9.05 51.19 3736 30' 13.85 9.05 51.19 503'4' black pipe clamps 13.10 7.89 84.99 521/2' black pipe clamps 10.93 6.30 69.50 BOSCH Model List Sale Sale 512 1581VS Top handle iig saw 23 13 529 13 Bosch Widd case for above ig saws 34' 30 36 34'	9013-1 315-1 comp. wick & carb bio
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I thought about the path that elements of water follow as a boat moves, but soon I realized this was too complex a subject on which to spend much time. Similarly, I did not give a great deal of attention to frictional drag and turbulence. Rather, I gambled on making flow as smooth as possible by controlling the displacement curve and, where convenient, reducing surface area. Later the gamble would pay off, and the Wherry would prove to leave littlewake.

By 1977 I was working in Seattle, Washington, and had developed a hull-design program for a Texas Instruments programmable hand calculator. Then I met Tom Whitaker, who was helping build a Perry-designed sailboat. Tom had learned cold molding in New Zealand after teaching in Thailand for a number of years. He became interested in my project, and Cosine I—a 16' x 30" cold-molded, single recreational shell—resulted. The following year I sold her and designed Cosine II—an 18'x 36 " shell which Tom also cold molded. I rowed that boat around virtually all of the islands in Puget Sound and raced her in the open-water rowing events that were being held at that time.

In 1982 Bob Pickett of Flounder Bay Boat Lumber in Anacortes, Washington, asked me to design a 14' stripplanked rowboat. Bob was selling cedar strips as a result of mention in David Hazen's book *The Stripper's Guide to Canoe Building*. Bob would eventually supply materials for a prototype that I would build and keep. The result of this arrangement was the Cosine Wherry.

hrough the years I have seldom passed up an opportunity to row any boat and had often rented Whitebear skiffs and other traditional boats from Dick Wagner's Old Boat House on Lake Union. I soon decided the Wherry should have a traditional hull shape.



Displacement is equal to the area under the cosine curve. Displacements forward and abaft center of buoyancy are equal. Prismatic coefficient = displacement / $(A_n \times WL)$ Final dimensions came from my own experience and careful study of lines collected by John Gardner and Willits Ansel. Gardner's work had been published in *National Fisherman* and later appeared in his book *Building Classic Small Craft* (International Marine Publishing Company, 1977). Ansel's *The Whaleboat was* published by Mystic Seaport Museum in 1978.

Pickett had specified the boat's length. Beam was decided mainly on the basis of spread between oarlocks, particularly at the forward and after rowing stations. Depths came largely from dimensions shown by Gardner and were greater than I otherwise would have used. The shape of the 'midship section—with appreciable deadrise and rounded bilges—was influenced by Ansel's descriptions of whaleboats.

Prismatic coefficient is defined in Figure 2. It is a measure of the fineness of the ends of a hull. The coefficient of Cosine I (the first shell) was only 0.500. This meant the waterline went from the equivalent of 180° to $+180^{\circ}$. This prismatic created considerable surface area with little added displacement and reduced fore-and-aft stability. In Cosine II, I had increased the coefficient to 0.552, and in the Cosine Wherry, I further increased it to 0.576.

Considerable attention was devoted to thwart and oarlock locations, shown in Figure 3. The boat needed to be rowed by one or two persons, but was too short for three oarsmen. A single oarsman would sit on the center thwart, or two rowers would sit on the forward and after thwarts. Thwart height was set so that, based on the center rowing station, oar grips came into the body about 12" above the thwart. Oarlocks were set 12 " abaft the after edge of the thwarts. The boat's center of buoyancy, and luckily her center of gravity, fell at the after edge of the center thwart. (The 100lb Wherry can be carried by a single person facing aft with the thwart resting on his shoulders.)

Calculations used for the design of the shells had to be refined and expanded. By now I was working on my own as a consultant and had purchased a Hewlett Packard HP-41, the ultimate programmable hand calculator of the time (perhaps of all time). The process, once the basic dimensions were selected, was to decide on



equations for the following: Sheer, in both plan and elevation; keel and ends; 'midship section; and transom. It was necessary also to select factors used in the above equations. I came to think of it as mathematical sculpting. Because I had no CAD system, I needed to make a series of calculations on the HP-41, draw the shape on paper, and then decide if I wanted to change it. Changes involved going back to the equations and the factors they contained. Since the Cosine Wherry was to be asymmetrical, two sets of computations were required, one for the bow and one for the stern. The only requirement was that the shapes had to be the same where the two halves were to meet.

A key to the design process was the selection of an exponent in the equation for the shape of the sections. As shown in Figure 2, the displacement curve dictated the area of each section below the waterline. Sheer and keel shapes were fixed in the early stages of design, and the curve of each section had to pass through these two points. The fullness of the curve-and thereby the area below the waterline-thus became a function of the size of the exponent. It was determined by a trialand-error (iterative) subroutine in the program. The area could also be varied by adjusting the keel line. If the

keel were to come up gradually, as it did toward the stern, the exponents would be larger and the bilges fuller. Forward, the keel was deeper and exponents smaller for a sharper entry. Full after sections made the boat more stable. The final result was a table of x, y, z coordinates from which mold stations could be made with little or no lofting.

I built the prototype Cosine Wherry in our one-car garage and launched her in the spring of 1983. Strip planking proved to be an excellent method for home construction of this type of boat. It placed little constraint on hull shape. Few special tools or skills were required. I also carved two pairs of 8' spoon-bladed spruce oars. In some ways they proved to be more of a challenge than the boat. A better length for them might have been 8'6".

I decided to call the new boat the Cosine Wherry—not because she met any definition of a wherry, but in memory of the old Navy boat in which I had learned to row.

The Cosine Wherry proved to be better than any of us had expected. She became the basis for *Rip, Strip, & Row* by Brown, Pickett, and Hartsock (Tamal Vista, 1985) from which several hundred Wherries have been built. Since then I've designed boats ranging in length from 8' to 24' using Similiar methods.

The Cosine design method could be applied to other displacement hulls; but, for the time being at least, I prefer to stay with rowing boats. Sailboats are complicated by rigging and angle of heel. Powerboats require a knowledge of engines, which I do not have. (I hate to see an outboard mounted on a boat that rows as easily as the Wherry.) Open canoes do not perform well on the salt water near which I live. Kayaks are excellent sea boats; however, for unexplained reasons, I do not really understand them nor am I fully comfortable in them.

Creating the Cosine Wherry was a rewarding experience. She has given me an appreciation of what must have taken place between builders and users of small boats in the 19th century. They must have been wonderfully intelligent people with an intuitive feel for hull shape and a willingness to communicate with one another.

John Hartsock is an engineering consultant specializing in wall systems. He has raced sailboats on San Francisco Bay, Long Island Sound, and Galveston Bay. In 1976 he and hisfamily moved to Edmonds, Washington, and his interest turned to open-water rowing. He can be reached at 619 Sater Lane, Edmonds, WA 98020.



Edited by Mike O'Brien

aunchings, a regular column, is dedicated to spreading the news of recently launched wooden boats. We want to share with our readers the latest creations of talented amateurs and professionals. Please help by sending us color photographs of what you have, built and telling us about your new boat-regardless of size, type, or intended use. Include the following basic information:

(1) Length on deck; (2) Beam; (3) Type, class, or rig; (4) Boat's name; (5) Designer's name; (6) Name, address, and phone number of builder; (7) Name and address of owner; (8) Port or place of intended use; (9) Date of launching (should be within the past year).

Send your news and best photos (slides preferred) of wooden boat launchings to Mike O'Brien, Senior Editor, WoodenBoat, P.O. Box 78, Brooklin, ME 04616.



Rob Stevens, of Hadden and Stevens Boatbuilders, sends word of making a Bob Baker-designed Piccolo lapstrake canoe for Bo Anderson. It seems that H and S had built to the same design for Bo's friendJack Gates a few years back, andJack's enthusiasm was contagious. The two Piccolos will sail in company on Maine's Casco Bay. Hadden and Stevens Boatbuilders, 65 Main St., Topsham, ME 04086. Plans can be ordered from WoodenBoat.



J.D. and Chris Elliott built this modified 19'9" Celebrity-class sloop with white cedar, mahogany, teak, and epoxy. Chris changed the underwater lines to include a winged keel and elliptical rudder. Because of the father/son relationship of her builders, the bright-finished daysailer was christened LEGACY. Chris Elliott, 122 Romano Ave., Coral Gables, FL 33134.



TAMWOCK, a 28 -by-11' Charles Mower-designed Barnegat Bay Aclass catboat, was built for Peter Kellog, of Short Hills, New Jersey, by the Philadelphia Maritime Museum, 321 Chestnut St., Philadelphia, PA 19106. The museum staff and volunteers worked under the direction of John Brady, Brady Boatworks, 225 West Tulpehocken St., Philadelphia, PA 19144.



Jim Thayer describes himself as a builder of fiberglass boats who "just got religion."WEE PUNKIN, a 7'10"wooden dinghy, represents the first results of his conversion. Jim double-planked his boat with 1/8" lauan, which he describes as "marvelous stuff-and cheap." The deck consists of 3/4" blue Styrofoam sandwiched between two layers of thin lauan. This construction eliminates the need for deckbeams, provides flotation, and is quite stiff. Plans can be had from Grand Mesa Boat Works, Box 75, Rte. 1, Collbran, CO 81624.



Gord and Eileen Brannen have been sailing together for nearly half a century. Last year, in search of a spirited daysailer that wouldn't require strenuous effort (hiking out) to sail at speed, Gord devised this 17'tacking proa. A beam of 7'6" should allow this multihull to be trailered without folding, canting, articulating, or separating. The designer/builder/owner can be reached at 5 Pitt St., Riverview, NB, E1B2Y9, Canada.



SUSAN CONSTANT, a 116' "re-creation" of the largest of three ships that brought English colonists to Virginia in 1607, has been launched at the Jamestown Settlement. The original vessel, a mid-sized merchantman, was about a year old when leased by the Virginia Company of London in 1606 for the transatlantic voyage. Stanley Potter of Beaufort, North Carolina, drew the new plans based on research accomplished by Brian Lavery. Alien Rawl, Inc., of Bradshaw, Maryland, built the ship on site. Eric Speth, Jamestown's Maritime Program Manager, is ship's master. Jamestown Settlement, P.O. DrawerJF, Williamsburg, VA 23187.



Dean Rhoads approached designer/builder Peter Freebody with suggestions for a new electric launch in the Victorian style. LUELLA, the impressive 34" teak-and-varnish result of this collaboration, will grace the waters of New York's Upper Saint Regis Lake. Eight gel-cell batteries supply power sufficient to run her twin electric motors for six hours on a single overnight charge. Peter Freebody & Co., Mill Lane, Hurley-on-Thames, Berkshire, England.



Jan Nielsen found the null lines tor this 21'4" fisherman's launch in Howard Chapelle's classic Boatbuilding (page 393). Bill Garden designed an appropriate cabin for the handsome, Volvo diesel-powered boat. Jan, the builder and owner, operates West Wind Hardwoods, Inc., Box 2205, 10230 Bowerbank Rd., Sidney, BC, V8L 3S8, Canada.



Starting with the lines for J. Henry Rushton's Saranac Laker, Fred Stark redrew the plans and added some ideas of his own. The striking boat measures 14'10"by 39" and weighs 74 lbs. Fred will use his glued-lapstrake plywood creation to "celebrate the wetlands and waterways of the Pacific Northwest." The builder/owner resides at 10246 63rd Ave. South, Seattle, WA 98178.





Ken Elowe designed and built this fancy 176 outboard skiff for Arlene and Bruce MacLeod of Orrs Island, Maine. The boat is used for picnics and fishing on and around inshore islands. A 20-hp Mercury provides plenty of power. Even Keel Woodworks, 21 Åmes Rd., Dover-Foxcroft, ME 04426.

Designer John Marples used Constant Camber hull panels, plywood, and epoxy for the construction of his 23' Cyclone. Unlike many contemporary trimarans, this boat keeps all three hulls in the water when at rest. John explains that the "lowdrama ama" position reduces heeling. Marples Multihulls Designs, 4530 Firmont Dr. S.E., Port Orchard, WA98366.



Richard Cullison, of Silver Spring, Maryland, has launched the first boat built to Phil Bolger's Martha Jane design. The 23'6" self-bailing, self-righting, sheet-plywood sharpie is shown here with the designer at the helm. Richard estimates that the project consumed about \$5,500 (including sails) and 18 months of part-time work. Light (7") draft, a tabernacle for the mainmast, and a flat bottom make for an eminently trailerable boat. For a detailed description of this design, see WB No. 80, page 102. Complete building plans can be ordered from Common Sense Designs, P.O. Box 91429, Portland, OR 97291.



Art Johnson and Sheryl Baker of Olympia, Washington, will cruise their new 30' Phil Bolger-designed cat-yawl on the "inside waters" of the Pacific Northwest. Carl Brownstein made a smooth job of the cedar-on-oak hull. A guard for one of the yet-to-be-installed leeboards can be seen on WILLOW'S side. Rights O' Man Boat Works, S.E. 2743 Bloomfield Rd., Shelton, WA 98584.



With help, instruction, and encouragement from her son Chris, Barbara Rueby made a fine job of this 10'6" Pete Culler-designed pulling boat. The builder, her young grandchildren, and her two German shepherds will enjoy PEARL on the ponds and lakes near Rochester, New York. Plans for this "New England Yawlboat" can be obtained from George B. Kelley, 20 Lookout Lane, Hyannis, MA 02601.
More Launchings

Listed by boat type, designer, and builder

8' 5" lapstrake skiff: Charles Edward Davies, Victoria, Australia. 9'9"skiff:John Nation; Nation Brothers Boatbuilding, 2419 N. Maple, Harrah, OK 73045.

11'5"kayak: Philip C. Bolger; Phil Gross, Pismo Beach, California.

ll'6''skiff: Easi-Build Pattern Co.; Deforest Underdahl, Prior Lake, Minnesota.

11'6'' Cartopper: Philip C. Bolger; Cliff Moore, Rocky Hill, New Jersey.

11'6 " **Pippin garvey:** Dave Gerr; Marcus Freedman, Pembroke Pines, Florida.

11'9 " **Acorn skiff:** Iain Oughtred; Matt Sazy, Burton, Michigan.

14'sectional johnboat: Kurt E. Olson, White Bear Lake, Minnesota.

15'2'' Nancy's China sloop: Sam Devlin; Harry C. Torno, Victoria, British Columbia, Canada.

15' 6'' Surf sailing skiff: Philip C. Bolger; Charlie V.Jones, Cashiers, North Carolina.
15'6''dory: Philip C. Bolger; Steve Turi, Hasbrouck Heights, New Jersey.
15' 7'' Whisp skiff: Steve Redmond; Dick

Eijssen, Hollandsche Rading, Netherlands.

16' outboard cruiser: Hartley Brooke; Dan Drabek, Santa Cruz, California.

16' Wayfarer sloop: Ian Proctor; Nicholas Puryear, Durham, North Carolina.

16'canoe: Ted Moores; Stafford Brochu, Colorado Springs, Colorado.

16'canoe: Ted Moores; lain Colquhoun, Victoria, British Columbia, Canada.

16' decked canoe: Bob Brown, Apple Valley, Minnesota.

16'Amesbury skiff: Lowell's Boat Shop, 459 Main St., Amesbury, MA 01913.

16' canoe: Gil Gilpatrick; John Solovei, Deep River, Connecticut.

16'Adirondack guideboat: William F. Wein, DeWitt, New York.

16' Ration skiff: William Atkin; William H. Denham, Vanceburg, Kentucky.

17' canoe: B.M. Morris; Russell Burch-field, Houston, Texas.

17' inboard skiff: Seth Scarborough, Dothan, Alabama.

17' recreational shell: William Garden; John Schmude, Saginaw, Michigan.

17'2'' canoe: Tom J. Donaghy, Calgary, Alberta, Canada.

17'2'' Sculling Skiff: Glen-L Marine; Bob Whitney, Pittsfield, Massachusetts.

17'3" Simmons Sea Skiff: Sea Skiffs, Inc., 7980 Market St., Wilmington, NC 28405, for Bruce Leggatt.

17'6'' skiff: Richard Schultz, Archetype Design & Fabrication, 5711 Kennedy Blvd., North Bergen, NJ 07047.

17'6'' McKenzie River drift boat: Greg Tatman; John Tyler, Portland, Oregon.

17'6 " catboat: Winthrop Warner; Mark Harper, Philadelphia, Pennsylvania. 17'8" No Man's Land boat: Brad Belkonen, Santa Barbara, California.

18' modified Swampscott dory: Chris Coiley, Lopez Island, Washington.

18' Pacific dory: Tracy O'Brien; Joel Abramovitz, Newton, Massachusetts.

18'canoe: Lew Miller; Arthur Alien, Clinton, Connecticut.

18'skiff: Tracy O'Brien; Dave Jefferson, Racine, Wisconsin.

18' Firefly recreational shell: Ken Bassett; Philip Brister, Oakland, California.

18' Firefly recreational shell: Ken Bassett; Darcy Wardrop, New Westminster, British Columbia, Canada.

19' catboat: Jay Benford; Anami, River Falls, Wisconsin.

20' sloop: Gustav Rueter, Heriot Bay, British Columbia. Canada.

20' modified Great Pelican: William Short; W.Jack Fesenmeyer, Old Wooden Boatworks, 106 8th St. E., Bradenton, FL 34208, for Alan Cobain.

21'gondola: Michael E. Spatucci, Classic Watercraft, 14372 S.W. 139 Court, Miami, FL 33186.

22'7" ness yole: Adrian Osier; Gerd Lohmann, Krefeld, West Germany.

23'9" Take Apart canoe: Thomas Woehrmann, Harbor Springs, Michigan.

24' Sea Ton sloop: E.G. Van **de** Stadt; Peter Zalewski, Toronto, Ontario, Canada.

24'cutter: Robert Smith, Portland, Oregon.

24'runabout: Don Philbrick, San Francisco, California, for Bill Breuner.

25'CalicoJack:Joe Gregory;James Atkinson and Joe Zachary, Baton Rouge, Louisiana.

25'curragh: Eddie Hutch, Tralee, County Kerry, Ireland, for Michael O'Shea.

25'runabout: Steve Killing; Dwight Boyd, Clarion Boat Company, P.O. Box 389, Campbellford, ON, KOL 1LO, Canada.

25' 3'' Black Skimmer: Philip C. Bolger; John Tirums, Pine Grove, California.

27' modified St. Pierre dory: John Gardner; Peter Willis, Lower Rose Bay, Nova Scotia, Canada, for Rob Tiarks.

28' Swedish cruiser: Tore Larsson, Kingsviken, Orust, Sweden, for Roger Streling.

30'gondola: Jack W. Fesenmeyer, Old

Wooden Boatworks, 106 8th St. E., Bradenton, FL 34208.

50' side-wheel riverboat: Alan Davison; Great Eastern Riverboat Co., Ltd., Charlottetown, Prince Edward Island, Canada.

52'9 " catamaran: Roger Hatfield; Gold Coast Yachts, P.O. Box 1980, Kingshill, St. Croix, U.S. Virgin Islands 00851.

56'pinky schooner: Pat Stallcup; Pat's Boatyard and Shop, 1029 Laurel St., Lake Oswego, OR 97034.

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A ERIEL is a McCurdy-designed, cold-molded cutter built in British Columbia by Bent Jespersen. This boat is a nice blend of modern design, precise craftsmanship, and attention to traditional details and aesthetics. By all accounts, she is also extremely fast and well-mannered. Once again, we have a chance to examine a design executed by a professional naval architect for his own use. Such designs are always of special interest, for the designer is free from the restraints, conditions, and prejudices of any client but himself. With no input except his own, he has a chance to dream. I find that such designs are often very good ones.

Jim McCurdy (of the firm of McCurdy and Rhodes) executed this design for his own use and had a boat named SELKIE built using composite construction. The boat was intended both for offshore and coastal cruising, Designed for rating and cruising, AERIEL has sailed well in competition.



and to race under the IMS Rule. McCurdy points out that the design has less beam and more draft than most contemporary boats, with a relatively high displacement/length ratio of 301. These characteristics produce a hull with a high range of stability (130°) , which is so necessary

for safety and comfort offshore.

This design, with a few minor modifications and built in wood, was the basis for AERIEL. She was built for Bill Malone of Nanaimo, British Columbia, and launched in 1989. Her builder, Bent Jespersen, is one of Canada's premier wooden boat builders. His shop on the waterfront at Sidney, on Vancouver Island, has become known for expertise in coldmolded wooden construction, and for quality craftsmanship.

There are several differences between SELKIE and AERIEL, the most noticeable being the change to an aft-



raked stern on AERIEL. A look at the sail plan will show this, as well as the tall, modern cutter rig with short main boom and large foretriangle (the base of which is 2' longer than the foot of the mainsail). Hall Spars supplied the mast and boom. The mast is supported by two spreaders and three forestays, one of them a baby stay from the cabintop to the lower spreaders, giving plenty of strength and support for offshore sailing. Total sail area is 747 sq ft when figured with 100% foretriangle. By my calculation, this works out to a sail area/displacement ratio of 17.25, indicating that she has plenty of wind horsepower to move her.

The sail plan also shows us a modern-looking hull profile, with relatively high, flat sheer; straight, raking stem; and short stern overhang, with the upper part of the rudder showing above the waterline. The straightsheered house profile fits the hull shape well. The window arrangement on AERIEL has been changed a bit from that in SELKIE. The new boat has two large windows aft, rather than one, and two smaller portlights forward.

Let's next look at the perspective lines drawings kindly furnished by McCurdy. AERIEL has a modern underbody with small tin keel amidships, and a large skeg/rudder right at the after end of the waterline. Notice how her belly abaft the fin bulges out a little to increase displacement aft and to allow the engine to be installed farther aft and lower in order to free up the accommodations a bit. The sections AERIEL, unlike her predecessor (designer Jim McCurdy's SELKIE), carries a traditional aft-raked transom.

are basically semicircular with no reverse to them (it's a pity reverse is so seldom seen in modern lines plans, if only for aesthetic reasons).

AERIEL's cold-molded hull skin consists of three diagonal layers of 1/4" red cedar followed by the final outer skin of 3/8" mahogany running fore-and-aft, all glued with WEST SYSTEM epoxy. The outer surface is sheathed with epoxy and fiberglass cloth. A monocoque structure such as this is immensely strong for its weight, as well as being leak-free. After smoothing up the inside surface of the hull, laminated oak frames were installed on all bulkhead locations and spaced on approximately 16" centers through the middle of the boat, with greater spacing toward the ends. The plywood deck is fiberglass covered, while the cockpit sole and seats are teak. The trim both outside and below is varnished Honduras mahogany. The lead ballast keel weighs 8,700 lbs and is attached with bronze bolts. The resulting ballast/displacement ratio of 48% is high, contributing to the excellent range of stability and enabling AERIEL to stand up to her rig in all weathers.

The accommodation plan shown on these pages belongs to SELKIE. AERIEL's differs from it only in detail, not general arrangement. On AERIEL a double sink replaces the single one shown; there is no pillar at the after end of the cabin table; she has a Yanmar diesel instead of the Westerbeke shown on the SELKIE plan. The layout is unusual only in that it is so much copied-it seems to be the most practical and popular arrangement for boats around 40' in length. The centerline companionway steps serve to separate the port-side galley from the main traffic flow, providing a nook in which the cook can brace himself while plying his art during the bumpy going of offshore racing. The chart table and seat opposite the galley are big enough for serious chart work. Around it are concentrated the

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switchboard and electronic components in one protected area. Abaft the navigation station is a quarter berth, with most of its length under the starboard cockpit seat.

Moving forward, the main saloon with extension berths on each side and big lockers outboard is a standard and well-proven arrangement. A dropleaf table attached to the after side of the mast will allow the whole crew to take a meal together.

AERIEL's beam of 11' 3' is somewhat on the narrow side to accept pilot berths with settees inboard. The big advantage of pilot berths is that someone can be in the bunk, asleep or reading, and there is still a place to sit down in the main cabin; nevertheless, not everyone likes them.

A toilet room to port, hanging locker and bureau to starboard, and two V-berths forward complete the accommodations. There is a door to the forward stateroom for privacy. If the quarter berth is used, AERIEL will sleep five.

Pictures show AERIEL's cockpit to be large and comfortable. The pedestal steerer with large-diameter wheel is located aft, with a seat across the after end of the cockpit. Forward

of the wheel, seat lockers on each side give seating for the crew with easy access to the sheet and backstay winches on top of the cockpit coamings. While the boat is set up with serious racing in mind, she is not rendered uninhabitable for leisurely cruising, as is the case with so many flat-out modern racing designs.

AERIEL, to me, is the perfect example of why wood should be seriously considered as an option for yacht construction. Her cold-molded hull must be equal to or better than composite in strength-to-weight ratio. I'll bet the cold-molded hull is cheaper to build one-off, and it certainly wins hands-down in appearance and warmth. If the hull is properly cared for, its durability should be outstanding. With a lovely wooden yacht such as this, pride of ownership (so difficult to measure but which means so much to most boat owners) will get the highest marks. Jim McCurdy's handsome modern design, coupled with Bent Jespersen's craftsmanship and good taste, has resulted in one of the nicest wooden sailing craft in Northwest waters.

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WoodenBoat REVIEW

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William H. Webb: Shipbuilder

Reviewed by Llewellyn Howland III

William H. Webb: Shipbuilder, by Edwin L. Dunbaugh and William duBarry Thomas. Published by Webb Institute of Naval Architecture, Crescent Beach Rd., Glen Cave, NY11542. 240pg., illus., fold-out lines plans, \$35.00.

C lipper ships make up one of the most exhaustively documented and dramatized chapters in American maritime history. For a century and a half, sea-struck schoolchildren have memorized the clippers' sailing records. Generations of writers and artists have sought (with varying degrees of success) to capture in print or on canvas the complex beauty of these gold-driven ocean racers.

From the first, too, there has been a distinct bias among even such discriminating narrative historians as that old sea dog, Capt. Arthur H. Clark (author of The Clipper Ship Era, New York, 1910) and Mystic Seaport Museum's first director, Carl Cutler (author of the magisterial Greyhounds of the Sea, New York, 1930)-a bias toward the adoptive Bostonian Donald McKay as the preeminent figure in the great age of American wooden ship building, the grand master of the clipper form. For these historians and their readers, it is not McKay's achievements alone that matter but the magnitude of the woes that befell him at the height of his fame. McKay's four-masted extreme clipper ship GREAT REPUBLIC was all but destroyed by fire on the eve of her maiden voyage in December 1853. Her ordeal-and McKay's-came to symbolize in the popular imagination the mutability of all our fondest hopes and aspirations. Whether McKay had been prudent to risk such a huge investment of his capital and faith in one vessel, it has seemed almost rude to inquire.

As Edwin L. Dunbaugh makes plain in his exemplary study of the life and work of William H. Webb, this foremost New York shipbuilder was a risk-taker by definition,



who did not hesitate

to take his chances with the likes of Commodore Cornelius Vanderbilt or, latterly, Jay Gould and Jim Fisk, even as vessels built by him were tested by the ceaseless extremities of wind and weather, the inevitable consequences of human frailty and error. Dunbaugh makes plain, as well, that Webb's designs and construction methods were, by any objective measure, the full equal of Donald McKay's. Equal. Or better.

Unlike McKay, however, or the even more unfortunate designer of clippers John Griffiths, Webb displayed the canny and conservative financial instincts of the born capitalist. He took great risks, yes, but seldom at the expense of good business sense. From his earliest days in business, Webb sought—and usually gained—a financial stake in the commercial vessels he built. And he was just as ready to invest in land-based enterprises as in maritime ventures. During the boom years of the California Gold Rush in particular, when Webb-built vessels helped forge a primary transportation link between the East Coast and the West Coast, Webb enjoyed a private gold rush right on Sixth Street.

The steadiness of Webb's business judgment was of a

piece with his measured performance as a shipbuilder. "Though most shipbuilders did not begin rendering lines drawings of proposed ships much before the mid-'50s," Dunbaugh notes, "it was William Webb's practice to do so from the time he started designing ships, not only making the drawings himself [and carving the 1/8"= 1' half models from which the lines were taken], but also writing out every specification for every ship by hand. Webb once observed that he had all the information needed to reproduce exactly any ship he ever built." From such a sound foundation, it is small wonder that Webb's reputation as a shipbuilder grew steadily—and continues to grow a century after his death.

It was in March 1840 that William H. Webb, then 23 years old, "a serious and stolid" son and grandson of New York shipwrights, inherited the management of the Webb & Alien shipyard at the foot of Sixth Street in Manhattan. At this already celebrated yard, under the instruction of his celebrated father, Isaac, young Webb had recently finished an exacting six-year apprenticeship in naval architecture and shipbuilding. And here, only a decade or so earlier, Donald McKay of East Boston (by way of Newburyport and Nova Scotia) and New YorkerJohn Griffiths had also served apprenticeships, with results the shipping world was just beginning to notice.

Although New York's 30 active shipyards were still feeling the effects of the major financial panic of 1837 and the Webb & Alien yard was nearly bankrupt following the death of Isaac, William Webb soon had a contract for the first vessel to be designed and built under his own name. This was the 114-ton, 80'brig MALEKADHEL, which is thought to have seen service both as an opium trader and as a slaver (though in neither case with Webb's financial participation). Later in 1840, Webb built the 433-ton, 120' ship JAMES EDWARD, which began life as a packet and ended it as a whaler.

Thereafter, orders came to William H. Webb in ever increasing volume and for ever more impressive and important vessels—constituting, as Robert Albion has written, the "greatest aggregate of tonnage for any American shipbuilder up to that time." All these vessels, including the fabulous 7,000-ton, 377' ironclad warship DUNDERBERG (later the French navy's ROCHAMBEAU), 1865, were built of wooden-plank-on-wooden-frame construction at Sixth Street in Manhattan.

Between 1840 and May 1869, when the 1,683-ton, 192' packet CHARLES MARSHALL became the last full-rigged ship ever launched in New York City or State, Webb modeled and built at least 135 vessels, employing at peak periods upwards of 1,000 workers. Among these vessels, each of which has been given a fine brief biography in this book by William duBarry Thomas, were 45 packet ships, 7 warships, 38 merchant steam vessels (among them the great Sound sidewheelers BRISTOL and PROVIDENCE of 1867), 4 pre-clippers, 7 medium clippers, and the extreme clipper ships CELESTIAL, GAZELLE, CHALLENGE, COMET, and—Webb's masterpiece—YOUNG AMERICA. About this vessel, Webb wrote: "[YOUNG AMERICA] is my

Wooden Boat Restoration & Repair

Wooden Boat Restoration & Repair

Reviews from two perspectives, by Bent Jespersen and Franc Casey

Wooden Boat Restoration & Repair, A guide to restore the structure, improve the appearance, reduce the maintenance, and prolong the life of wooden boats with WEST SYSTEM Brand epoxy. Published by Gougeon Brothers, Inc., P.O. Box X908, Bay City, MI 48707. 76 pg., illus., \$2.25. Also available from the WoodenBoat Store.

From the Northwest, where boats are stored afloat:

Many people have tried to repair old wooden boats and have become very frustrated because they simply do not know how to get started or where to turn for advice. These are problems faced by amateurs as well as by experienced woodworkers who are unaware of the new techniques and products available to them. If you see yourself in this category, *Wooden Boat Restoration & Repair*, written by the Gougeon Brothers of Bay City, Michigan, may offer some help.

The new *Restoration & Repair* manual is a 76-page, Softcover book in a very practical format. It has the contents listed on the front cover and is divided into eight sections, with numbered

red tabs that correspond with identical tabs inside the booklet

for easy reference. The authors are professional boatbuilders who have pioneered many of the innovative ideas and methods used in state-of-the-art boatbuilding. They have created a manual that is aimed at helping amateur and professional boatbuilders alike—and also promotes their products. conception of what a well-designed and -built sailing ship should be."

Not even Webb's honesty, probity, skill, and talent saved him from taking a major financial loss with the failure of his North American Steamship Company in 1874. This setback, which followed soon after the closing of his shipyard (and the virtual demise of New York shipbuilding) in 1868, brought Webb's active shipping career to a premature close. Although Webb was asked on more than one occasion to run for election as reform mayor of New York, he declined to seek public office. Meanwhile, the lifelong invalidism of his elder son (he had no daughters) and the untimely death of his younger son (and business partner) clouded Webb's later years with misfortune as cruel as any experienced by John Griffiths or Donald McKay.

But when W⁷ebb himself died in October 1899, at 83, his financial affairs were in first-class order. In addition to extensive holdings in New York real estate and Pennsylvania oil fields, he had substantial equity in several insurance companies and in Manhattan's Third Avenue El. He was, indeed, that rarest of beings, a builder of wooden vessels who died a rich man.

It is one measure of the worth and vision of William H. Webb that he should have founded and handsomely endowed (long before his death) the Webb Academy and Home for Shipbuilders, now Webb Institute of Naval Architecture, "to educate...young men who wish to learn the shipbuilder's trade" and to "provide...a happy and comfortable haven" for destitute shipwrights. Another measure was the contribution he made to the creation of the American Society of Naval Architects and Marine Engineers—SNAME—for "the promotion of practical and scientific knowledge of the arts of shipbuilding...and the allied professions...."

But perhaps Webb's most characteristic legacy was the publication, around 1895, of the magnificent folio volume *Plans of wooden vessels selected as typesfrom one hundred andfifty various kinds and descriptions, from afishing smack to the largest clipper ships and vessels of war, both sail and steam, built by Wm. H. Webb in the City of New York.... This is, to be sure, a monument to its author. It is no less enduring a tribute to all those thousands of now-forgotten shipwrights and mechanics whose skill and sinew were woven into the fabric of the great wooden vessels built and launched during the age of the clippers.*

Exacting in its scholarship, balanced and convincing in its judgments, and wonderfully accessible in its narrative style, *William H. Webb: Shipbuilder* fills a large void in the literature of American shipbuilding and entrepreneurial history. Only the substandard halftone and color reproductions (and some surprisingly uninformative picture credits) keep the physical book from achieving the absolute excellence that we might properly expect from a publication bearing the imprint of the Webb Institute of Naval Architecture.

Llewellyn Howland III is the proprietor of Howland and Company of Jamaica Plain, Massachusetts, specialists in marine books and arts.

They begin with a section on assessing the feasibility of repair and restoration. Section two deals with a boat's structure, its weak and strong points, and how to inspect for and locate damaged areas. There are sketches galore to help you better understand the text, if you are not already familiar with the technical terms used. The third section is designed to help you identify the various WEST SYSTEM epoxy products and provides basic procedures for their safe use—again, it's all well illustrated.

The next three sections tell you how to repair areas damaged by dry rot by removing the rot and fitting graving pieces, or by simply filling the affected areas with thickened epoxy. There are sketches that show a number of ways to repair structural framework—for example, replacing frames, making jigs for laminating new parts, and refastening keelbolts.

Another section explains their procedures for repairing conventional carvel-planked hulls and splining the seams. Lapstrake and cold-molded hull repairs are also dealt with in a simple and common-sense manner.

Questions about using epoxy coating for added protection are answered in section eight. In addition to all this, there are appendices in the back of the manual, with charts that tell how much material to use when mixing the epoxy products for different applications. There is some useful information on strength properties, moisture content, and weights for different wood species, along with lists of the custom and commercially available tools used in this manual. Some traditionalists will undoubtedly disagree with several of the techniques in the book and argue that a wooden boat has to "work" and should be flexible, so hard glue or epoxy should not be used in seams. Nevertheless, I agree with the authors that joints should not move in the first place. This goes for butts as well as seams. Epoxy provides strong joints. There will still be some flexibility, but it will occur in the wood itself rather than in the joints.

Overall, I am impressed with *Wooden Boat Restoration & Repair and* believe that it belongs in every workshop. And I am amazed by the amount of advice crammed into a book of its size.

After an apprenticeship in Denmark, Bent Jespersen has worked as a shipwright and boatbuilder for the. past 39 years. Al his boatyard in Sidney, British Columbia, he builds conventional carvel-planked and cold-molded yachts up to 53' in length.

From the Northeast, where boats are hauled for storage each winter:

Having been in the wooden boat repair, rebuilding, and restoration business for close to 20 years, I cannot imagine my shop functioning successfully without the help of WEST SYSTEM brand products. If they had been available years ago, many of our older boats might still be here. But I'm concerned now, after reading *Wooden Boat Restoration & Repair*, that epoxy may put some wooden boats beyond repair.

Wooden Boat Restoration & Repair really deals with the





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subjects of repair and patching, and only touches on the definition of restoration in its introduction. WEST SYS-TEM brand products can and should be used in some restoration processes, but appropriate examples are only mentioned briefly in the book.

As I read through this "guide to restoration," I couldn't help but recollect some boats I've encountered that have been treated with some of the methods presented in Wooden Boat Restoration & Repair.

I was sitting with the boys at a local boatshop during a coffee break not long ago. They were talking about one winter when they'd brought the yard owner's boat inside for a going-over. He had them strip the topsides and bottom and epoxy-spline all her seams. Faired up, the boat looked great and was tight as a drum—so tight, though, that when she went back in the water, the dry wood swelled, and the planks lifted right off the frames at the turn of the bilge. We used to see this problem when a boat was overcaulked.

I once met someone who proudly told me how he'd rebuilt his boat's transom. He had removed all the planking, epoxied new sections in the fashion pieces, arid with the help of epoxy and 3M 5200 to make up for a poor fit, assembled a new "welded" transom that "sure wasn't going anywhere"-at least, not until a catamaran slammed into it on the mooring and smashed it. He came by the shop again, but this time he was at a loss over how to make repairs.

The owner of a 30' double-ender asked me why, after spending \$1,000 at a reputable yard, his rudderpost continued to leak. I couldn't help but question the poor prep work and the quarts of epoxy that had been poured into the horntimber bays. But, looking at the bright side of things, the poor prep work made it easier to remove the epoxy, and we secured the tube, installed a new floor timber, and caulked the area. It only cost him a couple hundred dollars more.

I agree with Wooden Boat Restoration & Repair's recommendations for preventive rot treatments, dutchmen repairs, epoxy/fiberglass decking, laminated frames, fairing putty, restructuring plywood, and some of their advice on coating and finishes for new and old parts.

But when the Gougeons begin to discuss keelbolt problems, glued-in garboards, epoxied planking seams, complete encapsulation, hardware installation, and teakveneer decks, then I feel they are going to have to write another book on how to repair these areas the next time around. The book discusses leaking keelbolts, for instance, without recommending checking for electrolysis. The keelbolt holes themselves might not be the problem, but they certainly will be if the bolts to be removed have been epoxied in place.

Wooden Boat Restoration & Repair is a valuable book to have for repairing some of the problems common to older wooden boats. But I would not set this "guide to restoration" in WEST SYSTEM brand epoxy. It might need to be revised later.

Franc Casev operates Wood Boats in East Norwalk. Connecticut, where he specializes in the restoration, rebuilding, and repair of wooden boats, power and sail.

The Richardson Story

Reviewed by Peter H. Spectre

The Richardson Story, by William C. Lindquist. Published by William C. Lindquist, P.O. Box 17771, Rochester, NY 14617. 190pg., illus., \$29.95.

⁶⁶ T hey say every man has a hobby," began the explanation under the heading "What Boat Building Means to Me" in a Richardson Boat Company sales brochure. "If so, mine is boatbuilding. To me it is more than a mere 'job' it is the expression of an ideal through the medium of one's personal efforts. Early in my boatbuilding career I resolved to give Richardson Boats an individuality—a character all their own which would reflect in some degree, at least, by appearance and performance, the sincerity of effort which entered into their construction."

The writer of those words was George Reid Richardson, owner and principal boatbuilder of the company. Though the time was the middle of the second decade of this century, the sentiments were the same as those of a much later era: the 1970s and 1980s, when the act of building wooden boats was no longerjust another way for a blue-collar kind of guy to earn a living but something on a higher plane, a matter of personal expression. Which might explain why boats built by Richardson—at least those produced before the second world war—are valuable collectibles at this very moment, and those slapped together in a cavity mold by Uncle Fred's Boat Works in East Tenafly, New Jersey, are not.

We see a Richardson boat and immediately connect with it. One look at the Scout, a standard 26' raised-deck motor cruiser designed by William Deed and built by Richardson beginning in 1920, should be reason enough for anyone to shove his 1988 Cobra Intruder, the yellow metalflake one with the purple indoor-outdoor carpeting, into the nearest landfill.

G.R. Richardson, born in 1879, learned to build boats at the Bay City Yacht Works in Bay City, Michigan. In 1909, he opened his own shop in North Tonawanda, New York, at the western end of the Erie Canal. Primarily a custom shop until the 1920s, the Richardson Boat Company built motor, sail, and rowing boats, and gained a reputation for quality craft at a reasonable price, almost always delivered on the promised date. Over the years, Richardson built to the designs of Ralph Winslow, William Deed, William Hand, John Hacker, John Hanna, John Alden, Eldredge-McInnis, Sparkman & Stephens, and others—in short, the best designs by the best designers.

When the boat-at-every-dock concept came into vogue in the 1920s, Richardson did his best to provide the product for the eager consumers. But unlike other builders of the era, such as Christopher Columbus Smith of Chris-Craft and Bernard Lyman of Lyman Boat Works, he did not overexpand and therefore did not suffer the disastrous fall from grace of many of his competitors during the Great Depression. Right up to the day Richardson died in 1937, and for a few years afterwards, Richardson Boat Company



moderately sized production shop with loyal—in many cases, fanatically so—customers. They had built their reputation with custom boats of distinction; they added to it with production boats that could be customized to any configuration the owner could imagine.

The years following World War II were another matter, however. The company, which came into the hands of investors, gradually became just another boat factory looking for a way to make the most with the least. They fooled around with molded plywood boats that couldn't hack it, sea skiffs that were no match for those of shops specializing in such craft, and, in terminal despair, aluminum boats—not molded or plated, but built with aluminum planks on aluminum frames. They amalgamated, they diversified, they fought with their workers, they struggled with their dealers; they folded their tent, such as it was, in 1962.

All this and more is related in *The Richardson Story*, by William C. Lindquist. Perhaps it is not the most analytical of books, or the most lyrically written, but it is at the very least a resource for those who own Richardsons and wish to know more about why they are superior and those of Uncle Fred's Boat Works are not. There are plenty of photographs of Richardson boats under construction and in use, numerous quotations from contemporary boat reviews, and much of the bare historical bones of the company. Interpretation of what it all means is left to the reader.

What does it all mean? To be blunt about it, quality construction leads to success; diminution of quality leads to decline and eventual failure. The institutional histories of other custom and production boat companies that have been published to date—and there are now several—tell much the same story and beg the same interpretation. Here's hoping the owners and managers of today's shops and those of the future are paying attention.

Peter Spectre is a contributing editor of WoodenBoat Magazine.

Parallel Rules and Dividers: Choose Them Well Reviewed by Jon Wilson Photos by Sherry Streeter

'll admit it: I love gadgets. I am fascinated by the marvel and mystery of high-tech instruments. I am not easily persuaded to acquire them, but I love to see them perform. When I installed Loran and became a member of the Electronic Yacht Club, I couldn't wait to utilize all that technology. I soon realized, though, that when the fog rolls in close around the islands of Maine, I am far more willing to rely on dead reckoning than on sometimes-tenuous Loran TDs. That doesn't, however, dissuade me from wanting to install radar, and GPS, when all the satellites are in orbit. Still, in spite of the power and charm of these high-tech gadgets, the two lowtech instruments on which most of us rely are dividers and parallel rules. Dividers are virtually indispensable, but not all of them are the same. As to parallel rules, there are plenty of sailors who have fallen in love with alternative plotters for their coastal navigation work. This business of tools is very subjective, and there is no dissuading a committed user from his or her favored devices. I often get the feeling, though, that we've forgotten how wonderful the right tools can be, so I thought I'd review a couple of my favorites. This is not to pretend that I am any less subjective than anyone else, but to share my enthusiasms for certain qualities not always appreciated.

It's probably fair to say that many of us are so seduced by the wizardry of electronic instruments dial we often fail to keep a proper dead-reckoning plot anymore. In clear weather, I commonly fall into this category. I blame it on the absence of a good navigation station aboard, but in fact it's the absence of good discipline. Of course,

part of the pleasure of a DR plot is in the use of the tools themselves: If they are very precise, quick, and easy to use, we use them. If not, it's too easy to postpone the task as long as possible, and that's dangerous. This review is about easy and precise tools. It is also more about chart-table work than cockpit navigation.

T here are basically two kinds of dividers: friction adjustable and wheel-screw adjustable. The beauty of the





The Weems and Plath Ultralight model #176 dividers, and the 15" model #142 graduated parallel

rules.

The course line is drawn as necessary, and the parallel rules are placed so that a meridian is as close as possible to the "base" rule.

The "base" rule is

shifted so that the "S" mark lies directly on

the meridian, and the

rules are closed. The

protractor reads the

course true where it

intersects the merid-

ian. In this case the course is either 27CP or 030 T.

easily adjusted in the hand that's using it. (The *straight* friction divider is not as easy to adjust in the one hand.) The main problem with the friction type is that when the measurements have to be precise, the small adjustments are more difficult, depending on the condition of the pivot

joint and the coordination of the navigator. In addition, it can be very easy for the setting to change when stepping off distances, or when going from the course line to the mileage or latitude scale for a measure. The wheel-screw models, on the other hand, while boasting precision adjustment, are slow enough to try the patience of an eager navigator needing to close from two miles down to twotenths in a hurry, and they haven't been well suited to one-handed operation. To solve this problem, some manufacturers of drafting tools have provided quick-release threads, so that large adjustments could be made swiftly, but most of the wheel-screw models I've seen have suffered from a couple of additional problems. The first is that one or both of the arms of the dividers has a friction-type break in it to allow for extended compass drafting; it is easily moved, resulting in changed settings. The second is that the arms are sometimes not gear-synchronized, which feels sloppy and imprecise.

Fortunately, there are some new dividers which solve the needs for both quick action and precision adjustment. Called "Ultralights" (model #176, \$9.95), they are made in West Germany for Weems & Plath, the navigation specialists. Their secret is that they are wheel-screw adjustable for precise measurements, *but* the threads of the screws have enough pitch to allow quick gross adjustments to be made exactly as on one-hand friction dividers: with finger pressure. In effect, they offer the best of both styles. This feature may not have been intentional, but it is certainly a wonderful result. Moreover, the thread pitch allows even the fine adjustments to be made quickly and precisely with the wheel.

Since the Ultralights are relatively new on the market, their durability may not have been well tested; the screws pass through plastic threaded sleeves, so thread-wear could, I suppose, become a factor if the one-handed operation is extensive and heavy, or the threads aren't occasionally cleaned and perhaps lubricated with light oil in dirty situations. The points are interchangeable with leads (supplied) which convert the dividers to a pencil compassessential for plotting radar bearings on the chart, or drawing current vectors. But changing points is a waste of time. My preference is to have two pairs of dividers, and to keep one pair devoted to normal work, and the other devoted to pencil compass work. Happily, Ultralights are relatively inexpensive, which makes purchasing a couple of pairs easier. They are not graceful to my eye, nor tremendously comfortable as one-handers, but they are surely the most functional dividers I've ever owned.

As for the various ways of measuring coastal chart courses, I admit to having sampled numerous plotters, but I'm convinced that the right parallel rules are beyond compare. (By plotters I mean the common variety of devices that allow one to preset the magnetic variation,

align the base with lines of latitude or longitude, and directly and quickly read the magnetic course. I do have a great little pocket plotter like this for quick course work in the cockpit, but that's another story.) My own summer cruising is often so close to home that magnetic variation changes are few and small, and I don't like to go through the process of converting from true unless I have to. As I have learned from experience, however, it is easy for me to be seduced by that automatic conversion feature, and to forget about changing the variation during the course of a longer cruise. I'd hate to admit how far I've sailed without checking variation; my candor would collapse my remaining credibility. The result is that the advantages of these devices are sometimes defeated by my casual attitude in clear weather. Moreover, my preferred plotter has a degree scale which is so fine that it's getting a little harder to read—as are the magnetic degree scales on my charts. Thus, what I need is a plotter that doesn't encourage me to forget about variation, yet is quick to use, and easy to read. The solution is a set of protractor-graduated (Capt. Field's pattern) parallel rules.

As I mentioned, this is a subjective business, but what I love about parallel rules is that they are so versatile. An elegant solution to a traditional problem in both coastal and celestial navigation, parallel rules have managed to evolve with great success into the modern age. I have owned parallels made of rosewood, and of Bakelite plastic, but the best ones I've ever owned are made of clear acrylic. Like my dividers, they are also made for Weems & Plath, but in Denmark. On a Mercator chart, they can almost instantly provide the true direction (to which one must remember to add or subtract variation) of whatever the course without the need to go to a compass rose, but simply to a meridian (see photographs). Reading a course this way is sure to make anyone appreciate the inventive genius of the Capt. Field who, I presume, gave parallels the additional versatility of the protractor. This style reads like protractor-graduated triangles (indicating degrees true when aligned with meridians), but I find them easier and faster to use.

I never thought much about the difference between parallel rules and triangles until a fellow student of navigation one day boasted that his triangles were far superior to my parallels in their ability to indicate true course quickly. So we tried two courses, one long and one short. The result was a virtual tie on the short course, and a decided advantage to the parallels on the long course, owing to the fact that the parallels were simply longer enough to acquire a course line in one stroke. I realized then that parallel rules are probably widely underestimated and often underutilized. Perhaps too many sailors have experienced the less versatile (non-graduated) style, and feel constrained by the need to step them up to the center of a compass rose in order to read the course magnetic or true. It's an awkward



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process if the rose is not close, and the magnetic rose can be hard to read with precision, especially at night.

These Weems & Plath parallels are more than a couple of connected strips of plastic. To examine them closely is to appreciate fine instruments. The graduations (in welldefined single degrees) are stamped in on the underside, not just printed on, and they are crisp and clear, as they are on any good measuring instrument. As for readability, the narrowest graduation in degrees (at 90/270) on the smallest (15") rule is twice the width of the graduations on a chart's compass rose—far easier to distinguish under any circumstances. Cork discs are installed at the bottoms of the hinge pins, preventing inadvertent slippage of the rule. The only problem I have experienced with these parallels is that on what I call the "base rule," the graduations (in points and half-points) on my larger parallels do not run out all the way to the edge, causing a parallax problem when putting the center mark on a meridian, an irritation which slows me down a bit. The smaller models do not have this problem, and I assume it is a production flaw on the larger ones. Unfortunately, there is a tremendous difference in price between the smaller (15", #142, \$19.95) and the larger (18", #143, \$42.95, and 21", #144, \$48.95) graduated rules. It is apparently due to the difference in manufacturing and sales volume, but it discourages the average buyer from acquiring the larger ones. Personally, I prefer the larger parallels to the smaller most of the time, because I like being able to strike a long course line in one stroke whenever possible, and they feel generally more substantial. I should add, however, that Weems & Plath offers an inexpensive 18" parallel rule made in Taiwan, which is not a shabby product, but it is not in the same league as the Danish version, which is positively graceful and elegant by comparison.

here is something to be admired in a tool which *insists* L that its user be acutely and constantly aware of the variables (like variation) in an endeavor as unforgiving of error as navigation. I have devoted many waking hours in search of easier ways to do lots of things, and as I mentioned above, I am a gadget freak. But there is nothing so wonderful as a beautiful instrument which accomplishes much of the work but attempts none of the thinking. I know that I'll continue to try new plotting tools, because they're fun to see. But there should always be a place for the time-honored traditional tools, or what Ridge White, of Robert E. White Instruments, publishers of the *Eldridge* Tide and Pilot Book and purveyors of navigational instruments, respectfully calls "yester-tech." Modern technology is not fail-safe, and traditional tools and instruments can add a measure of reliability which feels less ephemeral. With that in mind, I trust that those parallel rules and dividers will always occupy a place of honor aboard.

Weems & Plath plotting tools and instruments are not sold at every chandlery and marine supply store. For the name of the dealer nearest you, write or call:

C. Plath Navigation and Automation 222 Severn Avenue Annapolis, MD 21403 301–263–6700

Jon Wilson is Editor of WoodenBoat magazine.

BOOKS RECEIVED

Communications Afloat, by Elbert S. Malony. Hearst Marine Books, 105 Madison Ave., New York, NY 10016. 144 pg., \$14.95. Emphasis on modern electronic communications, with a short chapter on visual and sound; part of the Chapman's Nautical Guide series.

Emergencies at Sea, by Sid Stapleton. Hearst Marine Books, 105 Madison Ave., New York, NY10016.223 pg., \$16.95. Runs the gamut from man overboard to loss of steering, medical problems to helicopter evacuation; part of the Chapman's Nautical Guide series.

Into the Great Solitude: An Arctic Journey, by Robert Perkins. Henry Holt and Co., 115 West 18th St., New York, NY 10011.219 pg., \$19.95. Alone in a canoe on northern Canada's Back River; much inner turmoil to go with the outer sort of a wilderness voyage.

Fighting Ships of the Revolution on Long Island Sound: 1775-1783, by J. Lawrence Pool. J.L. Pool, Box 41, West Cornwall, CT 06796. 132 pg., \$15.95. A history based on the letters of Betsy Pool; privateers, naval battles, midnight raids, and the burning of towns.

Working at Woodworking: How to Organize Your Shop and Your Business, by Jim Tolpin. Taunton Press, 63 South Main St., Newtown, CT 06470. 147 pg., \$21.95. The business of craftsmanship, including setting up a shop, doing the work in an economical manner, and keeping the business books in order.

Dressing Ship: How to Furnish, Refurbish, and Accessorize Your Boat, by Janet Groene. Hearst Marine Books, 105 Madison Ave., New York, NY 10016. 184 pg., \$22.50. Outfitting and decorating your boat in the modern manner: i.e., like a studio apartment.

Shaper Handbook, by Roger W. Cliffe and Michael Holtz. Sterling Publishing, 387 Park Ave. South, New York, NY 10016. 255 pg., \$16.95. The ins and outs of choosing and using a power shaper for woodworking.

Refrigerationfor Pleasureboats. by Nigel Calder. International Marine Publishing Company, Camden, ME 04843. 148 pg., \$24.95. Iceboxes, compressors, condensers, expansion valves, everything you were wondering about.

The Old Outboard Book, by Peter Hunn. International Marine Publishing Company, Camden, ME 04843. 214 pg., \$17.95. Incredible amount of detail about all those kickers from the past, including an appendix with comprehensive model/year information.

Exploring Muskoka Lakes, by Susan Pryke. Boston Mills Press, 132 Main St., Erin, Ontario, Canada. 151 pg., \$24.95 (Can.). A guide to Ontario's boating paradise, with much about the area's maritime history and many stunning photographs.

Muskoka Boathouses, by Jacqueline Carroll. Boston Mills Press, 132 Main St., Erin, Ontario, Canada. 91 pg., \$40.00 (Can.). Color reproductions, with text, of 40 pastel drawings of boathouses in the region of Ontario famous for its distinctive structures.

Buehler's Backyard Boatbuilding, by George Buehler. International Marine Publishing Company, Camden, ME 04843. 371 pg., \$24.95. How to build wooden boats the Buehler way; which is to say, inexpensively, yet like the proverbial brick outhouse.

Sea Sense, by Richard Henderson. International Marine Publishing Company, Camden, ME 04843. 358 pg., \$29.95. Practical seamanship for the cruising sailor; third edition of what is now a standard work.

National Maritime Museum Guide to Maritime Britain, by Keith Wheatley. Webb & Bower, 5 Cathedral Close, Exeter, Devon, England. 208 pg., £15.95. Town-by-town, region-by-region, onceover-lightly guide to the sights, sounds, and smells of the old days and ways.





Mildew, and Lots of It!

by Richard Jagels

A boat owner from Maine writes: "I am a longtime reader of your magazine and a lover of wooden boats. A year ago I purchased an FD-35, a fiberglass boat. Yes, I know that may come as a disappointment to you, but the boat has beautiful teak woodwork. The interior is all teak, no fiberglass in sight anywhere! Here is my problem: Mildew [on the wood]. Lots of it!

"It was there when we bought the boat. We thought that the previous owner might not have been careful keeping the interior dry. We cleaned it all up during the winter using Lysol and tung oil. It came back. We are careful to keep the interior dry! She has four Dorade vents. The cabin door is ventilated. The bilge is dry. The deck does not leak. We keep her at our yacht club. Can you give advice? I would greatly appreciate your opinion and suggestions. We love the boat! Don't tell me that we should buy one made of wood."

Is It Mildew?

I certainly wouldn't presume to suggest that you buy a boat made from wood. Your complaint doesn't relate to the fiber [expletive deleted] part of your boat.

Mildew is caused by a fungus, and its presence can often be confirmed by its distinctive smell, although absolute identification requires microscopic examination. Mildew, more commonly referred to as mold when it occurs on wood, may appear as a fluffy whitish or grayish bloom or may range in color from red or yellow to blue-green or even black. In boats, the black discoloration is quite common. The color is a result of spore production by the fungus, with different species producing different-colored spores.

Although the spores, and hence the discoloration, are produced only on the surface of the wood, the fungus usually penetrates the wood to some depth with colorless hyphae (microscopic thread-like structures). Scraping or wiping the surface may remove the discoloration, but when conditions are right again, the colorless fungus remaining in the wood will produce more spores on the surface and more surface discoloration.

Mold Versus Stain

The group of fungi that cause mold or mildew are called Ascomycetes. Certain members of this group are known as "staining" fungi because they produce colored spores within the wood rather than on the wood surface. Both mold fungi and staining fungi use starches and sugars stored in specialized wood cells as their food source. However, under the right conditions of moisture and temperature, if Ascomycete fungi (particularly the stain fungi) persist in the wood long enough to deplete these easily digestible carbohydrates, they will attack the walls of the wood cell and slowly weaken the surface of the wood—a process known as soft rot.

Mold fungi generally do not penetrate deeply into wood because they require abundant oxygen (more than the Basidiomycetes, which cause interior *decay* of wood). As long as the stored starches are available near the wood surface, the mold fungus will persist. When this food supply dwindles, the fungus may enter a resting stage or simply die. If new food sources (such as linseed oil or tung oil) are added to the wood, the mold will persist as long as air humidity or wood moisture content remain high enough.

A Persistent Beast

Although Lysol and other disinfectants can kill some bacteria and perhaps some surface mildews, they have little penetrating effect on wood. Once the mold fungus has become as well established as it seems to be in your teak, a surface application of Lysol would have little effect, particularly if you did not first remove the old finish. I can recommend a couple of possible remedies, but cannot guarantee their efficacy since persistent and well-established mold fungi are very difficult to eradicate.

Being fastidious about keeping the boat well ventilated all year around

and using the tried-and-true method of going over the boat once a year with a solution of one part household chlorine bleach to five to ten parts water *can* solve the problem for many a wooden boat. Bleach, however, will give oiled or unfinished teak a whitishgray look. You can avoid this by using an oxalic acid solution instead. Oxalic acid is much less volatile than chlorine bleach and, therefore, less of a health hazard in enclosed spaces. Never mix chlorine bleach with other cleaning solutions—toxic fumes could be generated.

Another way to attack the problem is to strip the woodwork, apply a mildewcide, and refinish it. The time to do this is when the wood is at its driest, perhaps after winter storage, depending on how and where the boat is stored. Scrape and sand all wood surfaces to remove any trace of finish. If your woodwork is extremely damp and if your boat, like the letter writer's, is a *fiberglass* boat, you could then heat up the interior of the boat to as high a temperature as is practical (90°F or higher, if possible) and maintain that temperature for a minimum of a week in an attempt to bring the moisture content of the wood below 15%. Caution: This kind of severe and prolonged heating may be difficult to achieve, and, of course, it is not recommended for wooden boats.

When you are confident that the wood is as dry as possible, apply a surface treatment of a mildewcide (more on this later). If the mildewcide is water based, again dry the wood, this time with localized heating. A hair dryer or a heat gun used for removing paint may be appropriate here.

For final finishing of the wood, apply varnish or an oil that does *not* have a natural seed-oil base; if it does, a mold inhibitor should be incorporated into the finish. A hard, glossy finish like varnish can be cleaned periodically and is less likely to attract more surface mold. Another advantage of varnish is that it is better at excluding oxygen from the wood beneath it, and thus better at preventing microorganisms from growing. Natural oil finishes always remain a little tacky and, therefore, are magnets for dirt and mold spores. Oil finishes also tend to be slightly more hydroscopic (water attracting). If you must have an oil finish, then incorporate a mildewcide into it.

Mildewcides

The effectiveness of a mildewcide is directly proportional to its toxicity to mold fungi. Unfortunately, many of the most effective mildewcides are also hazardous to human health pentachlorophenol (PCP) being the most blatant example. As I have pointed out in several previous columns, I do *not* recommend the use of PCP under *any* circumstances.

Several other less toxic chemicals are also reasonably effective in controlling mold growth: copper naphthenate; zinc naphthenate; copper-8quinolinolate; bis-(tri-n-butyltin) oxide (TBTO); 2-(4-thiazolyl) benzi-midazol; 3-iodo-2-propynyl-butyl-carbamate (Polyphase); and chromium trioxide (chromic acid). With the exception of chromium trioxide (which is dissolved in water), the above chemicals are usually dissolved in mineral spirits and hence can be incorporated into the final finish as well as used as a pretreatment on the stripped wood. The copper-containing preservatives will turn the wood slightly green, and the chromium trioxide will either darken the natural wood color or turn it slightly green or yellow, depending on wood species. If you cannot adequately reduce the moisture content of the wood, then I would recommend using chromium trioxide. Otherwise, one of the other preservatives would be preferable.

Probably the most effective chemicals that are readily available and do not appreciably change the natural color of woods are Polyphase and TBTO (or combinations of the two). The following companies produce clear or tinted versions of these wood preservatives, alone or in combinations: Cabot, Cuprinol, Lucas, Magicolor, Minwax, Olympic, and Sherwin Williams. I am sure that this is not an exhaustive list.

Health Risks

The chemical mildewcides that I have listed are thought to have minimal health risks. (TBTO can cause skin irritation for some individuals.) However, many of these chemicals, particularly Polyphase, are relatively new on the market, and we do not know the long-term health risks associated with using them. Avoid using any of these preservatives in areas where food is prepared or stored. I would certainly advise wearing appropriate respiratory and skin protection (face masks, gloves, etc.) when applying these chemicals. Forced ventilation with fans is highly recommended when working with wood preservatives or household chlorine bleach in the interior of a boat. Maintain forced ventilation for several days after application to ensure removal of residual volatiles. .

Richard Jagels is professor of forest biology at the University of Maine, Orono. He welcomes letters from readers of this column.





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43' LOD Chapelle schooner, 1981. Bright-finished hull with "no surprises." 2 private cabins, dinette, Volvo diesel. This boat has unbelievable woodwork and authentic detail and ambience. "For the schooner man." Located NW. Asking \$125,000

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a cabin layout, beautiful detail in a high varnish finish."A notable vessel for speed and interior volume."— L. Francis Herreshoff. Located in FL. Asking \$79,000

59'Walsted full-powered cutter, 1963. A raised-saloon, protected-helm vessel in perfect condition. Roller main by Hood. 3 staterooms and the best of everything. \$250,000

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DRUMBEAT— 49' Charles Wittholz design, built by George Luzier 1987. Strip-planked juniper, laminated mahogany frames, bronze fastenings, teak decks. Perkins diesel. Acc. 7. See WoodenBoat #78. FL. Asking \$290.000.



WINDALIER — 58'3" Custom S&S/A&R Keel Centerboard Yawl, 1962. Double-planked mahogany/ cedar w/ bronze CB trunk. floors, etc. Large & comfortable accom. w/ owner's cabin forward. Lovely, well-built, and wellmaintained CCA design. ME. Asking \$175,000.



VORTEX — 52 6 Custom Cold-Molded 55 Sq. Meter Sloop, 1990. Westerbeke diesel. Excellent cold-molded construction offering great strength and ease of maintenance. Nicely finished it equipped for short-handed sailing. Highly recommended. ME,



ACHATES — 30'4" Eldredge-McInnis designed Full-Powered Motorsailer, 1961 by Malcolm Grinnell. Mahogany, oak, bronze. 2 steering stations. Rebuilt diesel, 1990. Acc. 34 in spacious layout. Full sail inventory, well maintained. Recent price reduction. \$19,500.



FANCY — 24' Herreshoff Buzzards Bay 15 (E. Boat). built app. 1910, rebuilt 1978-83. largely original. Fast, classic daysailer w/ the Nat Herreshoff pedigree. Located MA. Asking \$15,000.



DOIGENE II — 58 Frederick Sheperd Ketch built by White Bros, England, 1902. Teak/oak/copper, teak deck 140-hp GM diesel. Sleeps 9. 4 staterooms. Former owners include Royal Yacht Squadron, King Farouk of Egypt. & the Bugatti Automobile family FL/ CARIBSIS0,000



LANDS END — 39'3'' S.S. Crocker Ketch, 1935 by Britt Bros, in Massachusetts. Mahogany/oak/bronze, teak decks. 74 Westerbeke 37-hp diesel. Acc. 4-6. Maintained by one of Maine's finest yards. Owner anxious. ME. Air



INTERLUDE — 42'4" Matthews "42" Convertible Flying Bridge Sedan, 1962. Twin GM FWC diesels. Acc. 6 in comfortable 3-cabin layout. A handsome classic extensively restored since 19H7, and well recommended. NJ. Asking \$65,500.



JOAN R —40'Wittholz Tug-Style Cruiser, 1971. Cedar oak/ Monel/bronze. Diesel generator. Sleeps 4 in 3-cahin layout w/ stall shower, reefer, etc. VHF, depth, Loran C. Well equipped & good-looking trawler w/ outside bridge. Comfortable & well maintained. SC. Asking \$59,950.



SANDPIPER — 33' L.F. Herreshoff "Meadowlark" Ketch, 1962 by Thomas Fletcher. Cedar/yellow pine/oak/bronze.'85 Yanmar 15-hp diesel. Acc. for 4. See WoodenBoat #58. ME. Asking \$15,000.



AIKANE — 30' S&S Gulfstream 30 by Derecktor, 1956 Cold-molded cedar over ong mahog planking \ Awlgrip. Sleeps 4. Belongs to a boatyard owner who has spent the yard's spare time rebuilding & upgrading. Highly recommended, good turn of speed. FL. Asking \$22,500.



 RAINDANCER II — 67 on deck, Murray Stevens

 designed & built Staysail Schooner, 1980
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 oak/copper, finished bright. Perkins diesel. Acc. 10. Full
 electronics. Ready to cruise or charter. Recently reduced.

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CARIBBEE — 57'6' Rhodes/Nevins CB Sloop, 1937 Sleeps 9. GM diesel. Double-planked mahogany over cedar, bronze fastened. Famous winning yacht from the '50s, now for sale at a much reduced price due to the owner's purchase of another yacht. MA. \$129,000.



MIST OF LEMOLO — 30' Exceptional Garden Cold-Molded Shoal-Draft Cat Ketch w/ Trailer, 1979. Comfortable accommodations for 4. excellent construction, shoal draft, & trailerability highlight this pleasing design. Highly recommended. ME.



ELSKE — 43' Sparkman & Stephens Yawl by Walsted of Denmark, 1967. Double-planked mahogany, varnished topsides, teak deck. Westerbeke diesel Sleeps H. Owner has implemented all recommendations by recent survey. Our highest recommendation. ME. \$220,000.



AMARANTH — 24' Bud McIntosh Custom Gaff Rigged Cutter, 1988 by Todd French. Pine & oak carvel planking on oak, copper rivet fastened. Suzuki 4-hp outboard. Acc. 4 in open layout. Wholesome, sturdy & traditional pocket cruiser. ME. Asking \$31,000



ARCHANGEL — 36' International 600 Yawl by Henry/deDood, 1961. Tight seam mahogany over laminated frames. Sleeps 5. Well equipped w EP1RB. autopilot, speed. Loran C. etc. Built to high standards & well maint. by knowledgeable owner. NY. Asking \$50,000.

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42'Crocker Ketch- 1958, ex. "Cousin Elizabeth" One devoted owner lor the past 17 years who has maintained this boat in excellent condition. Hull refastened in July "90 with silicon bronze. GM 3-71 diesel overhauled in Dec. '90. New cap rails. 5 sails, inc. club-footed jig and mizzen staysail. Beautiful! \$39,900.



51' Abeking & Rasmussen, 1953 Designed by Sparkman & Stevens and constructed of double mahogany planking over white oak frames, teak deck and bronze fastenings. She is a last, able sloop, well maintained, and outfitted for ocean racing and cruising. \$140,000.



36' Alden Sloop, 1936/88 Rebuilt to the highest standards in '88-only the keel and some hardware are original, but the design has been faithfully retained. 1st place winner in Tampa Antique Boat Show. Recent survey values replacement at 250K. Family illness forces sale. Asking \$69,500. Make offers



26'Crosby Catboat, 1926 For purists who want a piece of history... this boat was purchased from Mystic Seaport in 1980 and brought directly to Luzier's yard in Florida for restoration, inc. new keel, bottom, steering and tanks. Featured in Nautical Quarterly Vol. II, Sept. 1980. Asking \$29,900. Offers!



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48'6" ELDREDGE-McINNIS designed custom teak motorsailer built in Hong Kong in 1963. Completely refurbished to yacht condition 1985-87- Ford 120 diesel. Sleeps 5 in 3 cabins. Onan 7.5 gen set. New sails '86. Heating system. Dinghy on davits. Fully found for offshore cruising. Located FL. Asking \$125,000



65' CUSTOM trawler yacht designed

by Eldredge-McInnis and built by American Marine in 1963. Two doubles plus crew of 2. Twin GM 6-71 diesels. Cruise 10K+, top 12 knots. Complete electronics since '86. Only two owners and maintained in Bristol condition. 2000-mile range. Must be seen. Located NY. Asking \$199,500

57'8" ELDREDGE-McINNIS custom motoryacht by Goudy & Stevens, 1969. Double planked. Cummins 903 TI's 1975. Top 20 knots. 2 doubles, 2 in crew. Completely equipped with radar, autopilot, Loran, speed log, etc. A truly beautiful yacht offered by the original owner in "turn-key" condition. Asking \$200,000. Offers Located FL.

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53' PACEMAKER motoryacht, 1967. Twin GM 8V-71 diesels, rebuilt in '78. Sleeps 8. Ideal liveaboard with both oil heat and air. Loaded, and all in very good condition. \$84,900.

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42'3" CUSTOM pilothouse trawler yacht by our office. Built in 1986 of cold- molded epoxy system Sleeps 2-4 with huge tin-deck galley. Lugger 150-hp diesel, A state-of-the-art wood trawler in top condition. Located in VA. Reduced to \$129,000.

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32' Gilmer pilothouse ketch, 77.	39,50
35' Jensen, '63	29,90
36' Crocker ketch, '56	35,00
38' Lobsteryacht, '35	79,50
40' Concordia PH, '46	42,50
10' Crealock motorsailer '62	79 50



MIRAKA - 40' Mayflower ketch, blt 1961. Excellent condition throughout. Well suited for liveaboard or o/s. \$89.500

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All original interior, Loran, vane, Perkins diesel, 5 sails. \$26,500.

44' Herreshoff PH ketch, '69	\$89,000
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48'S&S, '60 (ALEMBIC)	67,500
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SOPHIA CHRISTINA — 46' gaff schooner. Brewer design, built 1983. As featured in WB#99, p.67. \$159,000.

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DICTATOR 31' 1904 Robert McLain Friendship Sloop There is really nothing quite like a Friendship sloop for a pleasant summer sail! Entirely restored by Jams Newman in the '70s, DICTATOR is one of the most famous examples of this popular type of vessel. Call us. Asking \$35,000



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Built for Charles Payson as the replacement for his famous commuter yacht by Quincy Adams Yacht Yard to a Sparkman & Stephens design, SAGA is a distinctive motoryacht. With impressive performance and appearance, her character is equally suited for the yachtsman who enjoys sport fishing. Asking \$89,900



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Below is a partial list of current offerings. If you do not see what you are looking for, please call us and we will do our best to help youfind your perfect wooden boat.

SAIL	BOATS			Herreshoff Ketch	50	1925	\$48,000
TYPE	LENGTH	YEAR	PRICE	Mauer Yawl	53	1927	\$74,000
National 14	14	1920's	\$3,800	Topsail Schooner	54	1959	\$78,000
Swampscott Sailing Dory	17	1980's	\$2,500	Marco Polo Schooner	55	1956	\$167,000
Custom Teak Sloop	19		\$11,000	Abeking & Rasmussen Masthead Yawl	57	1953	\$250,000
Stadel Gaff-Headed Cutter	20	1974	\$14,500	Herreshoff Ketch	57	1934	\$189,000
Herreshoff "Fish"	21	1926	\$12,000	Rhodes Centerboard Sloop/Cutter	57	1937	\$129,000
Herreshoff "Fish"	21		\$6,500	Chinese Sailing Junk	60		\$385,000
S. Herreshoff "Islander"	22	1952	\$7,900	Herreshoff New York 50	72	1913	\$300,000
Maxwell Cutter	24	1986	\$25,000	POWE	PROATS		0000000000
Luders 16	26	1940's	\$4500	FOWE	RBUAIS	UT I D	nner
Ouincy Adams 17	27	1945	\$1200	Limon CL/B Dunghout	LENGTH	1050	\$9.500
H 28	28	1947	\$10,800	Cheir Coop Scortman	10 0	1959	\$2,000
Tripp Sloop	28	1952	\$18,000	Chris Ceaf	9.4	1954	\$2,000
Alden Priscilla Sloop	30	1961	\$28,000	Christen Marinette	24	1930	55,000
Custom Sharpie	30	1982	\$21,000	Elco Marinette	30	1020	\$0,500
Crocker Amantha Cutter	31	1945	\$19,500	Choic Ceath Commander	30	1939	\$9,000
Hinckley Islander	31	1940	\$33,000	American Cas & Foundar	20	1007	\$18,000
International 500	31	1959	\$18,000	Flas Conjugate	94	1097	\$19,000
Jansen Pilothouse Sloop	32	1956	\$30,000	Chris Confi Challenger Salar	34	1064	\$12,000
Crowninshield Sloop	33	1902	\$7.000/Offers	Christerari Chanenger Saion	20	1994	\$40,000
Sparkman & Stephens Aux Sloop	33	1960	\$40,000	Maulaus Flabridge Contine	39	1929	\$05,000
Frank Loud Aux Cutter	34	1977	\$38,500	Flag Flatten Matagenalit	40	1949	515,000
Nielsen Designed "Gumdrop" Class Yawl	36	1960	\$49,500	Eleo Flattop Motoryacht	49	1023	\$68,000
Alden Coastwise Cruiser	36	1939	\$22,000	Matthews	492	1058	\$75,000
Knutson	37	1959	\$26,000	Flee Cruitarte	4.4	1936	\$15,000
Controversy Yawl	37	1957	\$28,500	Chris Craft Constallation	46	1065	\$49,000
David Nutt Custom Cutter	39	1976	\$79,000	Eleo Elatton	50	1099	\$70,000
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25' ERIC JR. Sound and seaworthy coastal cruiser designed by William Atkin, built 1929. Alaska cedar over oak. Same owner since 1960. Volvo diesel, Loran, VHF, depthsounder, cast-iron stove. \$13,950/offers. OR, 503-223-4022.

1960 BEETLE CAT, just restored. New frames, floors, coaming, deck canvas, sail. Includes cover, trailer. \$2,700. Steve Koopman, NY, 516-676-9893, evenings until June 20.

25' HUTCHINSON, 1936, rebuilt 1988. ON, 613-272-2362.

12'OLDTOWNSPORTBOAT, 1952. Spruce oars. Excellent condition. Classic! \$1,950. VT, 802-863-6656.

38' ROBB -DESIGNED CUTTER, New Zealand, 1939. Beautiful! Triple-planked Kauri. \$40,000. Honolulu, 808-833-3647.

30' ELCO CRUISER, #3034, 1947. Beautiful classic; needs a little work. We're moving, make offer; goes to good home. CT, 203-423-8359.



60' GAFF-RIGGED CUTTER, 1911. A fine example of a sailing vessel from the Edwardian era. Teak construction. \$95,000. David, 133 El Altillo, Los Gatos, CA, 408-374-0217.

33' HERRESHOFF MEADOWLARK, 1959. \$5,500. NJ, 609-399-7610.

36' NORWEGIAN SLOOP, 1958. Mahogany, oak, bronze. Large cabin, teak deck. Many major upgradings 1989-90, including Universal diesel. Well equipped. Beautiful, classic yacht in good condition. \$25,000. RI, 401-423-2410.

30' HINCKLEY ISLANDER SLOOP, 1939, 8'5" beam, 4'9"draft. Excellent condition. Only seven built, two remaining. Must sell! \$13,500. NY, 212-689-7094.

18'CHRIS-CRAFT, 1946, rare runabout Superb condition. Lake-worthy Original wood, refinished; chrome excellent; reupholstered cockpit. 250-hp Chrysler engine. Original engine available. Trailer. Photo on request \$11,900. MN, 507-931-1062. 28' CHRIS-CRAFT SEA SKIFF, lapstrake with hardtop. Single 283 Chevy engine, 1967. Hull, decks, transom, stem, etc., in very good condition. With transportable trailer. \$5,750. Located Rochester, NY, 716-223-5674.

24' CROSBY CATBOAT, built 1908, rebuilt 1971. Diesel, new sail. \$13,900. MA, 508-758-4740.

35' BLUENOSE SCHOONER, gaffrigged, Nova Scotia built 1938. Sound condition, sleeps 4. 25-hp Graymarine, Shipmate stove, VHF. Classic. Lots of fun! \$9,000. 508-922-1944.

1965, 35' CHRIS-CRAFT. Solid boat. Twin 318, FWC. \$2,750. RI, 401-295-1039.



41'ALDEN SLOOP, 1939. Mahogany on oak, bronze fastened. New Yanmar diesel 8/1990. Fast, comfortable, sound. \$42,000, offers considered. CT, 203-526-3561.

28' TUMLAREN, built 1983 to Knud Reimers' 1935 specifications. Cedar/ oak/mahogany; sleeps 2-4. Outboard, trailer. An exquisite thoroughbred double-ender. \$14,900. VT, 802-644-2010.

20' FANTAIL LAUNCH, circa 1900. Very pretty, very rare. Universal 1-cyl engine. Needs work; professional restoration available. P.O. Box 443, Tamworth, NH, 03886.603-323-7147.

1966 OLD TOWN "Molitor," complete sailing rig; 1966 3-hp British Seagull. Both in museum condition. 17'of brass and mahogany. \$5,000. NJ, 201-449-0994, after 9:00 p.m.



31 ' CRUIS ALONG, Flying Bridge Convertible, 1973. Mahogany, 12.5' beam; twins. Partially remodeled. Sleeps 6. All goodies except radar. Charter licensed. \$9,500. MI, 616-846-4203.

45' YAWL, 1956, built Nova Scotia. Pine on oak, fiberglass deck, silicon-bronze refastened. New spruce mast, stainless rigging. Lehman 4, 1974. Water pressure, electric anchor windlass, self-tailing Lewmar winches, life raft, Loran C, radar, VHF, wind instrument Autohelm, 6000 Harken furling, etc. \$112,000 (U.S. funds). Quebec, 418-687-4913.

19'6" CELEBRITY, #600. 5 sails, molded mahogany; totally refurbished. Ready to sail. \$1,250. VA, 703-276-8198.

1929 CHRIS CRAFT28', upswept; stored to original 1990. CT, 203-589-4998 or 203-583-3662.

1951 CHRIS-CRAFT 19'racing runabout. Also more Chris-Crafts, Centurys, and Dodges. CT, 203-589-4998 or 203-583-3662.

36'TROJAN TRI-CABIN, 1965. Documented, very good condition. Full electronics, swim platform. Excellent hull. \$14,000. MA, 508-281-3391.

12' WHITEHALL, grown knees and stem. Beautiful; in water twice. \$2,800. CA, 714-496-7103.



Glaucoma forces the sale of my like-new 4-year-old MAID OF ENDOR (see *WoodenBoat* No. 22, pg. 88). CT, 203-259-9996, after 6:00 p.m.

1950 CHRIS-CRAFT SEDAN 33'. Original 6-cyl twin. Excellent varnish. Runs and looks beautiful. Complete history available. \$14,500. PA, 215-678-6179.

14'8" PETE CULLER designed daysailer. Traditional, stoutly constructed, file bottom. Quick and lively, with fine details and finish. Excellent shape, only 2 years old. \$7,000. NH, 603-679-5153.

MAHOGANY RUNABOUTS are our only business at Boyd's Boatyard in Canton, Connecticut, where we are starting our 10th season. Over 40 boats are for sale here at our one location, including rough ones like 1950 18' Chris-Craft Rivieras for \$400 and \$800, and Chris-Craft Golden Pond Sportsmen utilities for \$1,000. Runabouts are also available restored and ready for immediate delivery. Send SASE for our complete list Boyd's Boats, P.O. Box 9, Canton, CT 06019, 203-693-4811. Congratulations to WoodenBoat for reaching the 100 mark and still getting better. While fiberglass is being repossessed, wood is cherished!



52' MALAHIDE TRAWLER. Mint condition. Rolls Royce engine. Immaculate interior with 3 gorgeous wood staterooms, 2 full baths, saloon, etc. Pilothouse and flying bridge. 6 knots/2.6 gph; 10 knots/5.2 gph. Trans-Atlantic (last crossing 1984). Beautifully outfitted 1989. Asking \$139,000. Patty Curtis, 315-437-1641; fax, 315-437-3634, NY.



21'CENTURY CORONADO, 1959, sliding top. Over \$20,000 invested in restoration. 318 FWC Chryslers, 40 hours. Double bottom, interior, chrome, tabs, step, VHF, fathometer, tandem trailer. Will guarantee survey. \$27,500. Tacoma, WA, 206-572-2929.

39' PACEMAKER COHO, double-cabin motoryacht, 1967. Twin 320-hp, Crusaders, low hours. 6.5-kw generator. Set up as a year-round liveaboard with 70,000 BTU oil heat. Full bridge and aft cockpit enclosure. A/C, central vacuum, washer/dryer. Recently remodeled and in excellent condition. \$35,000 or smaller boat plus cash. NJ, 201-727-0703.

19' LAPSTRAKE SAILING DORY, built by Lowell's in 1980. Includes optional equipment, trailer, 4-hp motor. Excellent condition. \$5,500. Further information: C. Porth, N4258 Hickory, Columbus, WI 53925. 414-623-3156, evenings.

30' DRAGON, 1957. Mahogany on oak. Racing condition. New sails; custom trailer. \$10,000. NY, 716-654-9518.



22' FRIENDSHIP SLOOP, 1968, Roth design. Excellent condition; two-owner boat. Consistent Friendship Sloop Regatta winner. Teak decks, Alomic-4; sleeps 2. Cape Cod stove, copper sink, head, full inventory. Great daysailer or weekender. Located Essex, MA. \$14,000. VT, 802-496-3526.

17' CENTURY RESORTER, 1946. Excellent condition. Double-planked mahogany; professionally restored 1991. New finish, upholstery, rebuilt 1978 215hp Mercruiser inboard, many extras. Fast and fancy. \$11,600. MA, 617-969-1294.

1962, 38' NORWALK Custom built, one of 12. Two new Chrysler engines. Galley, flying bridge, generator; fully equipped. \$19,000. Marie, 718-849-5644, NY.

28'TROJAN, 1967, flying bridge, cabin cruiser. Sound hull, engine strong. \$3,500. MA, 508-945-4222.

16'THOMPSON LAPSTRAKE RUN-ABOUT, 1960. Rebuilt 1983, now needs work. Original 40-hp Evinrude; custom E-Z Loader. First \$1,000. Send \$1 and SASE for photos. P.O. Box 5197, Arlington, VA 22205. 49' CHRIS-CRAFT CONQUEROR. 1954. Documented classic. Doubleplanked mahogany. Three 225-hp Chryslers, 12-kw Onan, lull electronics. Sleeps 6-8. Full modern galley, 2 heads, full shower, electric heating; full in-water cover. Ideal liveaboard. European businessman will negotiate. \$20,000. In water. Long Island, NY, 212-688-3468.

22' WILLIAM GARDEN TOPSAIL CUTTER, 1964. Mahogany on fir/oak, beautiful cabin. Yanmar diesel. Tanbark sails. \$8,900, offers. CA, 707-895-3927.

32' DICKERSON KETCH, 1960. Mahogany on oak, solid hardware. Graymarine 4. This classic cruiser is restorable; will sell at salvage value, \$1,900. Located Chesapeake Bay. CA, 703-836-7297.

16' OLD TOWN CANOE, Otca model, with sponsons. Good condition. MI, 313-591-6667.



NEW 26' SEA BIRD YAWL, 1988. Cedar on oak, bronze fastened, Yanmar diesel. Highest standards. \$35,000. Further details: Alex Hadden, Bath, Maine. 207-729-7402 or 207-443-3533.

16' GLOUCESTER MIDGET, 1921, gaff rig, double-ender, rebuilt 1985. Excellent condition. Cape Ann buyer preferred. Asking \$2,500. Gloucester, MA, 516-444-2101, weekdays.

19'TEAK LADY, varnished teak sloop, 1959, MINT; \$12,000. 23' STONE-HORSE, 1931, rebuilt, excellent; \$6500. 24' CULLER SHARPTOWN BARGE sprit yawl; \$1,500. 31' FRIENDSHIP SLOOP, "Dictator," 1973; \$25,000. 37' Alden U.S. ONE-DESIGN, 1946, original; \$7,500. 45' HERRESHOFF sloop, strong cruiser; \$18,000. 18' LYMAN, lapstrake; \$2,500. 30' MacKENZIE BASS-BOAT, 1967, diesel; \$14,000. Restoration projects: 44' Herreshoff NQRTHEAST HARBOR 30; \$4,000. Also sails, bronze fittings, etc. NY, 516-734-7409.



20' NOMAN'S LAND DOUBLE-ENDER, completed 1990. Batten-seam, carvel/pine/oak. Tanbark sails, wood blocks and gaff rigged. Bronze fitted throughout. Rigging by the Rigging Gang. New trailer. \$9,750. NY, 518-325-6126.

22' CHRIS-CRAFT, 1949, mahogany Sportsman. Concours condition. Firstplace winner in Tahoe Wooden Boat Show. Original 130-hp engine and rechromed hardware. \$37,500. CA, 916-929-8866.



25' MacKENZIE BASS BOAT. FWC. new engine and gear. Runs great. \$7,900. NJ, 609-742-1900.

20' CANOE YAWL EEL Garden design. Open canvas dodger. 4-hp Evinrude, trailer. Varnished mahogany hull, Gougeon WEST System cold molded. \$8,000 or best offer. OR, 503-620-2933.

20'CHRISCRAFT, 1963. Varnishedmahogany hull. 283 Chevy, rebuilt 1989. Good condition. \$5,500. NY, 516-666-1406.

30' MOTORSAILER "SEA SAILOR," 1974. Solid teak, diesel engine. Hong Kong built, professionally maintained. Bristol condition. Best offer. Nimphius Boat Company, WI, 414-293-4465.

46' DINSMORE, 1930. Restoration in process. Twin Chris-Craft 160-hp engine. All original. ME, 207-799-8481; 207-781-4658.

15' SAILING DINGHY, 1986. Stripplanked, cold-molded construction. Includes sail, oars, trailer, cover. \$3,500. MI,616-945-3559.

17' CHRIS-CRAFT, 1967, custom ski boat, last of its kind. Double-planked mahogany. CC 185-hp engine. All original. One owner, 475 hours. Chautauqua Lake, NY, 716-569-6569, afternoons.

1948CHRISCRAFTCUSTOMMOD-EL RUNABOUT, 20'. Rebuilt original MBL. Gougeon WEST System bottom, 16 coats varnish. First-prize winner at Port Huron, 1989; St. Michaels, Maryland, 1990. Custom trailer, waterline cover. Perfect! \$27,500. MD, 301-251-0058.

55' CHRIS-CRAFT CONSTELLA-TION, 1957.18-month restoration;new decks, designer interior. Lavishlyequipped; full a/c, heat. Three staterooms; owner's stateroom with queen waterbed, 2 settees, transom windows. Radar, VHF, depthsounder, watermaker, and much more. Koehler generator with Perkins 4-107. 2 GM 6-71 turbo diesels. May very well be the best wooden Chris-Craft in existence. \$250,000 and worth every penny. Located FL, 904-461-8401.



1930 CHRIS-CRAFT 26', upswept. All original; in water 1990. \$28,000. CT, 203-589-4998 or 203-583-3662.



HERRESHOFFMOBJACKREPLICA, 1982, cold-molded hull. Ten sails, Perkins diesel, B&G electronics, SSB, Boston Whaler tender, Simpson davits, Profurl, Maxprop. Classic mahogany, brass appeal; but very comfortable. \$99,500. ME, 207-255-3516; fax, 207-255-8565.

47' BREWER-DESIGNED KETCH, 1987. Custom epoxy/strip-plank construction on laminated frames with teak decks to the same design as the Mariner 47. Fully found with FWC diesel, furnace, radar, Sat-Nav, etc. \$110,000 Canadian funds. Maritime Ship & Yacht Brokers, New Brunswick, 506-634-1672; fax, 506-632-2044.

41'CHRISCRAFT, double cabin, 1961. Sleeps 8. Located Atlantic Highlands, NJ. \$20,000. NY, 718-448-1622.



33'9" CUTTER launched October 1988. Mercedes diesel. Mahogany on oak, stainless fastened, lead keel. \$35,000. ME, 207-439-6062, evenings.

19' LIGHTNING #891, Skaneateles boat Solid, double-planked, and 98% restored with original fittings and spars. Rebuilt trailer, new trailering cover, and two sets of sails. \$3,000. DE, 302-697-8531.

46' MATTHEWS DOUBLE-CABIN, 1929. Gas; liveaboard. Sound, but needs work. Located Maryland. \$10,000 or best offer. FL, 305-722-2858, evenings/weekends.

20' LYMAN RUNABOUT, 1961. 138hp Graymarine. One owner. All original; hull #Y1045. Stored indoors. \$7,500 or best offer. MI, 313-642-3717.



35' CHINESEJUNK-RIGGED SCHOO-NER, 1979. Cypress planking and oak frames. New bottom. 21-hp diesel, VHF, Loran, refrigeration, self - steering vane, hot-water heater and pressure system, extensive spares inventory. Great liveaboard/cruiser. Owner transferred inland. \$32,000. Located northwest Florida, 904-763-1329. HERRESHOFF H-28 KETCH, 1949. Fir/oak. Newly rebuilt Atomic-4; VHF, depthsounder. Sleeps 5. Excellent condition. Classic family boat \$14,000. MA, 508-991-3316.

30' TAHITI KETCH, 1964. Restored strip-plank/epoxy system 1986. Like new! Beautiful! Has completed 2-year round-the-world cruise. \$35,000 Canadian funds. Quebec, 418-854-0098.



SIX-METER, Boyd -designed cold-molded, racing rigged. Looks greatbutneeds \$10,000-14,000 structural work. \$2,500. MA, 617-639-0630.

45' MATTHEWS, 1968. Tri-cabin, enclosed afterdeck. Twin Detroit diesels, generator; all electronic equipment. Bristol. Excellent liveaboard. \$65,000. OH, 419-536-0717.

17' WHITEHALL row/sail, centerboard, restored 1987. Mahogany stern. Trailer. \$2,500. MA, 617-876-0071.



36' HERRESHOFF NEREIA KETCH, built October 1984. Near-new classic; last, seaworthy, comfortable, beautiful.\$59,000.NV,702-463-4753.



1962 AL MASON MOTORSAILER, 53'. Excellent liveaboard cruiser. A/C, heat, full electronics; 180-hp Caterpillar. \$85,000. MS, 601-374-5247.

30-SQUARE-METER, US41, Reimers, 1939, 43 x 28 x 7 x 5'. Varnished mahogany on oak, rebuilt 1979. Spruce mast, 1975. Excellent inventory. \$15,000. CA, 415-348-1170, evenings.

12'6" HERRESHOFF 12 1/2,built Cape Cod Shipbuilding, 1974. Professionally maintained. Excellent condition. CT, 203-762-5110.

28'6" MURRAY PETERSON SCHOO-NER, 1986. Yellow cedar, oak, bronze. BUKH 20-hp diesel. Hill sails. New condition. Survey, photos available. Medical sale. \$47,500 (Canadian funds). Pedersen, Box 10, Gabriola Island, BC, VOR 1X0, Canada. 604-247-8867.



29'5" HERRESHOFF KETCH, 1961, II-

28 modified, built in Far East. Beautiful mahogany wooden hull, full keel. New full cover and cockpit awning. Shipshore radio, refrigerator. Same ownership for 27 years. Continued insurance assured. Market value, last survey \$25,800; asking \$18,500/offers. CA, 213-466-0950.

12' OLD TOWN SPORT BOAT, wood and canvas, built 1964. Oars, oarlocks. Alloriginal; excellent condition.\$2,000 or best offer. NJ, 201-449-8180.



26' FRIENDSHIP. Classic; teak, mahogany trim. Rigged for inboard and Johnson outboard. Equipped from anchors to winches. Unique! \$12,500. MA, 617-942-0596.

19' CHRIS-CRAFT SILVER ARROW, 1959, hull #FA-I9-0090, of reported total of 92 produced. Always in fresh water. \$12,500. NV, 702-322-9110.

JOHN ATKIN S OWN 1988 "Ninigret." 22'x 6'8" (beam) x 1' (draft) utility/bass boat. See photo in *WoodenBoat's* "Launchings," Sept./Oct. 1988. Complete with new Caulkin's galvanized trailer, 1987 40-hp Evinrude oil-injected outboard. \$ 17,000. Write Atkin & Co., P.O. Box 3005, Noroton, CT 06820 for further information.

36' SCHOONER, NEW. Under construction. Hull, deck complete. Engine in. Beautiful work! Asking\$30,000. Newman Marine, ME, 207-244-5400.

26' FOLKBOAT, 1947. Sailed regularly; stored indoors. Varnished hull; a classic beauty! \$5,500. NY, 516-754-4149, evenings.



DICKERSON 35, full-keel ketch, 1964. Mahogany/oak/bronze. FWC diesel. Well equipped for cruise/liveaboard. Recent improvements. Exceptional Dickerson! \$32,500. ME, 207-729-1639.

36' CABIN CRUISER, 1928. Similar to Elco design; cedar hull. Sleeps 6. Well preserved, in one family lor 58 years. Needs engine, interior work. Loving owner. Negotiable. NJ, 908-241-0827. 22' CASCO BAY HAMPTON, 1976. Pine-strip construction, oak frames, center console. Rebuilt 115-hp Volvo, canvas; trailer. A real beauty! \$6,900. ME, 207-846-6191.

15' LYMAN, 1955. Mahogany deck, bench seats. 40-hp Evinrude, 1968. Remote steering. Recently refinished. Reasonable offer. ME, 207-892-5230.



63 x 14 x 9' WORKBOAT SCHOONER, built 1908, San Francisco, by the famous Stone Boatworks. Heavy fir on doublesawn fir with double ceiling. Hull sound. 6-71 GM new, never run; HD 600-rpm auxiliary diesel. Has been liveaboard. Needs cabin and deck work, interior, mechanicals, tankage, and rigging. Have 400 yds custom heavy Dacron sailcloth. Owner growing older and thinking smaller. Offering a lot of boat for \$30,000, finance negotiable. On private mooring, West Coast. For more details and many photos, send \$7 to: R.B. Abelseth, Box 4066, Camp Connell, CA 95223.

33' OWENS CABIN CRUISER, 1966. Being rebuilt and upgraded. Twin Chevy engines. Buy as is or completed! Bob Kane, Box 1888, Bowdoinham, ME 04008. 207-666-3668.

IS IT TRUE...Boats for \$43 through the government? Call for facts! 504-649-5745, ext. S-10060.

OWENS 40' TAHITIAN. Fully equipped. Excellent condition; recent survey. Will take smaller boat on trade. MO, 816-524-8424.



1925,27' WILLIAM HAND CRUISER, Mystic Seaport Antique Rendezvous winner. New power, strong survey; insured by Haggerty. Asking \$40,000; below appraisal. MA, 508-388-0303.

42' STEPHENS TRI-CABIN, 1951. Twin 318 Chryslers, generator. 2 heads, shower, galley, 2 staterooms, saloon, fireplace. Flying bridge. Excellent liveaboard; needs some minor work. \$18,000. CA, 415-684-3458.

1962 CENTURY RESORTER, 18'. New chrome/varnish. Excellent hull and engine condition. Always in boathouse, \$10,000 or best offer. NH, 603-536-4988.



HERRESHOFF S-CLASS, recent \$30,000 total rebuild. Distress sale, \$8,000. MA, 617-639-0630.



30'CLASSICDOUBLE-ENDER1984. Naturally finished lapstrake hull, built to meticulous standards. Good sailing qualities. Must see to appreciate. \$28,500, negotiable. MD, 301-647-5869.

LAKEPOWELLClassic1949,36'Chris-Craft sedan cruiser. Twin inboards. Sleeps 6. A.C. power, refrigeration, Penn Yan dinghy. Recently restored. Covered slip. Ski-Nautique skiboat. Looking for partner(s). Brad, 303-938-1000, days; 303-444-8889, evenings.

43' ALDEN SCHOONER. Perkins 4-107 diesel. \$26,000. For information, call VA.804-495-2804.

22' CHRIS-CRAFT, 1952, excellent condition; MBL, \$10,000. 22' Chris-Craft, 1947, poor condition, \$750. CT, 203-599-8477.



33' CHRIS-CRAFT CAVALIER SEA-STRAKE, 1967. Exterior refinished. Twin 210. Complete canvas, air, heat. Will negotiate. Illinois area, 815-455-6834, anytime.

SIX-METER, 1932, partially restored Spruce spars; some older sails. Mahogany on oak. Near Toronto. \$1,000 or best offer. ON, 416-725-2677.

35' COLD-MOLDED CUTTER, full keel. 2-cyl Volvo diesel. Handsome, sound; needs cosmetics. \$22,000. NC, 919-343-0898.

17' CHRIS-CRAFT CONTINENTAL, 1958. All original. EC 132-hp, 6-cyl, twin carburetors. Trailer. PA, 215-527-8589.



25' LYMAN SLEEPER, 1966. A fully restored beauty with all new upholstery and full canvas. Loaded. Tandem trailer, 220 Graymarine. Galley, head. \$12,600 firm. OH, 216-928-1378.

41'FEADSHIP CUSTOM CLASSIC EX-PRESS CRUISER, built 1955 by DeVries Lentsch, Holland. Featured in 1956 Amsterdam Boat Show; world's finest workmanship. Hull double-planked mahogany, refastened 1989. Natural teak transom, cabin, cockpit; teak/rosewood interior. Chrysler Marine V-8s, cruises 16 knots. Full electronics. Halon, inverter, full head/shower. All original, recent survey, documented, insured. \$59,000. CT, 203-869-6976, evenings. 22' KINGSTON LOBSTER SLOOP, new cuddy. Volvo diesel, trailer. Beautiful boat. Lying Chesapeake. \$3,500. PA, 412-447-2344.

23' STONEHORSE built by Landing Boatshop, 1980. Varnished mahogany sheerstrake. Westerbeke diesel. \$8,000. MA, 617-334-6784.

1963 CORRECT-CRAFT COMPACT SKIER. Original; rebuilt engine. Second place ACBS, 1990. Trailer. \$4,500. MA, 508-347-9385, after 6:00 p.m.

30' INTERNATIONAL 210 SLOOP. Fast, wet, fun; eatJ-24s for lunch! Much recent work. Trailer; several sets sails. Ready to go. \$2,900. CT, 203-388-1289, days; 203-388-1118, evenings.

38' VIKING, 1972, DCFB. 1988 Twin 351. Equipped for liveaboard/cruising. Excellent. Asking \$35,000. NY, 516-676-3994.



91/2'CLASSIC SAILING YACHTTEN-DER. New construction, cedar, oak, mahogany, spruce; finished bright. Extra fancy; includes sail, spars, oars, cover, bags. Also free cradle and used trailer. \$2,900. NH, 603-526-9363.



GET ON OUR MAILING LIST. Classic mahogany speedboats. Delivery available. Color photos. What are you looking for? Call Mitch-if we don't have it today, we'll let you know when we get one! 1954 17' Chris-Craft Deluxe Utility, \$2,900; 1947 17' Chris-Craft Deluxe runabout, \$1,500; 1955 24' Hacker-Craft triple-cockpit, \$11,000; 1954 18' Sportsman, \$8,000; 1941 17' Barrelback, \$8,500; 1948 17' Resorter, \$2,500; 1937 17' Deluxe runabout, \$3,500; 1947 17' Chris-Craft Deluxe runabout, \$5,500: 1950 19' Chris-Craft racing runabout, \$28,000; 1940 16' Chris-Craft special raceboat, \$10,000; 1956 21' Capri, \$9,500; 1937 21' Chris-Craft Sportsman, \$3,000. TRADES CONSIDERED. Mitch laPointe, 1733 Gull Lane, Mound, MN 55364.612-472-6122.



19' WINABOUT SLOOP, circa 1930. Mahogany/oak; restored with Gougeon WEST System epoxy. New sails, trailer. Seakindly, wonderful family boat. Best offer to good home. NY, 315-673-4820.



1950, TRI-MOTOR CLASSIC 50' CHRIS-CRAFT. Beautiful, comfortable, prize-winning vessel. Cruising yacht with runabout flavor. Superior condition. Excellent liveaboard. No luxury tax at \$75,000. MD, 301-373-3671.

35' RHODES 23 Eastern Interclub sloop, 1948. Excellent condition. \$12,000 or best offer. RI, 401-294-3648.



18' MASON, 1966, deep-V. Excellent ride; fully restored 1989. Original Johnson V-4 100-hp. All-new canvas, Calkins trailer. Must be seen. Asking \$8,700 (U.S. funds). ON, 416-825-1472.

HERRESHOFF ROZINANTE, 1981. Mahogany on oak; spruce spars. 4-hp outboard, Skippy stove. Asking \$14,000. MD, 301-974-1163.

29' DRAGON, former Olympic racing class. Good condition. A sleek classic! \$6300. Ottawa, Canada, 613-832-3208.

21'THOMPSON OFFSHORE, 1965, lapstrake. 150-hp OMC I/O, low hours. Trailer; fully equipped. Excellent condition. \$4,000 or best offer. MI, 313-882-6811.

23' STAR, solid hull. Good sails; needs new mast. Keel removed. Asking \$500. WI, 715-356-2693.

30'CHRISCRAFTCONSTELLATION, 1965, mahogany. Twin 283 engines. Excellent condition. Photos available. \$18,500. TN, 615-995-2828.



"Fifty,"J.G. ALDEN design, 394" LOA, 11 '9" beam. Mahogany and teak, built 1970 by Mostes, Geneva; sails (753 sq ft); DAF 6-cyl 105-hp diesel. 5 berths; VHF, depthsounder. Maintained in very good condition. French Riviera. \$85,000. France, 93-019471 or 43-319147.

21' FRIENDSHIP SLOOP, Morse design, 1962. Ruggedly built, oak frames. Fully found, excellent condition. Dacron sails, s/s rigging, electric lights, Atomic-4 gasoline. \$8,500. MA, 508-356-3391.

WIANNO SENIOR #111. Excellent condition. Bronze fastened; major refit by our own shipwright company. Best offer. RI, 401-683-6587. 29' NORWALK ISLAND SHARPIE HULL. Pro-built, epoxy system. Hull, deck, cabin, cockpit, ballast, etc. all complete. Great buy at \$12,000! WV, 304-872-2012, evenings.



1949 FRANKLIN POST CUSTOM CRUISER, 31'. Cedar over oak. A 1990 classic restoration, refastened, new; paint, varnish, upholstery. Completely rewired. Palmer engine excellent. Original appointments throughout. No work needed. \$19,000. NY, 212-879-9565.

48' WHEELER MOTORYACHT, 1958. A/C, generator, T6-71Ns. Kept under cover; in yacht condition. Fiberglass flying bridge added last year. All horizontal surfaces have been fiberglassed. This yacht is beautiful and turn-key. Asking \$89,000/offers. FL, 904-387-5538.

40' ALDEN YAWL, 1956, in Denmark by Molich. Diesel, 150 hours. Mahogany hull, teak decks, spruce spars, Hood sails. Sleeps 5. Lots of extras. Excellent condition. R1, 401-884-8105.



34' BOLGER BLACK GAUNTLET SHARPIE, 1976. Ketch rigged; Bruynzeel plywood over fir frames, bronze fastened; bottom covered with fiberglass set in epoxy resin. Johnson 9.9, electric start. Well built and maintained. \$7,500. MA, 617-235-3711.

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