Mystic Revelations, Rowing Boats, and Making a Decent Oar

Text and illustrations by John DeLapp

Small Talk, Revelations, and Boats

When I first went to Mystic Seaport for the Small Craft Workshop in 1988, it was just the right time. I had made it through the grammar school of the lofted line and the rolling gain, and I had recently graduated from the high school of the handsome, capable boat. I felt ready to look my peer in the eye and discuss the fine points of traditional small craft. What I found was a university of insane purity and revelation. It was Christmas, and I was eight years old again. Yes, Virginia, there really is a John Gardner, and although these things rarely work out, he was *exactly* John Gardner.

Strangely, Pete Culler was there. Although he's been gone for ten years, his presence was so strongly felt that it was as if he were perpetually just at the other end of the pavilion. Several of his boats, made by his own hand, were there. I had always admired Pete Culler's work but was frankly a little mystified by the Culler cult. It took no time at all studying, touching, and absorbing what I could of these boats to regain some needed humility and acquire a sense of grief at his early passing. The weekend was filled with surprise and revelation, and I came away with a year's thought, study, and work ahead of me.

In 1989, Mystic was as full of joy as before. Again, it was the people with their depth and breadth, in a wonderful setting, that was so tremendously enriching. I came away filled with delight and, deep inside me, a new revelation. And although this revelation took several months to surface, there was a new hero to accompany it.

That hero is Lois Darling. The revelation is in her model of Ratty's boat from *The Wind in the Willows*. That's it. Just Lois, Mole, Ratty, and the boat. It's like this. For the past few years I had been increasingly dissatisfied with the rowboat's obscurity. I like rowboats a lot. I live, breathe, and dream rowboats. Sailboats are okay, you can hitch a free ride, and if you insist on being the one to steer, you can stave off boredom playing with the lines and twiddling the tiller while you wait to be terrorized. Still it gets old in a hurry. Sure, in kayaks you can face forward. You're also firmly cocooned to the waist in a tippy little sliver with the only thing separating you from disaster being survival tricks. Canoes are just as bad. You kneel (!) while holding a short oar in your hands and try to ply it in such a fashion as to make the boat go straight. If you want to talk to your companion, you talk to the back of her head. Some conviviality. Racing shells are probably the worst of the bunch. They are so juiced up on testosterone that the only pleasure left is the hope of winning.

I knew all this, as well as the wonder and joy of pleasure rowing, within days of first picking up John Gardner's *Building Classic Small Craft*. Pete Culler's *Boats, Oars and Rowing* burned pleasure rowing into my core. Why then do all of these other boats have legions of supporters, all buying boats, magazines, and countless dollars' worth of frippery while the rowboat anguishes?

The answer is clarity of purpose. I think now that we have to suspend all we know about boats, oars, and rowing and concentrate on one thing: making rowing as pleasurable as it is for Ratty and Mole. I'll say it, "simply messing about" in Ratty's boat.

To do this—to make the joy of rowing understandable to others besides the hard-core believers—we have to identify all of the things that make rowing less fun than the prospective rower thought it would be. And then we get rid of them. I've listed some places to start:

1. Drag. A rowboat should be long and slim and elegant. It should glide through the water with minimum effort and be really capable of going places. No more short, fat rowboats.
2. Weight. Weight not only slows a boat down, it also keeps it from getting to the water in the first place. Most women can regularly lift about 35 pounds onto a car without alarm. If a couple expects to use a boat, it better not weigh more than 70 pounds.
3. Tippiness. The boat must be steady enough that novices can relax and not have to be on top of it all of the time. Commercial canoes are this steady.
4. Lack of foot braces. Braces *are* a pain to fit, but until you get the knack of digging your toenails through the varnish, they are a big help.
5. Neck-crooking. Maintaining a course on a winding river or in a breeze can be aggravating especially since the boats that are the easiest to row and the most maneuverable can also be the most difficult to keep on course. Ratty had the answer all the time. I've made a resolution that all of the rowboats going out of my shop from now on will have a rudder, yoke, and tiller lines as

standard gear. The rower rows, the passenger steers, what could be simpler? There also has to be a method (a couple of cam cleats?) with which a lone rower can set the rudder.

6. Oars. When it comes to running off the prospective rower, we've really done it with our oars. Oars are heavy, they raise blisters, and they are often difficult to use. The classic example: Put a novice rower into a boat with a nice long pair of well-greased, buttonless ash oars—good, solid, durable oars, the kind that weigh about 6 pounds apiece. The novice will flail around out there for about ten or fifteen minutes. The oars will slide in and out, jump out of the locks, wear the rower down, and make her or him feel like the complete fool. He or she will be out of rowboats and into canoes like a shot.

If all this seems a little heavy-handed, you could try a more subtle approach. Take your bright-eyed hopeful and put her or him into an Adirondack guideboat or, if the guideboat is a little on the tippy side, a nice St. Lawrence River skiff. The oars will be lighter, and they are pinned in their locks so that they stay in their proper place. Being long and slim, both of these boats want a fairly long oar to make them go well. In order to balance the oars, the oar grips are substantially overlapped. New rowers universally hate this, "I keep whacking my knuckles." It does no good to tell them that they'll soon get used to it. The ones with any sense would rather stop than get used to whacking their knuckles.

Ratty had that problem wired too. If the English pleasure rower wanted a wider distance between his oarlocks than he had boat — so that he could get rid of excessive overlap — he added outriggers. The fact is that the traditional English wrought-iron outrigger is too heavy and unwieldy for a boat that has to be car-topped. Light, stiff, easily removable outriggers, perhaps like the ones on the Natoma skiff, can be made in the shop and solve the problem quite nicely.

The point is, in pleasure rowing at least, if you can clearly identify a problem, you can usually find that someone somewhere has already solved it. When this approach to problem solving is applied to the pleasure oar in general, things get pretty lively. If the problem with pleasure oars is that they are heavy and hard to use, we have an inspiration for a perfectly lovely solution in the 3-meter racing oar. The question is whether we can make use of it. The racing oar has been subjected to such intense evolutionary pressure in the name of competition that it must be considered nearly perfect for its purpose. The wonder is not that it is tremendously strong and efficient, but that it works so easily and still weighs only 4 pounds. Unfortunately, it is also difficult to build well, expensive, and fiercely complicated. That's what you get when your chief aim in life is to beat out your fellow man.

We could cheerfully chuck all this talk of complicated, expensive construction and go back to our old muddling oars if it weren't for the tantalizing promise. An example: My Natoma skiff gets along just fine with a 7'6" oar. A pleasure oar this length built to conform to the racer's values of light weight and efficiency would be a marvel. It would only weigh 2-1/2 pounds. It would be so easy to use that a smallish woman could glide along for miles, expending no more effort than she would on a rambling walk.

I have worked out a method for making oars that incorporates the desired qualities of the racing scull. I don't know that the method is particularly easy, but it is inexpensive, and with a little practice a pair can be made in 6 to 8 hours ready for varnish. In the drawing I have tried to explain everything as clearly as possible with the exception of the theoretical background material necessary for modifying the oar design to suit other boats. If you feel a little weak in oar design theory, accompany me into the next section for a short exploration of handle balance weight, inboard/outboard ratios, and perhaps one or two of the other wonders of the pleasure oar.

The rest are thanked and excused!

The Technical Part

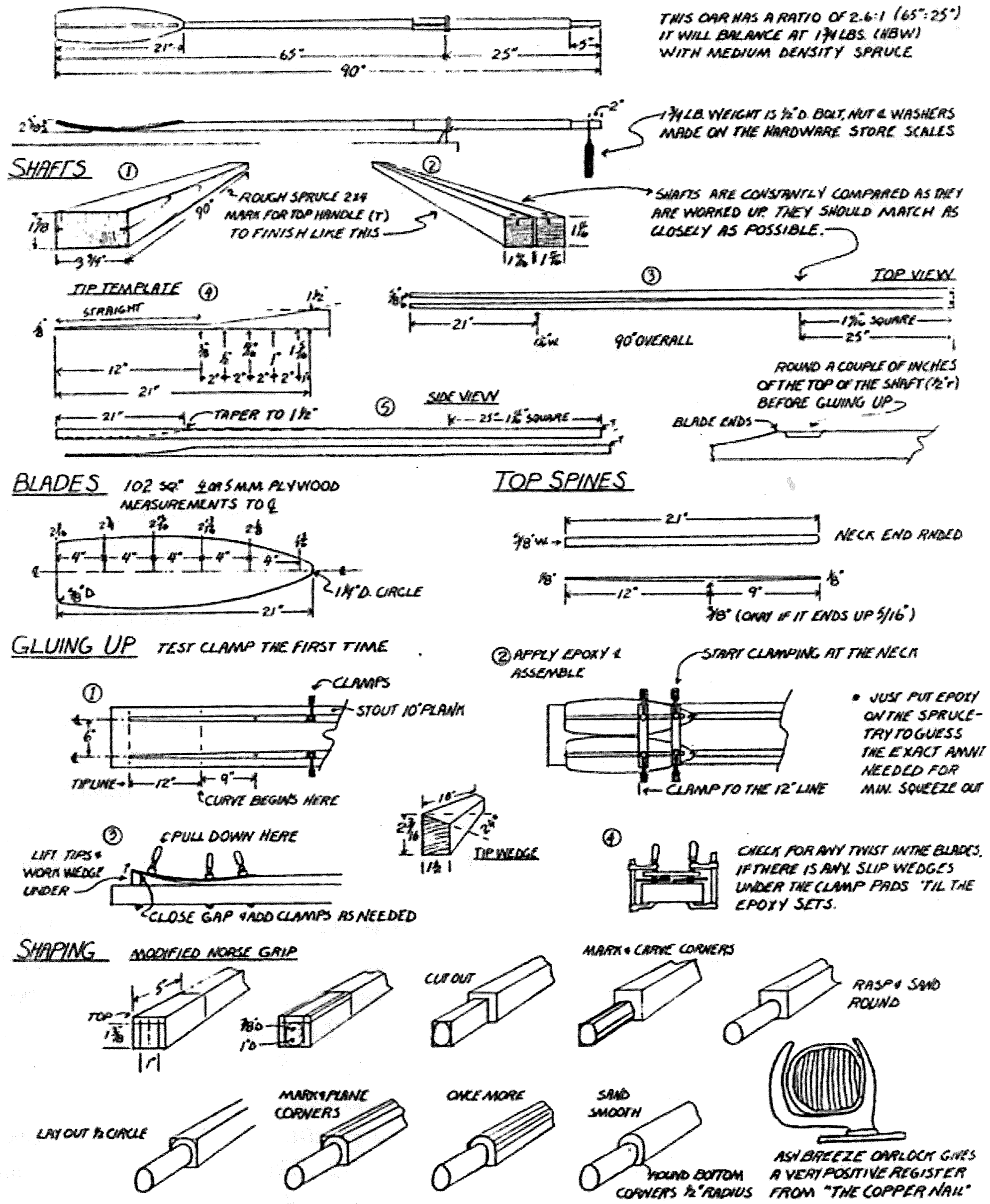
Now we can get down to the business of how oars work. It really is fun if you sort out most of the academic garbage. The intriguing thing about a really good oar is how everything works together. The size and shape of the blade are in harmony with the size of the shaft. The part of the oar inside the lock has a real relationship with the part outside. Everything comes together in the oar's weight, or rather, its mass. The significance of mass can be illustrated by envisioning a man walking a big cruising sailboat along a dock. The boat's weight is supported by the water, so all he has to deal with is its mass. He doesn't have to be particularly strong, he just starts pushing, and pretty soon the boat slides along. But he shouldn't wait until the last moment to start slowing the boat down. It'll jerk him right into the water. Mass is sneaky.

I have mentioned my preference for rowing over paddling. One reason is because in rowing, you don't have to support the weight of the oars in your hands; they float in the locks. All you have to do is waggle them back and forth. But oars still have mass. In order to get from point A to the point where the lunch is, they not only have to be started and stopped an awful lot of times, they also have to be raised out of the water at the end of every stroke. This is why racers insist on the lightest oar possible. They're trying to save their strength for pulling. You want the absolute minimum mass necessary to do the job well.

7' 6" PLEASURE OAR

For Rowers 120 - 190 lbs.

Targets: Maximum weight 2-1/2 lbs., Maximum H.B.W. 1-3/4 lbs. at 25"



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Again, all of the parts of an oar are interrelated. A light oar can still be hard to use. This is where balance comes in. Oar balance is really two different things: *simple balance* where the oar will balance along the shaft when supported on the edge of the hand, and *hand balance weight*, the weight needed on the handles to raise the blades out of the water. Simple balance—the center of gravity— is one of the few simple things about oars. It should be far enough out towards the blade so that when the hands are raised at the beginning of a stroke, the blade will fall crisply into the water. This is part of a good feel in an oar.

Hand balance weight is a little tougher. What *is* a good hand balance weight for a pleasure oar? A good hand balance weight for a racing scull is 2-1/2 pounds. The experts consider more than that too wearing on the athlete. Smaller rowers, most women included, quickly tire at this weight, but most feel comfortable with 1-3/4 pounds. For what it's worth, I've never heard a large rower complain that the 1-3/4 pound hand balance weight oars are too light. So what is the optimum hand balance weight? The problem is that hand balance weight is directly related to how stout an oar is. If a boat is to have only one pair of really good oars — and most boats are lucky to have one pair — then the oars have to be big and strong enough so that when some large enthusiastic lout uses the boat, he won't immediately snap them off. I consider 1-3/4 pounds the maximum hand balance weight for a mixed user oar—with more work on the subject in order.

Getting a light hand balance weight—even 1-3/4 pounds—is not easy. The best way of starting is to make oars with the lightest material suitable. This generally means spruce—the lightest that you can lay your hands on. This is because the less weight you have outside the oarlocks, the less weight is needed inside to balance it. The next way of getting a light hand balance weight is to be particular about where the oar rests in the lock. The best example is again found with the racer. The clamp-on button on a racer's oar determines how far in or out his oar rests in its oarlock. It is movable, and it does get moved, sometimes by as much as 1/2 inch. When the racer loosens the button and slides the oar out, he changes his *leverage ratio* on the water, and he might be able to go a little faster. He also increases his hand balance weight which will wear him down sooner. Critical stuff. Most racers set their buttons at about 87 centimeters (34-1/4") from the end of the grip. If the oar is 300 centimeters long (118"), there is 2.45 times as much oar outside the lock as inside, and the oar has a ratio of 2.45:1. If you are going to make a pair of light, naturally balanced spruce oars, 2.6:1 is about as far as the ratio can be pushed and still end up with a hand balance weight of 1-3/4 pounds. If the blade is carved out of solid wood, then some ruthless shaving will have to be done to get it to balance at 1-3/4 pounds.

If you need a pair of oars for your light dory and the beam at the locks is 48", this is how you would proceed: If handle overlap is to be avoided, simply divide the beam in half—24"—and multiply that by 2.6. The result, 62.4", is the distance outside of the lock. Add the 24" inside the lock to get the total oar length of 86.4" or 7' 2-1/2". This is enough to make one of Phil Bolger's light dories go. If you don't mind a reasonable amount of overlap, say, about 1-1/2" (it really *is* easier once you get used to whacking your knuckles), the oar length jumps to about 7' 8" which *might* be better. All of this is not much help if you've got a long, lean St. Lawrence River skiff of 36" beam. A 6-1/2' oar isn't long enough, and outriggers aren't usually an option. You'll just have to corner Andy Steever (his address is in the membership directory) and ask him about boring out the grips and adding weight to get the oars to balance. For all others though, I am certain that if you tracked down the Old Man on the Mountain and asked him the meaning of life, he would say "long slim boats, stiff outriggers, and light, lightly balanced spoon oars."

Are spoon oars really that much better? You bet they are. Well, at least I think they are. The racers are all dead certain. They say that given two equal racers in two equal boats, if one is given a pair of flat blade oars and the other a pair of pretty spoons of the same size, then the racer with the spoon oars will beat the one with the flat blades every time. A spoon blade is more efficient; it can be made smaller and lighter than a flat blade. An ounce saved in the blade will save 2-1/2 ounces (the ratio) at the handle end, so it *is* worthwhile. As to what blade, shape, size, amount of hook, etc., is right for you and your boat, all that's needed is a place to start—use the information in the drawing if you like—and a theory of spoon oar propulsion as a guide to further development.

The bad news is that all the theories commercially available aren't of much use. There's a good selection, but they're filled with things like vectors and are impossible to understand. The good news is that they conflict with one another. The whole business is so complicated and so hard to quantify that the proponents of these theories can't even prove each other wrong. That's where the fun comes in: You can make up your own theory. It's not hard, all that's required for a good one is a little charm and plausibility. For illustrative purposes I will offer up one of my own with the understanding that no one will confuse it with fact. Rather, it should be considered as a guide to the direction to be traveled and, like the rest of the article, a kind of inspired idiocy.

The Jai Alai Theory of Spoon Oar Propulsion

A spoon oar works like this: Assume that you are rowing along in a fast, easily driven boat. You are pulling with alacrity, the blades are slipping in the water a noticeable amount, and the shafts of the oars display a discernible flex with each stroke. Rather than moving smoothly, you notice that you are accelerating with each stroke and coasting on the return. You are pulsing along at warp speed. As you reach towards the stern to begin your next stroke, look over your shoulder at one of the blades. You will see that it is not only ahead of you, it is also in fairly close to the boat because it has traveled in an arc. At this point you raise your hands to drop the blades into the water and immediately begin pulling. The oar blade is no longer traveling in an arc; it is caught in the water and trying to push off of it.

Something else is happening. Assume you are moving at 30 strokes per minute. As the boat travels forward to catch up with the oar, during the first half second of the stroke the tip of the blade is also thrust outward by about a foot and a half. The hooked tip of the blade is trying madly to gather water into the curve of the spoon while at the same time pulling against the water ahead. The ensuing confusion makes the water angry and increases its resistance towards getting out of the way. As the boat passes the oar blade, the blade begins its journey back inwards another foot and a half in another half second. Because the tip of the blade is pointing increasingly dead aft, the water still resisting is channeled behind the boat. It is the curving tip of the blade channeling and directing water through the cycle of the stroke that makes the blade so efficient. Or, if this is not clear, it is like a game of Jai Alai. The oar is trying to scoop up a patch of water and throw it behind the boat. The water is uncooperative and stoutly resists, and instead the boat is thrown forward. Positively Newtonian.

I haven't covered ideal grip shape, what sort of flex is desirable, etc. It's not that I don't have opinions, it's just that this is getting dreadfully long, and after that last bit about "angry water" I'm not sure anyone would believe me. If there is interest, I could talk about these another time.

In closing I want to mention a few things about the oar-making method I've devised. First, it's not all that easy. A fair number of tools and technique are necessary to do a good, quick job. It is cheap enough that you can use the best materials you can get hold of—a rough 8-foot 2 by 4 and 2 square feet of plywood. For the first pair, though, just use whatever is cheap and available. The second pair will come out much better.

There are two advantages to this method. (1) If both shafts come out of one straight, clear 2 by 4 and are constantly compared as they are worked to shape and glued up, the oars will be naturally tuned. That means that both will have the same weight, balance, and spring. This counts for a lot in making rowing easy. (2) Once you've made a pair or two of these, you'll have the procedure down pat, you'll be able to make them quickly—6 or 8 hours—and be able to try out ideas as they come. Your oars are then free to evolve quickly into a configuration that will make rowing your boats easy and fun.

Finally, I am pleased with these new oars. In my Natoma skiff I designed a boat that performs very well, but like any other boat, her best performance comes only with really good oars. My carved spoons have taken me as long to make as my Natoma skiff. The new oars work at least as well as my best carved spoons, and, as they continue to evolve, are becoming downright handsome. Perhaps most importantly, they are quick and inexpensive to build. I now have the comfort of knowing that all of the boats coming out of my shop will have not only a proper rudder but a decent pair of oars as well.

If you have any questions, comments or problems, please feel free to call or write.

Editor's note: *TSCA Council member John DeLapp has graced these* ASH BREEZE *pages before with his designs for* Flyfisher *and the Natoma skiff. John hopes that you will try his method of making oars, and he looks forward to hearing about your experiences with them at the next Small Craft Workshop at Mystic Seaport. Send me a postcard if you would like John to continue with an article about flex in oars and the shape of the grip. I know I would like him to continue since I used a pair of his oars at the last workshop and was very impressed with the comfortable grip he designed.*

Both John and I would also like to hear your ideas about oar making. Let's keep this subject active in The ASH BREEZE *so we all can increase our knowledge. We might even end up with a pair of efficient and easy-pulling oars for our boats.*