FIBERGLASS CONSTRUCTION AND MAINTENANCE JACK MUELLER SPEAKS AT THE PACIFIC NORTHWEST MID WINTER MEETING

Editor's Note: This article is a distillation of a presentation by Jack Mueller who was the featured speaker at the mid-winter meeting of the Pacific N.W. Lightning District. Traditionally the N.W. District invites one of the Class's superstars to this annual business meeting, get smarter session, and skiing weekend. It does wonders for mid-winter "sailing hornies" and gets everyone looking forward to the upcoming season. In fact, this meeting often draws as well as the District Championship Regatta.

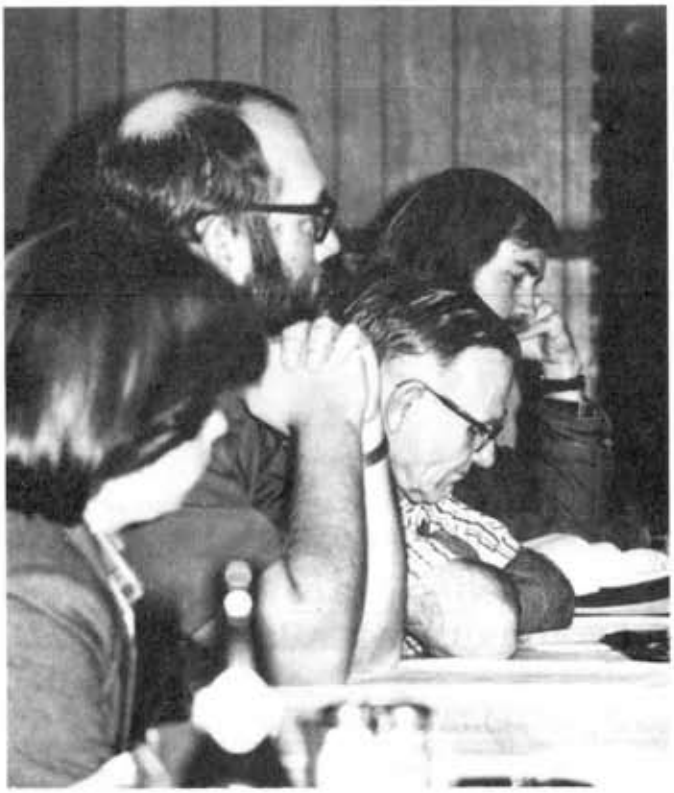
"Hi, I'm Jack Mueller and I'm from Cleveland, Ohio. I'm in the business of building fiberglass sail boats, including Lightnings, Snipes, and several other classes.

First, I will go through the building of a one design boat and then go a little bit into boat shapes, primarily, the Lightning. Then I'll go into a general maintenance of glass boats and repair.

I also would like to apologize for my wife not being here. We had hoped that she could come but with kids and things it just didn't work out. She's important because she's my crew and has a lot to offer. She sails with me all the time. And even though I wouldn't sail without her, there are strong words between us occasionally. She is very important on the boat and she is the one thing I really look to when I race. Hopefully she can come out here next trip when we're sailing in the North Americans in 1980.

Building One Design

When you consider building a one design in an established class, there are many things to think about. First, you get measurement certificates and plans to which you have to build. For speed there are very skimpy details which result in using "trial and error" to get the boat to go best. Also, there is a lot of research you must do yourself.



Jack Mueller making a point.
Photos by K. H. Wolvington

When we first started, the boat company was called Eichenlob Boat Company. I went to college and studied metalergical engineering so I don't have much of a formal background in boat building. But through trial and error I've learned quite a lot. We got into the boat building business in the mid-sixties mainly to bring a point out to the Lightning Class.

A very good friend of the family's who was president of the Class at that time, Iohn Rhulman, capsized on the Southern Circuit. The boat was awash and it was very cold. Two of the crew had to get off the boat because they were in shock. It became necessary to just leave the boat because it had just the minimum amount of flotation required at that time. We

saw the direction that a lot of one design classes were going, to self-rescuing boats. At the time my family and I were sailing in Lippincotts and John Lippincott was a friend of the family. I believe that my father was a vice president of the Class at that time. We tried to work with Lippincott to develop a boat that would be self-rescuing. We tried to get them interested in building a self-rescuing boat. At the time we had exactly zero interest in going into the boat business. We felt that something had to be done to save the Class as without self-rescuing boats the Class would die. The flotation was minimal. It would not float well with three people in it. And, there was absolutely no way a Lightning could be sailed out of a capsize.

Lippincott at that time wasn't interested, things were going well and it would increase the cost of their boats. So we contacted Allen and Nickels and Holman and got essentially the same story. Finally we contacted Carl Eichenlob and he said I'm in the wood boat building business and I do capsize occasionally, but I mostly break masts. But, he said I agree with you, but I am not interested in producing those kind of boats myself. I will, however, work with you and tell you what I have learned as far as hull shapes are concerned. I will come out and help you get set-up.

So after many discussions we figured out a way to make a fiberglass Lightning that would be self-rescuing. This scared the Class. They said right away we could make only three boats and that we would have to put an "x" on the sails. So we said that's okay. We felt that once we did this it would show the benefits of self-rescuing. And then rulings could be made that would allow the building of a self-rescuing boat. So, we went ahead and made the three boats. We used a polyurathane foam sprayed into place. We built the floor very thick, seven inches. The maximum the class allows now is five, which is more than adequate. I think we figured out that with the seven inches there would be 1900 lb. flotation on a boat that weighs 700 lb. With a maximum crew of 600 lb. that easily left enough to allow the boats to be self-rescued; righted and sailed away.

Well, we made these boats and took them down to the Southern Circuit. Boy, were they rough because we weren't in the boat manufacturing business. We were simply trying to show the Class that this could be done and that the current rules should be changed so the Lightning would be safer. These boats were well received and the class did change the rules, but originally limited us to four inches of foam. And that is how we got into the boat building industry.

Hull Construction Material

The Lightning is kind of a strange boat to build compared to a Thistle, 470 or most of the modern design boats. This is because the Lightning has many flat sections on it. The problem with flat sections is that built with fiberglass they are flexible. Here is a section of fiberglass from a transom and you can see how flexible it is. To eliminate this problem a core is placed between two layers of fiberglass. This must be a material that won't flex and that will hold some compression. Here are a couple of cored sections from the topsides of a Lightning and you can try to bend them. You see you just can't bend them.

There are several cores materials that can be used in boat construction. Another is a honeycomb made of either aluminum or resin. The problem with honeycomb in a one design boat is the outside fiberglass coat is very thin and if the surface gets fractured at all or if the boat is wet-sailed for any period of time, all the little holes will fill up with water. The boat will gain a lot of weight. A solution is to try to fill up the honeycomb holes with a foam, but it is a "bear" to fill up all those little holes. So honeycomb has not worked out well for light weight one design construction. (It is used successfully in larger boats.)

Here's a piece of foam without the fiberglass on either side and you can see now it is very flexible. The flex resistance comes from the inner and outer fiberglass skins being bonded to the foam, making a sandwich. This PVC closed cell foam will not soak up water. Some foam is scored to go around compound curves. Here's a polyurethane type of foam with strands of fiberglass through it which is very strong. The problem with this is that the scores are so deep it is difficult to get the cracks created by the scores to fill up with resin thus leaving a space for water. Now, foam will soak up water once water gets to it. The way it happens is by going through changes from hot to cold and the expansion and contraction that results, in turn, breaks down the cells and lets water in. This can occur in a damaged area of a boat. So you have to maintain your boat and make sure there are no breaks in either the inner or outer skin which will allow water to come in contact with the foam. A boat can easily pick up 20 lb. to 100 lb. of water if this is allowed to happen.

Foam is rated by its weight per cubic foot and runs from 2 to 4 lb. During the last 6 months we have changed to PVC and the research on it shows much less water absorption through breakdown. Remember that fiberglass boat construction is only 15 years old and a lot of developments are

still taking place. Balsam was once used as a core; but, we don't allow it in the shop. It soaks up water at a fantastic rate. It was the original material used for coring.

We use plywood at points of stress such as the floor area of the cockpit between the thwart seat and the centerboard truck and around the splash rail because these are areas where people are jumping and landing. Its more expensive. But, foam would break down after several years.

Up to about three years ago we used a spray on foam that was only two lb. per cubic foot filled up the entire flotation space, so that is there was no air space or air tank. The problem with air spaces is they will leak occasionally where a fitting is attached. Also, if you are holed an air tank will fill up to some degree; however, the boat will not sink and may still be sailed out. The problem with the spray on polyurethane foam and the reason we stopped using it is we could not be sure it got into every space. This caused some problems with delamination and bubbles under the fiberglass. We would still like to be able to use it and give 100% positive flotation; but, we could not guarantee the boat. So, this means having air tanks. We still use it in special places like filling spinnaker poles and for patching.

Polyurethane foam has been used to fill under the seats of boats that do not have flotation but I would not recommend it. It tends to break down with temperature changes and then soak up water, much more so than PVC foam. In block form it would be okay under seats because you replace it when it gets heavy. Airex is another foam that is used a lot but it is not good for boats that sit on trailer or dolly bunks because the heat build up on a hot day will allow dimpling.

Hull Shape

Now let's talk a little about hull shape. Anyone can go out and build a Lightning, it's one of the Class policies. Many boats before 1960 were home built and a few still are today. You can write the Class and purchase a number and with it you will receive a set of plans and tolerances for the various measuring points. The tolerances allow the builder to make little errors and still have the boat measure satisfactorally. During construction a jig could slip a little without a disaster. But what has happened is builders are getting a very high level of consistancy. So what all the major builders have done is use these tolerances to develop a boat that they think is going to be a little bit faster than other boats. Now, most builders figured this out over 15 years ago so boats have not changed much. In fact, the shape of our boat was taken from the wooden boats that Eichenlob was building. To get these "best" shapes within the tolerances builders years ago would try to find particular boats that seemed to be very fast and then order from the Class the measurement certificates for these boats to determine where they were within the tolerances. They would find boats that were fast upwind and boats that were fast down wind. No one boat shape is best on both points of sail so what you find are compromises. So what has happened with the consistancy that is now possible is that we build boats that are right on these best sides of the tolerances at over half of the measurement stations. Usually a class boat that goes right down the middle of the tolerances will not be a competitive boat.

Earlier I mentioned that a 470 or other round bottomed boats were easier to build. The reason is that it is not necessary to put a core in for stiffness because a little flex in the hull will not effect their performance the same way it will a boat with flat surfaces, like a Lightning. This is a reason why the Lightning is as expensive as it is. In fact about 2/3rds of the time building the hull is in the coring, an expense not necessary with round bottomed boats. Snipes, Stars and Fireballs all have to be cored.

Another reason that a Lightning is as expensive as it is is the rigging. The retail price for the rigging, not counting the blanks for the mast or boom, is around $2200. Not all of this rigging is necessary for racing, but is usually desired. By comparison the cost for rigging on the smaller Chrysler boat is $800. Both prices include the centerboard. Some of the things that are not needed are: a double ended back stay (single would do); the elaborate vang arrangements; Barber haulers(a hook would do); if you are a good sail trimmer you don't need the elaborate jib fittings found on most boats. The elaborate down hauls and various drum systems are not necessary (block and tackles would do), and the cunningham doesn't need to be rigged to both sides. We figure it takes two people three days to rig just the Lightning hull (not including the mast). All this stuff makes the boat easier to sail.

The hull shape we use is from Lippincotts, Olsens, and Etchells, mostly for upwind performance. There are no secrets to boat builders. It is best to have maximum bouyancy at the mast step which means going to maximum chine depth in the tolerances at the mast step. This is for upwind performance, also the maximum keel depth. Then going up to the bow it is best to go to the minimums. It also helps to keep the shape as round as possible. Etchells made their boats very flat going aft and were very fast down wind. So we try to design the boat as flat as possible both across the boat and going aft from about station 3½. The same ideas are used for Snipes and Thistles.

Maintenance

Now I'll go on to maintenance. The hardest thing on a boat is to wet sail it. This is because Polyester is slightly porous and over a period of time will soak up water and into the core. Another thing especially around fresh water is algae which attacks the polyesters. This causes the gelcoat to blister with little pin heads. So you need something like anti-fouling paint on the bottom. This also can happen under the trailer bunks, so we try to use a bunk covering that will drain or dry very quickly. We fix the blisters by wet sanding, filling and then spraying on paint or re-gelcoating. A week or ten days of wet sailing won't cause any problems.

When you get any damage on your boat the most important thing is to protect the core of your boat. We use gray duck tape to cover any cracks or holes. When this happens finish your race if you can and then immediately pull the boat and open up all areas so they'll dry and then tape'em. Be sure to remove the tape when the boat is out of the water and let the hole dry. We re-duck tape the boat every week until we get a chance to repair it.

The sun's X-rays really do a lot of damage to a boat so it is best to try to keep the boat well covered. Boat covers are well worth their cost in helping save the resale value of a boat.

If you have a boat that is pretty well oxidized then you can use a regular auto polishing compound, not a rubbing compound which is too abrasive. Polish it out with a medium speed buffer. A high speed buffer can burn through the

surface of the boat. Then to protect the boat put on a coat of wax. Use a straight wax, most auto waxes are also polishers or cleaners which means they have an abrassive in them.

You must use a plain wax.

If your boat is beyond what can be rubbed out with polishing compound then you can use 400 and then 600 wet/dry sand paper. And then use the polishing compound followed by buffing and then waxing just like I mentioned a minute ago. There are a lot of waxes in the boating industry, but one we use is Mirror Glaze. Another is McGuires Wax. Any paste wax will do. We buff with a towel.

A lot of people make a big deal out of whether a boat should be just wet sanded or waxed. A drop of water will roll down a wet sanded surface a lot faster than down a waxed one. So it looks like sanded is faster. But a couple of things happen to a wet sanded surface such as water sticks higher up on the hull so you actually have a little greater wetted surface with a sanded boat. Another thing, the polyester of which the boat and gelcoat are made is slightly porous and when you sand the hull you are opening up little holes so it will absorb more water and increase the weight of the boat. Also the surface becomes very susceptible to picking up dirt. Another thing we do with our boats is to use a florocarbon spray before we go to any major regatta. It doesn't make the boat any faster but it does keep the boat cleaner (and therefore faster). Land's End used to sell something called Sail Tack which was a floro-carbon. A less expensive product that is the same as MS 22 by Miller Steffenson.

Gelcoat has a lot of funny characteristics such as: it has a limited shelf life, it won't harden tack free, and mixed colors tend to separate out. It's a tough thing to patch with. It's very difficult to spray. It is pigmented resin. In order to get it to harden tack free you can get a wax to put in it or simply cover it when it sets up so that no air gets to it. Cellophane, wax paper, or something like that works well. It's best to avoid using a wax because if it isn't mixed properly it can cause a patch to fall out.

One of the problems with the Lightning is when stored on trailer bunks it tends to dimple. The boat was not designed to be dry sailed. Especially when rigging the boat before or after a race there can be several people on it and the total weight is just too much. Most manufacturers put extra strength in the bunk areas but often it is not enough. One of the things you can do is have larger bunks and even more important be sure they fit the boat well. The hull does have a memory and over a winter will go back almost to it's original shape if there is no weight on the dimpled areas. One thing you can do is set the boat on the trailer a little further forward or back from its normal position.

Repair

Fiberglass is one of the easiest materials to repair. However it is the most difficult material to repair really well. It is almost impossible to get repaired gelcoat to match the original because the sun oxidizes it and changes the color. But it is very easy to do just the fiberglass patch and finish it up with auto body filler such as White Diamond or Black Magic which are polyesters and will stick well to the fiberglass base and sand easily. Always use a block sander. Then on quick patches we go to an auto supply store and get some enamel or lacquer that matches the boat. This holds up well and you can usually find some that matches well.

For more permanent repairs there are excellent paints now mostly intended for the auto industry. These are two part paints that are often even harder than the gelcoat. All-Grip is a two part polyurethane paint that is excellent. Imeron is another one that is more available and cheaper. It's made by DuPont. Peterbuilt and Kenworth trucks are painted with it. You can paint it over gelcoat when properly prepared.

YOU CAN TELL THE PLAYERS WITHOUT A PROGRAM

by Joe Mark

Sailors are usually so busy fiddling with their boats and sails that they have no time to examine a common by-product of the experience of racing a Lightning. That ingredient involves the social relationships that develop in a fleet. Sailing a Lightning with the same bunch summer after summer results in the development of a certain palship similar to that of shipmates on a long voyage.

We want to take a peek here at some of the fascinating types of characters that make up an average fleet. See if you can recognize some of these types in your fleet:

The Gentleman Sailor — He's usually a top sailor, but above all, he is a gentleman, a man of unquestionable integrity and honesty. His actions on the race course are never reckless. He is never involved in tawdry controversies or protests. He may, however, be the Judge at the Hearing. Everyone involved in a protest would want him on the panel of any wrongdoing. Win or lose, the gentleman skipper's behavior is impeccable. He sits tall at the tiller. And you just know that when the day comes that he sails his boat into the great beyond, The Great Measurer at the Pearly Bridge will pass him with a knowing but perfunctory nod.

The Bully — in contrast to the gentleman sailor, is a complete rascal. He will do anything to win: absolutely ruthless on the race course, capable of any and all dirty tricks. If you don't know your rules, he'll yell a few out at you just to throw you off while trying to pass you. He may try that even if you know your rules. After the race, his fellow sailors huddle in bunches to recount his dastardly deeds and unbelievable chutzpah. When his boat comes in there's always some other skipper there to meet him screaming and waving a red flag about some outlandish action he perpetrated on the race course. His answer: an equally vehement counter protest. Well, every club needs a villan, and I hope that you have a peachy one, or, a reasonable facsimile.

The Technician — This is the scientist-engineer type. His boat is mathematically perfect, as planned out with the aid of a computer. Compasses, angles of incline, sail shapes, weather reports (including the effect of the rotation of the earth), water temperature, wind variables are all carefully measured and weighed. The main problem for this wizard is his crew. Crew come in all shapes and sizes (their weight, for example, is constant and frequently not appropriate for wind conditions) and they have emotions (a troublesome barrier to efficient operation). The crew is supposed to make only useful suggestions, largely of a descriptive or factual variety for the computer, i.e., the skipper to process. But it is most dismaying for this paragon of science to hear from his crew useless input like, "Oh ----, we took the wrong tack again." Well, what are you going to do, it takes three to race a Lightning!

The Slob — His boat is always a dirty mess. Fittings are broken, lines are frayed, the paint is bleached, and there are odds and ends all over the place. At home his wife yells at him for leaving his underwear on the bedroom floor, and on his boat he has three years worth of old and rusty fittings, nuts, bolts and such in the bilges. He's always borrowing something big — not just a pair of pliers or some tape — but something like a rudder, or, a jib that he forgot to bring. His personal appearance is similarly unkempt, but he is saved there, because almost all the sailors dress like slobs — it's the accepted and proper uniform.

The Fleet Champion —Ah. . .Here we have the cynosure of all eyes, the cock of the walk, respected, admired, even feared — but perhaps secretly hated! They may rush up to him and congratulate him on his remarkable victory after a race, but the hidden thought may be "What's he got that I ain't got — luck, that's all!" The competitive instinct emerges most sharply here, and it really keeps the pot boiling. The Fleet Champion gets the big silver and the 'oohs' and 'ahs' of the admiring crowd. The hope and desire, even need, to displace him springs eternal in every skipper's breast. Some may generate a genuine respect for the accomplishments of the champ, but others may envy his accomplishments and spend all winter devising strategems for his overthrow — short of sinking him.

The Loser — Absolutely loved by all. He calls forth sympathy. Everyone gives him advice. Always encouraged: "Hang in there Ebenezer. You're doing much better compared to last year" (when he was last). The Loser isn't just last by five or ten seconds. He is so far behind at the finish that the Committee Boat pulls up anchor and leaves, yelling to him as they pass him that they counted his finish. The Loser takes this humiliation without any anger or a tear. Once, a long time ago, you see, the Loser won a race. There was a 180° wind shift while he was one mile behind on the wrong side of the race course, while the fleet was totally becalmed, and that fluky wind shift swept him clear across the finish line. On that memory, he is nourished, waiting for another day when fortune will smile on him.

The Beauty — Every fleet has a Miss or Mrs. America (and probably a Ms. as well). She's the one who sails in a bikini on a hot day (or even on a not-so-hot day). Boats have been known to crash into one another while skippers were intently watching her wrestle with a spinnaker pole on the foredeck. She screams when the boat heels and laughs when jokes are tossed about, but she is apparently totally unaware of her effect on the males in the fleet. Recently when a divorce in one fleet resulted in one such Mrs. America departing the scene, a noticeable sadness settled over the male participants on the race course — but strangely the quality of the racing picked up.

The Visiting Expert or "Pro" — is held in reverence and awe. In this respect, a visiting pro racing at a club is treated with the attention and respect of the Pope paying a visit to the U. S. He is the champion of champions — (the one who wins the Nationals and Worlds, and so on. The Loser sidles up to ask him, "How can I become a winner?", and the knowing Pro has a ready answer: "Try my new mainsail. I call it the 'Turkey.' It sets itself to all wind conditions automatically and is especially designed for tur...I mean, modestly performing sailors, like yourself. A new resin applied to the leach causes it to hum a funeral dirge if by some impossible chance it is set wrong, giving you a chance to re-adjust it immediately," Hope returns to the Loser's eyes. The Technician asks the Pro if setting the jib at 93½" for medium airs is right. And the Pro responds with "Yes, of course, you bought my other creation, the ACE, which is only for top notch sailors. That jib can be set optimally for varying winds from 93-⅜" to 93-⅝" which makes your 93-½" just right." The Technician smiles and the Pro tries to leave his adulating sailors with a friendly wave of his starboard arm. But the Beauty stops him to ask what colors his sails come in, The Pro is temporarily overcome by the depth of the question, but he recovers his poise regally and answers: "Virginal White, Honey."

The Athlete — He's the physical specimen who flexes his muscles as he talks. He can lift boats, climb a mast, pull and push docks around and so on. He'll sail only on winning boats, and his favor is carefully curried by the appreciative skipper. One summer he was an alternate (who never got to sail) ape on the winches on one of the America's Cup losing boats in the trials and in the winter he is sought by the likes of Ted Turner for the Southern Ocean Racing Circuit. I use the word 'sought' in its weakest sense, as I believe he actually heads down to Florida looking for a berth, and it seems to me he is too old to be called a 'college boy' any longer. Nevertheless, he is widely admired by the younger set and sought after as a crew in our Lightnings. Do you have one?

Mrs. Landlubber — She wouldn't be caught dead on a Lightning and has never set foot on her husband's boat. But she is always at the club cheering hubby on, a devoted adherent of the sport. She helps out with the lunches, and so on, but she keeps a careful eye on Daddy's new female crew. He, on the other hand, is a regular grouch on land but somehow seems more carefree and cheerier when he leaves shore. When asked why she doesn't crew, she offers, "Oh, I would probably get seasick, or, fall overboard...I just cannot do that sort of thing." Somehow, it seems that hubby never seems to try to persuade her to give it a try.

Well, you can probably add a few types of your own. And, of course, there are mixtures. But put them all together — along with the average sailor, the guy in the middle of the fleet — and you have, more or less, a Lightning sailing fleet. A slice of apple pie away from the turmoil of grim reality. Where else can you get a chance to meet and enjoy such a colorful cast of real live characters — all doing their thing and enjoying it?

WHEN TO FOOT AND WHEN TO POINT

by Bruce Goldsmith

Maybe you have wondered what happened to the boat that was right next to you for most of the way up the windward leg, but all of a sudden was at the mark way ahead of you. You know you did not do anything drastically wrong — but what did he do that was so drastically right? Just how did he get away?

Your "boat speed" was good, you hung in there for most of the weather leg, only to be on the outside of 8 boats that "just squezed around the mark" ahead of you, or you were on the inside of 8 boats that "powered over" you as you tried to squeeze around the mark. You simply ended up in the wrong place! What really happened was that your judgement of when to foot and when to point has not been cultivated.

To change direction when sailing to windward, you can tack or foot or point. You have to continuously choose where you would like to be relative to other boats within these limitations. This article will explore when to foot and when to point. Footing is steering below a normal windward angle to gain more forward speed at the expense of windward pointing. Pointing is steering closer to the wind than a normal windward angle to gain windward distance at the expense of speed. Either can fine tune our position without such a drastic measure as tacking. The difference in the effective sailing angle between footing and pointing might be up to 25°, where as tacking varies between 70° and 100°.

The basic rule is to foot to the headers and point to the lifts. In this way you end up on the upwind side of the next shift relative to boats around you. When we consider footing and pointing, we always have six different ways to go instead of just two. The top sailor is constantly juggling the six possibilities of: sailing either tack, footing, pointing, or normal. He picks spots that can be reached by one or a combination of the above that will improve or protect his position. Usually footing or pointing is a subtle way of positioning yourself on a few boats around you. For example, assume you are 20 yards astern of a pack but in clear air. Footing puts you in bad air, Sailing normal gains nothing. Tacking gains big if wind lifts later, but loses big if wind heads. Pointing avoids bad air, gains if wind lifts later, loses slightly if wind heads, but allows a tack that gives clear air ahead and to leeward of the pack rather than just to leeward. Now we again have the option of pointing up or footing, where as any other choice but pointing would have given us no choice.

Sometimes footing or pointing can cause more than subtle positioning. The most extreme usually occurs right after the start or near the weather mark. After the start, you generally cannot tack because of starboard boats, so close attention must be paid to keeping your air clear by footing or pointing. If boats to weather are rolling over you, you should foot only as much as you need to keep your sails ahead of their wind shadow. If boats to leeward are pinching you off, you must point enough to stay to windward of their backwind. When both problems exist, you either started late or are just plain slow. Normally, however, it is a time to be very aware of footing or pointing. If successful you are in the first row among the leaders. If not you are automatically in bad air and back in the pack looking for a place to tack.

Near the weather marks it can become very critical to foot or point. For instance, you may be just short of the starboard layline on starboard tack. Pointing gets you around the mark ahead of a wall of starboard layline boats. If you don't start pointing soon enough you'll have to take a pair of short tacks and be behind the whole wall. When you have overstood slightly, you must foot or boats will tack to leeward and ahead and round the mark inside of you. Take advantage of your option to foot to position yourself so that someone tacking below you can't lay the mark and someone who takes your stern overstands.

In addition to using footing and pointing for positioning, there are classic times that call for one or the other regardless of position. In general you foot to reduce leeway or side slippage, and gain steering control. Examples are: sloppy water, before port-starboard crossings, before and after tacking. You point to take advantage of the potential close winded conditions. Examples are: smooth water, steady wind, after footing for control, and when overpowered, especially on smooth water and with light crew.

At every post-race rap session the subjects of boat speed and going the wrong way are bantered about vigorously. Sometimes someone gets credit for a smart move or super boat handling. Seldom does a discussion occur about our subject. I'm suggesting that we should all pay more attention to when to foot and when to point.

Eugene Masker

THE NEW CREW

by John DeBenedetti

Much has been written about selecting, teaching and training the optimum crew; about how to get that ideal combination of weight, experience, intelligence and personalities to win the Districts or National championships. We all know its best to have this same crew all year — but for many members of the class having your best or the same crew for every race is not possible.

A planned-for crew can't make it or doesn't show up. This seems to happen to me quite often, particularly for local club races. What does one do when this happens, forget about sailing? No, you find another crew and go sailing!

Many clubs maintain a crew list of available people for crewing. Good crew are offered positions early. As soon as you find you're going to need another crew, get on the phone to line one up.

Many people would be good crew. Most novices are enthusiastic and do need training, but many skippers will not take time to train new crew. It would be wise to have a pool of people you could draw on to fill in crew spots.

In looking for new crew, find someone fairly athletic, a swimmer who will be able to move around the boat with ease. It would be nice to find someone with a cool temperament, who wouldn't mind being yelled at when there are tense moments! I've found that enthusiasm for learning, coupled with athletic ability can cover the deficiency of inexperience.

When you are short of crew and have a novice to fill the spot, spend some time with him going over the boat, equipment, etc. Show him the things he will have to contend with, how they work, and the effect they have on the boat, trim, etc. Try to explain to your novice crew exactly what will be happening in certain maneuvers and just what he'll be doing — being very specific at this time. Get out on the race course early to give him some actual experience or practice without the pressure of being in a race.

A District Championship (Pacific Northwest)

Prepare your boat by having everything including the spinnaker in ready position before the race. Once on the course with your new crew it just makes good sense to go through some drills. When I have one crew with little experience we put him in the middle position and coach him from both sides! In pre-start activities I handle the mainsheet myself, the forecrew the jib and I ask the middle crew to keep a watch out for boats and weather — glancing there myself especially to leeward.

Tactics and strategies are discussed with the forecrew, all the time trying to include the middle crew in what is going on and why. When tacking, we try to give a few seconds warning and have the middle crew cross over a little ahead of the rest of us since he will be slower at first. Explain how to hike properly, and you'll be surprised how someone with little experience can help you.

Mark roundings, with spinnaker hoists and lowerings will be your toughest challenge. I usually have the new crew feed the spinnaker out of the cockpit as it is being raised. I, as skipper, bring the guy around to the pole in the correct position while the sheet is left untended for a short while. After hoisting the spinnaker, we raise the board and adjust the main sheet. After hoisting, the skipper can fly the spinnaker until foredeck duties are done. Then our foredeck crew can fly the bag until the jibe.

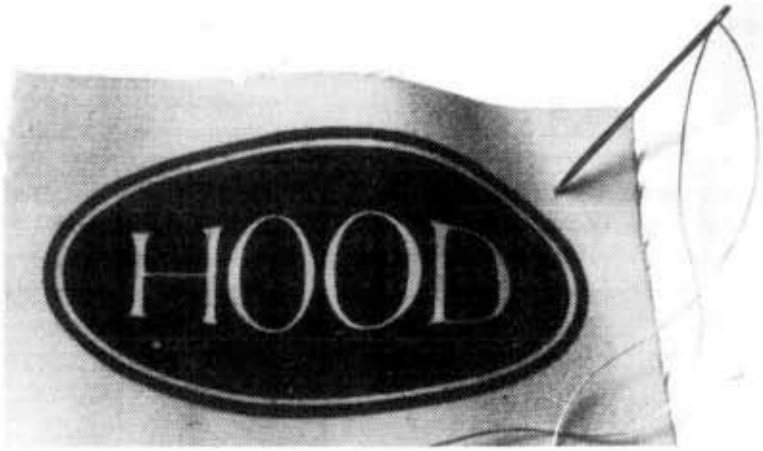
At that point we get busy. Try to start the jibe procedure earlier than usual, possibly falling off to a short run before the jibe. We choke the chute a little more than usual for control. Here a decision must be made. If the novice crew can do it, let him take the new guy coaching all the while as to how much to let out and when to cleat. Meanwhile, the skipper can control the new sheet. Let the main jibe itself, having choked it a bit beforehand if necessary. If the skipper does not feel confident with this idea, he could handle both sheets. Another way would be to let off and pre-cleat the new guy just prior to jibing.

Spinnaker lowerings should be started early, with enough time to allow forecrew to be ready at the point of rounding the mark. The novice crew could lower the halyard during the takedown, skipper handling the sheet, or on a leeward drop, the guy. Skipper can even handle the jib sheet, if it is led to him before hand. You may let the novice crew handle the spinnaker if you feel he can do it. Centerboard, backstay and cunningham adjustments can be done prior to the drop.

All this may seem like leaving most of the work for two people, but within a short time the novice will have picked up a bit of experience, and you'll be able to spread the duties around.

If you are unfortunate in having two novice crew in a race, it will be tough, but it can work out with judgement, patience and calmness. If the skipper can present these qualities during the circumstances outlined above he will help himself and others considerably.

Best of all you will have sailed, had some fun, and had the chance to develop a new crew. Maybe he'll wind up being a permanent crew for you. It's happened before!



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LIGHTNING CRUISING

Editor's Note: In the heat of the racing season I suspect many of us (certainly I) forget one of the strengths of the Lightning that has significantly helped make it the classic that it is. Mainly that this little boat of ours is a very stable and comfortable day sailer. Indeed, as the next three articles point out it even is a serviceable cruiser, though more like back-packing than camping in a motor home.

We should be proud of and continue our racing efforts for the Class as this is what best supports our organization. This year we are fortunate that three members have contributed these cruising articles. Past efforts to obtain articles for the Year Book or Flashes on subjects not related to racing have not been well supported by the membership. There is a lot that can and should be written. It is up to the membership.

The continued growth of our Class is in part dependent on generating interest in sailing by our younger children. I for one plan to do more day sailing next summer with a couple of youngsters (perhaps future crew) in my family who think sailing around is fun.

CRUISING HAWAII IN A LIGHTNING

"The Owl and the Pussy-cat went to sea

in a beautiful Lightning boat."

By Morrie and Barb Craig

My wife and I came to the Hawaiian Islands by sea via a forty-foot sailboat; she as tutor, I as navigator Having arrived on the "big island," exploring it by boat, and delivering the owner and his family to Maui, we were now land locked and had been so for the past seven months while working at the University of Hawaii-Hilo. The seas were beckoning and we dreamed of exploring Molokai and Lanai by sailboat before returning home.

One of our trips to the University of Hawaii-Manoa campus included a visit to Kaneohe Yacht Club where we discovered a Lightning fleet. Here a boat was for sale and before we realized, our dream became a reality. Our plan was to visit Molokai by land and then sail a Lightning around the island of Lanai to some of the more remote places in the Hawaiian Islands.

Lanai especially haunted our dreams. We had heard of its unspoiled beauty, the coral sand beaches not yet discovered by condomeniums, hotels, or hords of people. The island is owned by the Dole Pineapple Company and the two thousand people who live on Lanai are employed mostly in the pineapple industry. We had by now spent some time in the Islands and looked forward to visiting a place not yet caught-up in the twentieth century; and doing this via a Lightning was beyond our wildest dreams.

We chose a Lightning for two reasons: We had traveled the Lightning racing circuit in the Pacific Northwest for three years and felt we knew how to handle it well in all types of conditions. If the weather was unfavorable we could pull up the centerboard, remove the rudder and drag the boat up on the beach. A Lightning is a sturdy boat and fairs well in high winds; moreover, it has a lot of storage room for camping gear and provisions ample for two weeks.

Omitting such details as how to get a nineteen foot boat from Kaneohe to Honolulu and barge it to Molokai, the next thing we knew it was the afternoon before our anticipated departure. That afternoon my wife commented in that special voice all husbands know, "if we are to die, at least we'll do so together". The channel between Molokai and Lanai was still wearing its caps of white and the subsiding seas didn't comfort me much when a gaze to seaward pictured such turmoil. We had already waited a week-and-a-half for the winds to subside and the cancellation of small craft warnings.

Each day began with a ritual. At four in the morning, one of us would begin our forty-five minute walk on foot to the local docks at Kaunakakai Harbor. Just at day-break we would check the sea conditions by looking out into the channel we anticipated crossing. The locals enjoyed teasing my wife about our plans to sail in such a small boat without an engine across the Kaholi Channel to the island of Lanai. Our departure was a much anticipated event, but as usual the final decision was left to five a.m. the following morning.

The following morning as anticipated, we left Kaunakakai Harbor. The seas were still aroused from the week-and-a-half of small craft advisories but the winds were supposedly eight to twelve knots. We beat up the coast of Molokai for a couple of miles to Kawela, so we could easily reach across the channel. The winds were so still that we either ghosted along or paddled. As we reached out into the channel and lost the lee of the island the winds freshened up to seventeen to twenty-one knots and we found more than a few white caps. Even now it is surprising that we couldn't see the "wind-line." Initially the seas looked over-powering and I had one of those "weak-in-the knee" feelings, but as the crest of the first wave approached, instinctively we pointed "Owl & Pussy-cat" downwind. Often we had been in races with overpowering winds and the Lightning's spinnaker had taught the survival response of falling off when sailing down wind. We returned to a reach and our intended course to

Shipwreck Beach. However, a few threatening eight foot frothy green curls and trying to control our Nantucket sleigh. At first we were not planing easily because all our gear was stowed forward. By the second big wave, the first mate was thrusting gear aft, while trying to hike to keep the planing boat level. It was one of the few times she wished to weigh two-hundred-fifty pounds instead of half that. Since the captain was ordered to keep his eyes glued seaward and a steady hand on the helm, the mate relegated herself official photographer. Some of our pictures are priceless and depict our first feelings of uncertainty. After a few minutes we were accustomed to the groans and creaks of the boat, and twangs of the rigging. We proceeded to enjoy the challenge of the very fast crossing. Fifty minutes later we had traversed the eleven miles of Kalohi Channel; safe, reasonably dry, and excited over the exilerating Nantucket sleigh ride we had just encountered. The "first time", no matter how trival, is always special and so was the first crossing for us.

Just a little east of Pohakuloa lighthouse on Lanai there is a break in the reef. After consulting the chart again and scanning the area, this channel was chosen as our entrance. As we neared the lighthouse, the sails were dropped and centerboard slightly raised. We paddled in thru a narrow channel until we could get out and walk the boat down the reef. Here the boat lay behind a protective reef in about two feet of water with a coral sand bottom. We set up camp among the Kaiwe trees and enjoyed the rest of the day skin diving for lobster and shells, and sleeping on the beach as we would a number of times in the ensuing weeks.

Our camping adventure from Pohakauloa Point to the pineapple harbor of Kaumalapau, our trip to Five Needles and to Palaoa Point (an ancient fishing village), and our return crossing to Kaunakakai Harbor all remain untold. After three years we still reminiscence and think of this crossing as one of the most exciting segments of our year-and-a-half traveling throughout the Hawaiian Islands.