FIRST WORLD'S CHAMPIONSHIP REGATTA

by Thomas D. Fallon—President, L.C.A.

Most major discussions have now been made. They are as follows:

1. **Location**—Milford Yacht Club, Milford, Connecticut. Milford, is on Long Island Sound—the best known sailing water in the U. S. A. Milford conducted an excellent LCA Championship Regatta in 1957—won by Bill Cox. They also were the splendid hosts for the 1960 North American Star Class Championship Regatta plus many other regattas of major importance. Milford is approximately 75 miles east of New York City over super highways.

2. **Date**—Week beginning Monday, Sept. 11, 1961.

3. **Racing Conditions**—Six races over the standard LCA triangle—twice around plus an extra weather leg—will be scheduled, but one race can be thrown out—as in Olympic competition. Scouvy will be the standard LCA system—not the Olympic system. It is possible that all six races will be scheduled on three days, Thursday, Friday and Saturday, September 14th, 15th and 16th.

Eligibility—Each major Lightning area will be allowed to enter 4% of its registered boats with a maximum entry per area of 15 boats. Under this program entries for each one will be approximately as follows:

South America	15 boats
Europe	12 boats
North America	15 boats
Hawaii	1 or 2 boats
Canada	1 or 2 boats

Determination of Entries—Each major area will control its own entries. North American entries—except Canada—will be based upon the results of the North American Championship Regatta to be sailed the week beginning August 21, 1961 in the Pacific ocean off San Diego, California.

Crews—Crews will be provided for all entries from outside North America if the request for crews is received sufficiently in advance. North American entries including Canada must provide all their own equipment including crews.

Equipment—Good competitive boats will be provided for all entries from outside North America if the request for a boat is received sufficiently in advance. ALL entries must, however, provide their own sails.

Housing and Meals—Free housing and meals will be provided for all entries—shippers and crews—from outside North America—for the period of the Regatta.

Subsidy—The LCA is hopeful of providing some travel subsidy for all entries from outside North America. The amount is uncertain as of March 1, 1961. It will depend upon the generous support of the Regatta by loyal LCA members. Mr. Gaines Houston, LCA Vice President from Little Rock, Arkansas, USA., has accepted the task of raising extra revenue for this purpose.

Prizes—Prizes will be in the European tradition of awards for each race plus new awards.

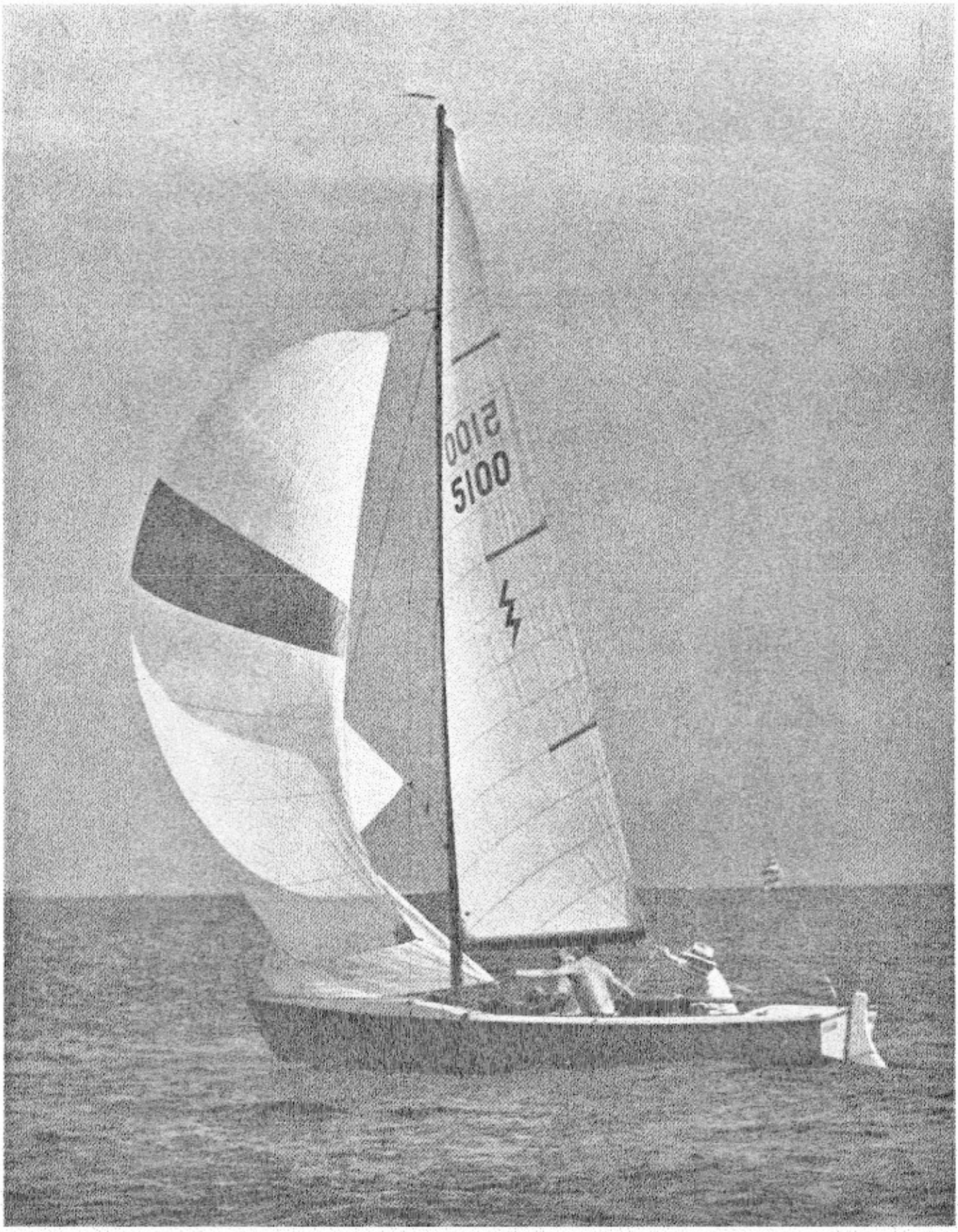
General—This will be the first LCA World's Championship. To make it a truly World's Championship entries from Europe and South America are a vital necessity. All LCA officers are dedicated to give their full cooperation. The complete support and enthusiasm of all International officers and members is urgently requested.

For Further Information—Contact any of the following:

Mr. Ken Ireland, Regatta Chairman
care Milford Yacht Club
Milford, Connecticut, U.S.A.
Mr. Hamilton Ford, Treasurer LCA
Mr. Jay Limbaugh, LCA Vice President
International Affairs
Mr. Thomas D. Fallon, LCA President
325 Delaware Ave.
Buffalo 2, N. Y., U.S.A.

Photo—Al Mature

The St. Petersburg Yacht Club Saturday night show was tops in entertainment.



Our able President and sailor Tom Fallon with his new spinnaker flying at St. Pete. Crew: Howard Boston on jib and Towney Wilson on main.

Baltimore's Marbury Fox Beats Large Lightning Fleet

By Bob Chambers

BULLETIN: On November 4, 5, and 6, 1960 a company of Lightning sailors invaded the Quantico Marine Base. Their target, fun, a little bit of sailor talk, and three races on the Potomac River. The capable Marines handled the invasion in typical Marine style. Every detail was looked after, and all agreed the invasion was a complete success.

Pres Fallon stirs up some wind at Quantico.

As President Tom Fallon stated in his own quite Fallonism, "This is the greatest gathering of the clan in many a moon." And indeed it was, with the exception of the Internationals and the Mid Winter Championship in St. Pete. This year's Quantico Regatta lured sixty-nine boats from the eastern sea board, to western Ohio.

Saturday morning was overcast and windless. The first race was postponed until noon. The Marines, who supplied everything else, finally came up with a light breeze. The starting gun reported and the Potomac River was a mass of white sails. The wind turned out to be spotty with the peculiar sensation that very often the river was smooth as glass even though the wind velocity was 8-10 MPH. The boats going over to the port tack immediately after the start seemed to get more wind and the dozen or so boats that went in that direction rounded the mark within a whisper of each other. Halfway down the spinnaker leg the race committee shortened the course to once around. After a close reach to the next mark, there were not appreciable position changes. However, the drive for the finish line saw many changes in the leading group. Jim Carson emerged the victor, as he sailed in what seemed to be a private shaft of air. Marbury Fox was second followed by Stu Anderson, Howard Lippincott and Al Bernel in fifth place. Bernel was later disqualified by a protest moving Bob Tunnell into fifth place.

The second race started soon after the first race was completed. The wind had settled down to a steady 10 MPH. Al Bernel starting at the leeward end of the line shot out in front on a close reach to the first mark, and was never headed. A cold, driving rain, which had threatened during the first race, finally caught up with the frost bitten sailors. However, the wind held fairly steady and there were not too many position changes after the first mark. Al Bernel finished the triangulat course ahead of June Method, the only girl skipper sailing with a girl crew. Third was Howard Mullin followed by Roy Knapp and John Sullivan rounded out the first five.

Sunday morning was a sparkling crisp day; the air was shifty and spotty. The shifts were so violent it was practically impossible to protect a position. The lead changed several times with Bob Lippincott, Wally Crump, Bob Crane among the many who, at one time shared the lead. Al Bernel rounded the second last mark in twelfth place. Sailing to leeward of the leading pack, keeping his spinnaker full, he was able to circumvent the fleet and go into first place. He held his position, finishing ahead of Bob Tunnell. Third was Marbury Fox followed by Tom Fallon and Bob Crane.

Marbury Fox by finishing third rapped up the regatta as Jim Carson, who had been leading going into the last race fell into the tank. Had Al Bernel not been disqualified he would have easily taken the first place silver. Howard Mullin was second, followed by last years winner Bob Crane. Jim Carson and Bob Tunnell rounded out the first five.

All agreed it was a wonderful regatta and everyone appreciated the chance to sail in the stiff competition that represented the sixty-nine entries.

The Lightning Class is most appreciative of the hospitality extended to it by the United States Marine Corps. Heading the committee this year was Major Bill Rump, under the command of Lt. General E. W. Snedeker. Washington's Walter Collier was a most competent Race Committee Chairman.

Our heartiest thanks to all.

First place winner, Marbury Fox and crew with Major Bill Rump doing the honors.

QUANTICO FROSTBITE REGATTA

November 5 and 6, 1960

Number	Skipper	1st Race	2nd Race	3rd Race	Total	Position
7020	Marbury Fox	2	11	3	191	1
7511	Howard Mullin	14	3	8	183	2
7019	Bob Crane	13	8	5	182	3
6884	Jim Carson	1	7	19	180	4
7585	Bob Tunnell	6	18	10	174	5
5100	Tom Fallon	7	26	4	171	6
7605	Bob Lippincott	17	9	11	171	7
6920	Jim Tunnell	10	16	15	167	8
6346	Wally Crump	9	27	6	166	9
6932	Dick O'Donnell	36	6	2	164	10
5959	Tom DeStasio	18	15	12	163	11
5082	Jay Limbaugh	21	17	7	163	12
5380	June Method	30	2	17	159	13
7745	Howard Lippincott	4	42	9	152	14
6003	Ed Dean	11	30	18	149	15
7337	Henry Sprague	25	12	22	149	16
7324	Frank Williams	35	13	13	147	17
1903	Stu Anderson	3	28	36	140	18
7202	Barney Mead	12	31	26	139	19
7082	Roy Knapp	23	4	42	139	20
527	Bob Purnell	20	20	31	137	21
7244	Al Bernel	DSQ	1	1	136	22
7592	Joe Corbi	15	39	20	134	23
7543	Al Field	8	32	35	133	24
3704	Bob McWhorter	34	10	33	131	25
770X	John Parker	26	25	30	127	26
5079	Frank Schneider	46	22	14	126	27
6619	Mary Wilkinson	22	21	41	124	28
6899	John Sullivan	16	5	DSQ	118	29
4206	Dale Allen	49	19	25	115	30
6868	Walter Galvin	29	33	28	115	31
6957	Dave Thurston	41	24	37	106	32
6005	Walter Tripp	37	51	16	104	33
7705	Marcy Lippincott	44	33	27	104	34
6126	Lee Brown	27	34	45	102	35
1239	Reid Dickerson	43	40	23	102	36
7516	Earl Engler	24	14	DNF	101	37
860	Virge Vaughn	42	29	43	94	38
5730	E. N. Lavery	38	55	24	91	39
5964	Harold Hernly	19	59	40	90	40
7222	John Moore	32	44	44	88	41
7000	Karl Smither	31	DNF	21	87	42
732	Bob Shultz	48	46	29	85	43
7611	Jim Gilbert	28	48	47	85	44
7545	George Garrecht	33	23	DNF	83	45
7800	Claude Sullivan	47	50	32	79	46
5825	Tom Williams	40	52	50	66	47
6946	Jonothan Owen	50	53	39	66	48
5559	John Schneider	57	37	52	62	49
7206	Tom Coe	39	38	DNF	62	50
7373	Wirt Gill	DNF	35	46	58	51
7603	Don Dalmeyer	54	49	48	57	52
7624	Bob David	60	56	38	54	53
6523	Frank Mullins	59	45	51	53	54
5604	Nelson Hoffman	51	58	49	50	55
6428	James Dillard	55	47	56	50	56
6617	Richard Heald	52	57	53	46	57
7359	Ed Hennessy	56	41	DNF	42	58
6318	Murray Schwartz	45	DNS	54	40	59
826	Bill Peacock	51	54	55	38	60
5442	Dave Swinford	58	60	52	33	61
3087	Marty Artech	61	61	DNF	16	62
USMC #1	Mick McMahon	63	62	DNS	13	63
USMC #2	Cpl. Linsey	64	DNF	DNS	5	64
USMC #3	Lt. Baxter	65	DNF	DNS	4	65
USMC #4	Cpl. Geo. Patterson	66	DNF	DNS	3	66

Second place winner, Howard Mullin and crew.

3rd Place winner Bob Crane and crew.

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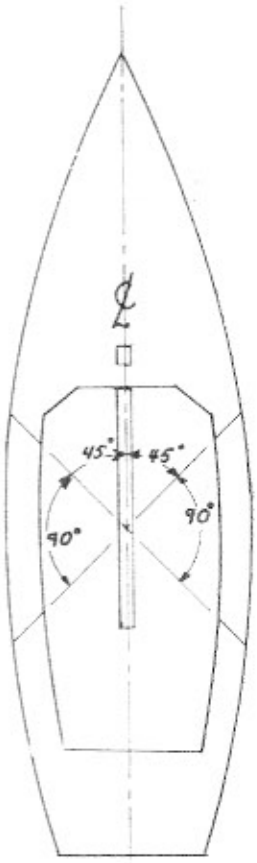
WIND LINES AND THE COMPASS

By Howard J. Mullin

Several years ago I was able, with the help of several beers, solicitously offered to one of the local "hot skippers", to get from him a rather guarded explanation of those black lines he had painted on his deck and how they work. Ever since then I have been squinting up and down these lines which I call wind lines that I painted on my boat and realizing that there is more to using them than meets the uninformed eye.

Let me explain just what these lines are and how they are placed on the deck. From the center line of the boat, construct 45° angles off the centerline to both port and starboard and also both forward and aft as the drawing indicates:



I only use these lines in beating to windward and they are helpful to me in several ways, including:

1. Determining the direction of the true wind.
2. Determining whether you are ahead of, even with, or behind competitive boats on the same opposite tack.
3. Determining whether you are gaining on competition, losing, or holding your own.
4. Determining very accurately whether you can or cannot pass in front of a boat convering on the other tack.

Before starting any explanations or theories, let's assume that the wind is constant in direction on all boats, and, that all boats can and do make a course exactly 45° off the true wind. We shall make the true wind come out of due East; therefore, our starboard tack will be on a compass heading of 45° (NE) and our port tack will be on 135° (SE). If we are on the starboard tack making a course of 45° (NE), and referring to the above diagram, it is readily seen that the wind lines on the starboard bow and the port quarter are pointing directly into and away from the eye of the wind; that is at 90° (E) and 270° (West). The other pair of lines, one on the port bow and the other on the starboard quarter are pointing due North and South respectively, or 0° to 180° and are perpendicular to the wind.

Now, looking down the lines to the North and South, any boat that is on the windward side of the line extended either to port or starboard is ahead of us and any boat to leeward of this line is behind us. This is true regardless of which tack they may be on, or how far away down the extended line they may be.

The use of the wind lines also enables us to compare relative speeds of boats. For example, if your competitor was on the wind line 5 minutes ago and now is somewhat to leeward of it, you have been going faster than he, **assuming the wind direction has not changed.**

Aha! Now we bring in the compass. Never, no never, look down a wind line without looking at the compass, too! Let's go back to the above example. You look down the wind line over the port bow and see that your competitor has fallen behind, or to leeward of the line. Next look at your compass. If you are still making 45° you **are** making on him. But if your compass heading has changed since 5 minutes ago and you are now making, say, 55°, then he has not fallen behind but your wind line has swung away from him and your improvement in relative position is a result of a favorable wind shift and **not** of relative hull speed.

Now let's suppose that the second look down the windline over the port bow reveals that your competitor has moved ahead of, or to windward of the line. Check the compass. If your heading is still the same, then he **has** been going faster than you. If your compass heading has fallen off to, say, 35° then your loss of relative position was caused by being headed and **not** because he has been moving faster than your boat. The same analysis of your other competitor down the extension of the South bearing line over the starboard quarter can be made. If he has drawn ahead of the line since the last time you looked, either he has moved faster or you have been lifted and only your compass can tell you **which** has happened.

The fourth use I listed above, that of determining whether you can safely port tack the other oncoming boat is readily apparent. If he is safely behind your wind line, you can make it. If he is on or nearly on it you cannot safely pass in front of him.

I would like to add here one after thought which, I warn you, will rather complicate matters a little. In the above examples where I have said that in various instances your opponent has "made" on your wind line, it was because his hull speed was higher than yours. It is also a possibility that he got a favorable lift which put him out in front rather than an increase in hull velocity. So a **third** analysis should be made if you wish to determine accurately the reason for the change in relative position on the wind line. You must try to determine whether his boat is still making 45° (or 135° if he is on the port tack). This is very difficult when he is any distance from you.

The sum up, then, remember these basic fundamentals:

1. One pair of windlines is always parallel to the true wind direction and the other pair is always perpendicular to the true wind.
2. All boats on the perpendicular wind line are even with you regardless of which tack they are on, or how far away they are, or which side of you they are.
3. A change in position relative to the windline of your opponent can mean one of three things, relative velocity, a wind shift on you or wind shift on him.
4. You must use your compass in conjunction with the windlines to help you determine which of the three possibilities has occurred. I might suggest here a pencil behind the ear and a white deck on which you can jot down compass headings, as necessary equipment. My deck looks like a bookie scratch pad after a race is over.

If the reader is still with me, I would like to warn him of a pitfall—encountered by me in several instances, the last of which was not too long past. Let's put me on the starboard tack bearing 45° beating in to an East wind as in the example above. I look out the windline over the starboard quarter and note that my opponent is on the windline some one hundred yards distant. We are even, right? Five minutes pass. I look at him again and he has fallen behind my windline. I check my compass—35° it says, and I have been headed. I should tack, but look at the lead I've opened up on him! Guess I'll stay on this tack and really get a good lead. Then, bango, the wind shifts back to put me on 45° again and I've lost my lead and then some and it is too late to tack now, for if I do, I'll pass under his stern. So by all means, sailor, do not forget the cardinal rule of upwind sailing: TACK ON HEADERS. Do not be misled through incorrectly interpreting the information given you by these wind lines.

Remember, too, that your boat doesn't always track 45° off the eye of the wind. In light air she will do about 50° and in heavier than moderate air, somewhat less than 45°. After using the lines for awhile you will be able to make these compensations automatically.

One other use I have put the wind lines to is in checking the starting line for the favored or upwind end. Cross the line on the starboard tack hard on the wind. A look down both the port bow and the starboard quarter lines towards both ends of the line will readily tell you which end is ahead of the wind line. That end would, of course, be the favored one. A double check on port tack should also be taken to confirm the lay of the starting line.

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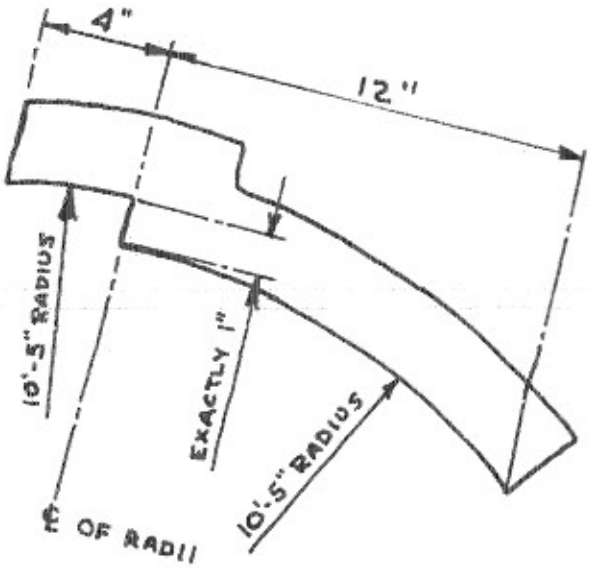
LOCATION OF TRUE CENTERLINE

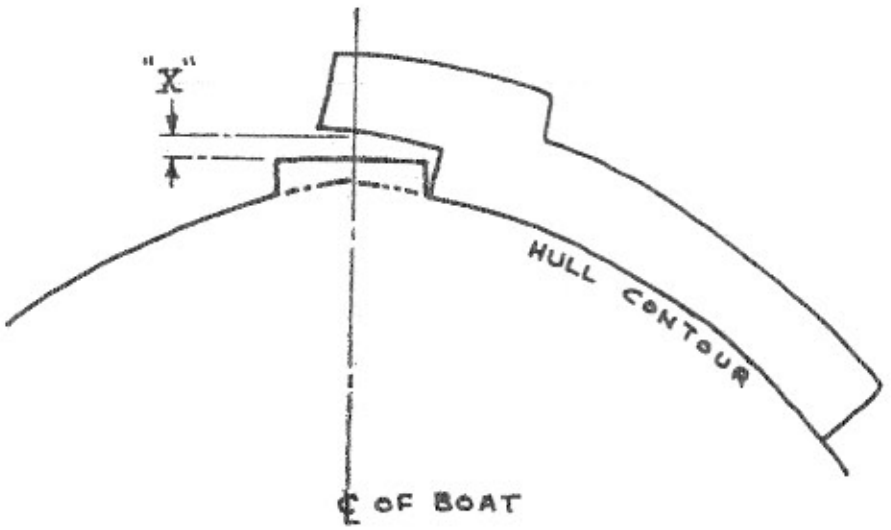
A very accurate location of the centerline of the Lightning at each Station may be made by use of a thin batten similar to that illustrated below.

BATTEN



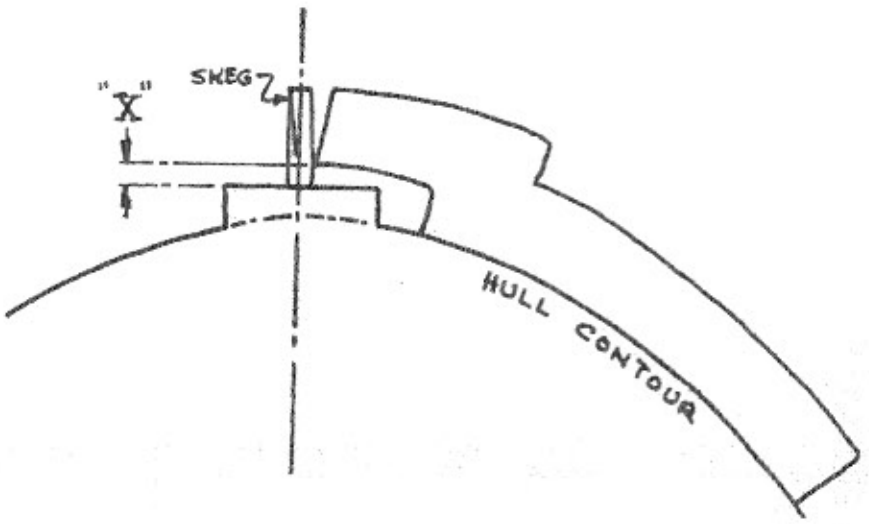
USE OF THE BATTEN AT ALL STATIONS EXCEPT STATION 9

1. Hold batten perpendicular to the centerline and baseline.
2. Measure distance "X" at centerline of boat.
3. 1" minus "X" equals keel height above centerline for entry on Line 2 of the Worksheet.



USE OF THE BATTEN AT STATION 9

1. Same as above except that measurement is taken alongside keel.



THE LIGHTNING SLOOP
A PICNIC BOAT or a RACING SAILER

President's Comment:

The author of this article won the first race of the 1960 Internationals by a substantial margin. This was no fluke. His boat goes very fast. He won at least fifteen races in 1960 by even greater margins. It is a standard boat with standard sails.

This article is not the type thing one would read and look at Gunsmoke at the same time. But it tells exactly what Al has done to make his boat go faster than other similar boats with similar equipment.

Al may indicate that to do all the things he recommends is easy. It is easy for a person who is determined to win. But a considerable amount of dedication to this purpose is necessary.

The comment attributed to me: "You are too old to take up racing a Lightning" is almost correct, but not quite that blunt. Frankly, Al's performance in 1960 amazed everyone. Al's 1960 record proved conclusively to me that continuous and diligent working on the boat—tuning, sails, etc., pays off in increased speed beyond what I had realized. I used to think "Oh, just get the boat rigged up about right and race it as best you can". But "about right" is not good enough.

Al indicates in this article that Allen, Fallon, Smither, Anderson, et al helped him. Allen, Fallon, Smither, Anderson, et al are looking to Al in the future to help them.

By Allen Bernel

Many summers had passed me by before the intriguing sport of sailing came to be my hobby. After two years of picnic sailing and watching fleets #59 and #78 race on Niagara River, I was determined to join in the fun and try racing a Lightning.

Now if you are ill, you consult a doctor. Being an independent businessman, I approached the art of sailing the same way. Tom Fallon appeared to me, in 1957, to be a genial, talkative sailor so I had a neighbor of mine, who works for the same Company as Tom, introduce me. After one hour of introducing myself and explaining to Tom my desire to learn to race, he studied me intently and after pausing a moment he said, "You are too old to take up racing a Lightning". I am sure that I was at a loss for words but he had not changed my conviction to be a good sailor. This was the beginning of the "young" coach, Tom Fallon and his elderly student, Allen Bernel.

This article is directed to the average sailor, like myself, who desires to improve but does not feel confident that the changes he might make would be the correct ones.

Various post-race discussions between your competition can bring out points of tuning or equipment that is excellent for his boat, and the way it is tuned, but be entirely wrong for your own craft. In this article, I have tried to establish the chronological steps I believe can be followed to condition your Lightning for the race program of the season. It is a starting point from which recorded adjustments can be made and then determine if such adjustments improved your performance.

Before proceeding further with this article, I would like to give credit to all of the fine Lightning skippers and crews that have listened to my questions and have given me unqualified answers as to the information they have gained, the hard way, through the years. In particular, I would like to thank Tom Fallon, my coach and tactition; Karl Smither, my light weather instructor; Tom Allen, my reticent hull and sail analyst; Stu Anderson, my "hell for leather" sailing friend. How could anyone keep from improving with sailing ability such as this for friends and competition?

To ruggedly race your Lightning, you must consider the hull as a racing platform. Every part of the hull must be completely familiar to the skipper and he must know in his mind that it is in such a condition that he can put it to the test of each race, regardless of whether the wind is blowing five or twenty five miles per hour. Because a hull is of early vintage does not mean that it can't be a top competitive boat. Look at the record of the Internationals held over the last three years and you will see such numbers as 749, 1903, 4040, 4811, 4872, 5100, and 6336 up in the thick of the fight for top honors. All it takes is sufficient desire and interest to get the maximum speed from the equipment that you own. Tabulated below are the steps that I sincerely believe will improve the performance of any Lightning sailor.

THE HULL:

The first consideration the skipper should give to the hull is that it is thoroughly sanded to the smoothest finish that can be obtained. This should be performed in steps, with the first sandings with wet #240 paper and finished with #600 wet paper to give the surface a burnished finish. This sanding applies to fiberglass as well because the surface that you want is one that will wet out when in contact with water. An easy way to check the condition of your bottom is when you put your Lightning in the water for the first time. Drop the boat into the water so that it is floating on its natural lines and then raise it back out of the water. If the water is spread over a large surface and it does not try to run back into a puddle, you have prepared the surface properly. If it puddles, the next move should be to the beach for a good sanding. The statements apply double for the centerboard and rudder because they have two sides and their total wetted area is a sizable percentage of the total boat. Sand it and keep it sanded for the entire season and particularly before the important races. The psychology of knowing that you have prepared the boat properly will permit your mind to concentrate on the race at hand.

The weight of the total boat should be kept as close to the 700 pounds minimum as possible. Remove all the junk that you accumulate when picnic sailing. Also, if a certain fitting is outdated and heavy, replace with light weight replacements, but don't sacrifice weight for strength or durability as you will want to be able to push the equipment to the limit when it blows and there are no points given for equipment breakdown.

The running rigging and the fittings for assisting the crew to sail the boat efficiently should be in top condition. Try crewing for another skipper in a well rigged Lightning and you will soon appreciate the necessity of having this portion of your craft in top condition. If the blocks run hard, lubricate them. A used hypo needle from the family doctor will get the oil down in the block where it will do some good, rather than put oil all over the block. If the sheets are worn or frayed, replace them now rather than after they part in a race.

Every craft should have the following devices to do a top job of sailing: Jib downhaul. This device can be either on the halyard or an extension of the tack of the jib and led through the deck and back to a location that

the jib man can easily reach at all times from his normal position. This device should be in the form of a throw lever with a mechanical advantage of four to one and sturdy enough to withstand a strain of 500 pounds. A three thirty-seconds flexible wire halyard should be used with this arrangement on the jib as any form of line would just stretch and still permit the luff of the jib to fall off to leeward. Metal beads are used on the wire halyard and these beads slipped into a slotted clip which is fastened to the side of the mast about two feet above the deck. The jib halyard is fastened on one side and the main on the other side of the mast. It is best to have the jib on the port side as your jib man will be on the port side of the boat on a normal spinnaker third leg of the course and he can easily hoist the jib at the last moment before preparing to take down the spinnaker. One other small item we have found helpful in this same situation is to leave a sufficient amount of the jib halyard tail above the deck so that when it comes time to drop the jib, all you need to do is to unclip the bead and toss the halyard tail in the air and the jib will come down quickly. If you pull the tail down under the deck, then you must bring it back through the deck opening and many times it fouls. The purpose of the jib downhaul is to be able to put sufficient tension on the jib luff so that it does not fall off to leeward and ruin the shape that the sailmaker built into the sail. It is an advantage to have a screw type adjustment on the throw lever so that the tension can be regulated.

The second device to help you do the best job of sailing is an adjustable topping lift for the spinnaker pole. The purpose of this device is to permit you to raise and lower the pole from inside the boat. The best device to date is a length of one-sixteenth flexible cable that starts with a snap at the end where you attach the topping lift to the spinnaker pole and goes up and through a piece of tubing located completely through the mast coming out aft through the sail track, from there the cable proceeds down the groove of the track through the mast deck opening and aft through a cheek block on the mast step. A cotton or pimm sheet tail is attached and this is led through a cam cleat located on the port side of the lower centerboard trunk at about station six. This location will permit either the skipper or the jib man to regulate the height of the pole while the main man is flying the spinnaker. The tube through the mast is normally located just below the spreaders. The cable must be held in the center of the sail track while the sail slides of the mainsail are being put on the track so that the cable does not foul the hoisting of the main.

The third device needed is a strong rugged boomvang. This is sometimes referred to as a kicking strap. The basic design used throughout the class is a one-eighth flexible cable attached securely to the boom by means of a thoroughly bolted boom bail or running the cable up through the boom and sail track and then back through the track and securely anchored underneath the track. From the point of anchoring on the boom approximately 36 inches aft from the mast, the cable is then led forward through a ring (detailed description to follow) and then down through a deck opening just aft of the mast deck opening to a form of tension device below the deck level. The tensioning device can either be a six to one block and tackle or a drum winch. Regardless which type is used, it should be rugged and capable of exerting close to five hundred pound pull. The ring mentioned above through which the cable is led has a one quarter inch shock cord attached to it and the shock cord is led through a cheek block mounted on the most forward part of the boom on the port side. The shock cord is then led aft and anchored about four feet aft on the boom. The shock cord is stretched enough so that the tension is sufficient to hold the ring and cable up close to the bottom of the boom so that it will be out of the way when not in use. A plastic covered cable is preferred as bare flexible cable tends to catch the hair of the jib man while moving about his area of the Lightning. This device is a must on a racing Lightning.

The fourth device needed is an adjustable outhaul for the main sail. Bellows manufactures an excellent rig for the Star sailboat that can be adapted to the Lightning boom. However, any handy person can rig such a device. The only thing you are trying to accomplish is to be able to adjust the clew of the mainsail from the jib man's position. A simple device to accomplish this movement is to take a length of three-sixteenth line and dead end it at the aft port side of the boom. Lead this line forward around the mainsail outhaul fitting and then aft over a cheek block mounted on the aft starboard side of the boom and then forward through a small cam cleat mounted about eighteen inches aft from the mast on the starboard side of the boom. The purpose of this fitting is to adjust the tightness of the leech and draft of the mainsail.

The final suggestion is to place marks on various parts of the boat or rigging. These marks are no more than "hallmarks" to be used by the crew as guidance or comparative positions in the setting of the sails. Start from the mainsheet block that is located on the boom directly over the block on the centerboard trunk and mark both sides of the boom every four inches. These marks can be different color in order to identify them or numbers stamped on the boom. Next, put one mark on the mainsheet about one foot aft of the block on the boom. This will have to be marked with the boom in the normal position for windward work. Mark one jib sheet at the jib sheet cam cleat or at the last block before where the jib man is sheeting the line. The mark should be clearly visible to the jib man. Then stretch the two jib sheets out evenly and mark the second jib sheet the same distance from the dead end. In theory, if the rigging is centered, the jib sheets should sheet to the same point on either tack. Again, it is repeated that these marks are to be used as guide points and the jib man should be constantly easing the sheet to see if it is the ideal position.

LOCATION OF MAST IN HULL:

The position of the mast in the hull will vary from boat to boat. Always bear in mind that the centerboard and rudder are in a fixed position and that the center of lateral resistance is already established for your boat. The problem that confronts you is to locate the mast and the sails hoisted thereon in the proper relationship to this center of lateral resistance. Always think of the mast and sails as a unit or team. It is the motor in your boat and the problem is to get the greatest horse power out of the unit. If you accomplish this and the sails you own are of good design, your boat speed should be competitive. A good place to start is to place the fore face of the mast twenty inches forward of the center board pin. Then rake the mast aft so that a plumb bob attached to the main halyard will show an eighteen inch rake at the boom surface. It will be necessary for you to stand in the boat while taking this measurement. Be sure and stand with one foot on either side of the centerboard and at the

center of the boat fore and aft. The rake of the mast will be controlled by the length of the head and back stay. The shrouds should be adjusted so that the mast is centered in the boat port to starboard. Leave some slack in the shrouds, particularly the lowers. The main concern is that the mast head is centered in the boat and the mast is straight, side to side. It is always better to have the top of the mast fall slightly off to leeward than have the balance of the mast sag to leeward. The final adjustment of these shrouds can only be made while sailing hard on the wind. Initially, set up the jumpers so that the mast is straight, fore and aft. Suggest you refer to Sports Illustrated books of Small Boat Sailing.

SHAPING OF SAILS
MAINSAIL

Sails are like people, very seldom are two of them identical. Therefore, each sail must be considered individually. Very seldom can two different mainsails by the same sailmaker be carried on the same shaped mast and obtain the greatest efficiency from both sails. The most important statement in this article is the next sentence. The fore to aft shape of the mast should be that which will place the desired shape into the mainsail. Bending of the mast from the spreaders down removes draft from the mainsail or changes the location of the draft. Bending of the mast from the spreaders up, loosen the leech of the sail. Shaping of your sail can only be determined by observation and trial and error. Since our eyes are located horizontal, it is very difficult to see fine details of vertical curvature such as on a hoisted sail. Therefore, the preliminary shaping of a sail can best be obtained when it is in a horizontal position. Choose a still day or late afternoon without wind and put both the jib and mainsail on the boat and sheet them in a normal position for weather work. Beach your boat and haul it over on its side by the spinnaker halyard. Secure the halyard so that it holds the boat on its side with the mast parallel with the beach. Trim the sails as if you were on a weather leg. Now set your downhaul and outhaul on the mainsail to a point where there are no tension lines showing in the mainsail. The condition you want with mainsail set in this position is for the greatest depth or draft of the sail to be approximately 35% of the distance from the mast to the leech when taken parallel to the boom and that the middle batten of the sail is parallel with the center line of the boat. Usually you will find that this batten is pointing towards a point on an imaginary extension of the center line of the boat. This is a condition of a tight leech and must be avoided at all costs as it is creating a force just opposite to the direction you want to sail. You will find that the only way to loosen this tight leech is to pull down on the tack of the sail but if this causes the draft to move forward, then go to the jumpers and loosen the jumpers and tighten the back stay until the middle batten lays flat or parrallel with the center line of the boat. Do not be afraid to loosen the jumpers to relieve the tightness of the leech of the sail. You will find that each turn on the jumpers will require at least 5 turns on the back stay, in order to keep the same tautness on the headstay. Once you have eased the jumpers and tightened the back stay so that the sail has the draft in the proper place and the center batten lays flat, mark the positions of the outhaul and the downhaul. An easy way to check the draft of the mainsail is to tie a light string to one of the sail slides and stretch it aft so that it just touches the leech of the sail. Stand at the head of the mast and you can easily see the shape and draft of the sail at this chord. This adjusting of the mainsail is time consuming, but it pays off against your competitor. These adjustments have been made in a static condition with no wind in the sail. You will find that you will have to move the downhaul down about an inch and the outhaul out about one half inch to reproduce the same shape in a moderate breeze. Remember that tightening the luff of the main moves the draft forward and eases the leech, moving the outhaul out eases the leech. It might be necessary to force the mast at deck level fore or aft to obtain the desired location of the draft. Be sure and block the mast in this position once you have the desired shape. While you have been adjusting the jumpers and back stay, you will have caused the upper and lower shrouds to be improperly adjusted. Adjust the shrouds so that the mast is straight up to the V strut and falls off very slightly to leeward above the V strut. You can easily see this by sighting down the mast. You will have to turn the boat over on the other side to adjust the other two shrouds which were on the down side of the boat. Now we are ready to go to the jib.

JIB:

There is very little that one can do to shape a jib. It is the writer's opinion that a jib should be sent back to the sail maker at least once every year to be checked or replaced. A jib with a tight leech is of no value except in a very light wind. A jib with a loose leech is of no value. Think of a jib as a helper sail to the mainsail. If it does not help, it is of no value on the windward leg of a race. Your main concern on shaping the jib is to be sure the jib sheet is led properly so that the entire luff of the jib breaks at one time when you bring your boat up into the wind and that the jib sheet is led at the proper angle to the center line of the boat so that the wind collected by the jib when coming off just brushes the lee side of the mainsail. I would suggest that you consider single lead jib sheets. Except in a blow, any youngster can sheet the sail and even in a blow the main man can help strap it down. Cam cleats will have to be used to hold it but this is not a disadvantage if you have found the correct point to sheet the sail. By using single lead jib sheets, it is twice as easy to find the one point to locate the jib sheet block on the deck when compared to the two or combination positions of a double lead jib sheet. The position to locate the single or double jib sheet lead is easy athwartship. Measure five feet aft from the bow on the center line of the boat. Measure out 13¾ inches at right angles to the center line. Now draw a line from the bow of the boat through this point. Extend the line aft as far as the deck will permit. Your jib sheet block or the combinations of the two points of the double lead sheet should be on this line. Movement of possibly one inch in for very light air or two inches out in heavy air will improve your performance of the jib. With the boat still on its side, yank on the jib sheet lead. If the luff of the jib shows tightness at the lower portion of the luff, move the lead forward, likewise if it is tight at the top of the luff, move the lead aft. The final location of the lead for and aft can only be determined by actually sailing and watching to see if the entire luff of the jib breaks at once. Remember, each time that you adjust the fore and aft position of the mast or the rake of the mast, you must again relocate the jib sheet lead fore and aft. The slot between the jib and mainsail should form a triangle with the apex of the triangle at the head of the jib. The jib leech should form almost a straight line from clew to head. Now let's go check the helm of the boat.

Editors comment: This article is getting so dry, I decided to liven it up.

Black Lace Regatta Entrants at Fleet 62.
L. to r.: Carol Fromberz, Peggy Kammer and Skipper Lalu Toye.

HELM OF BOAT:

Choose a day when the wind is blowing about eight miles per hour and the water is relatively calm. Place your crew close together with the boat trimmed flat, fore and aft and have a slight heel of about five degrees but no more than five degrees. With the center board all the way down and the sails trimmed as you had them when the boat was on its side, the boat should sail hard on the wind with just a few ounces of pressure on the tiller in the form of a weather helm. Be sure that your rudder works very freely in its fittings. If necessary, use Vaseline to free the fitting so that even the slightest pressure can be felt in the tiller. This is very important in order to work out to windward. If you experience a lee helm, ease the jib or tighten the main slightly. Likewise, if you have a weather helm, ease the main and tighten the jib. If you have an excessive lee or weather helm the mast will have to be moved in the boat to correct such a condition. The movement of the mast can be made in two ways. The mast can be moved fore or aft, maintaining the same rake or the rake can be reduced or increased. The most important thing to remember is, not to change the shape of the mast fore and aft which suited your mainsail. Moving the fast forward will reduce weather helm, whereas, raking the mast aft will increase weather helm. By raking the mast aft and moving the butt forward, you can keep the same center of sail effort and at the same time increase the venturi action of the jib on the mainsail due to an increase of the overlapped sail area. The correct location of the mast and sails can only be accomplished by trial and error. Strive for a slight windward helm at winds of eight miles per hour. The windward helm will increase as the winds increase so that it becomes necessary to sail the boat straight up under these conditions, below eight, it will be necessary to put one of the crew to leeward to keep from developing a leeward helm. Remember that the sails are the motor in your boat and the only way that you can be competitive or excel is to develop more horse power out of your only source of power than your competitor develops.

POSITION OF CREW:

It would seem that the location of the crew would be unimportant, however, bear in mind that the average crew will weigh five hundred pounds when most racing Lightnings weigh close to the seven hundred pound minimum. Therefore, the placement of the crew fore and aft is just as important as keeping the boat flat. Always keep the crew of three closely bunched in the center of the boat. When there is a slight chop, move forward. When the wind and seas increase, move aft so that the bow is just out of the water. When you can get her on a plane, move aft enough to raise the bow but as soon as she breaks over her bow wave, move forward so that you are not dragging the transom. A small spirit level mounted on either side of the centerboard trunk will indicate to you the fore and aft trim of the boat.

THE USE OF THE ABOVE DEVICES ON VARIOUS POINTS OF SAIL:

WINDWARD LEG:

1. Make sure the jib luff wire is as taut or slightly more taut than the head stay. (Use the jib downhaul lever).
2. Adjust downhaul and outhaul of the mainsail so that the leech and draft of the sail are ideal.
3. Set main and jib sheets in relation to marks so that greatest drive is developed.
4. Only use boomvang in a blow so that when the mainsail is luffed, it doesn't raise the boom.

REACHING:

1. Ease jib downhaul, mainsail downhaul, and outhaul so that maximum draft in the sails is obtained for this off-wind leg.
2. Apply sufficient tension on boomvang so that boom does not raise up, however, don't put it on so hard that you don't have a slight twist or fall-off to the leech of the main.

RUNNING:

1. Adjust height of spinnaker so that the pole is at least horizontal in winds of eight miles per hour or more. Refer to Hank Cawthra's excellent article on flying the spinnaker in 1960 Lightning Year Book. The only comment that I would care to make is, to fly the sail "High, Wide, and Handsome". Too many sailors make the mistake of flying the spinnaker too close to the head stay and mainsail. Any time the foot of the spinnaker is closer than three feet of the head stay, it is being improperly flown. Ease out on both sheet and guy and get it up and out.
2. The mainsail downhaul and outhaul should be eased at least 5 and 2 inches respectively. A good indication of the amount to be eased will be fullness of sail on the luff and foot bolt rope.
3. Tighten the boomvang down hard so that the boom is parallel with the deck and the leech of the main is tight.
4. Do not oversheet the mainsail. It is better to have the wind spilling off the luff into the spinnaker than off the leech of the main.

After reading the article, you will realize that I have directed it to the average, beginning skipper and crew who desire information on improving their performance. Diligent effort and desire will enable these skippers to be up close to the transoms of sailors such as Allen, Fallon, Smither and Anderson at the finish line rather than using a pair of binoculars to see who won the race. Do not be afraid to change the tune of your boat, just record the changes and if they do not help, change back or try another shape to the mast or sails. This is the only way a skipper will know if he has her going wide open.