

QUESTIONS, ANSWERS, COMMENTS

This section has been concerned with the exchange of ideas and information related to making the Day Sailer easier to use, safer to cruise and faster to race. In the last issue, Hans promised a compendium of ideas from all of the issues of The Day Sailer. We have read all back issues except No. 3 (if anyone has a copy of No. 3, we would like to see it) and here is a summary of what we found there. Sometimes the same subject was covered in several letters from different views and we felt that to simply copy the several letters would be confusing. Therefore, we have summarized rather than quoted the many ideas. To conserve space and to avoid arguments, we have not attempted to give credit for specific ideas, but we are grateful to all of you who had the various ideas.

A word of warning; not all of the thoughts in the following came from The Day Sailer. We have tried to take the best from The Day Sailer, sailing books and magazines and other skippers. If you disagree, we would like to put your ideas in the next issue of The Day Sailer.

RUNNING RIGGING

Here is a listing of the line sizes and lengths which Jim Hunt says they put on new boats.

Main halyard	wire 23', 1/16"; 27', 1/4" dacron
Jib halyard	wire 15'
Main sheet	44', 5/16" Samson braid
Jib sheet	26', 5/16" Samson braid
Downhaul	3', 3/16" dacron
Outhaul	3', 3/16" dacron
Topping lift	17', 3/16" dacron
Pole downhaul	12', 3/16" dacron
Spinnaker sheets	two at 32', 3/16" Dacron (editor's note: try one at 74')
Spinnaker halyard	34', 3/16" Dacron

TRAILERS

If you store your boat in the yacht club lot and use the trailer to get to and from a hoist, you have no special problems. Any trailer which supports the boat on three or four points along the centerline, and on four pads under the hull will be okay. If you intend to trail the boat and launch from ramps, check the following items:

1. Be sure that one centerline support holds up the centerboard to take the pressure off the square pin.

2. Get large wheels; 12 inch or larger. The larger wheels will generate less heat during high-speed trailering and lead to fewer tire troubles. Also, the axle and wheel bearings are less likely to get wet when launching.

3. Get a tilt-bed trailer with an adequate winch. Dunking the entire trailer to float the boat off and on can be exhausting and costly in wheel bearings.

4. If you have no bow eye on the boat, raise the winch to the deck level to get a better pull.

5. Balance the boat on the trailer so as to have about 80-100 pounds on the tongue. The boat will trail more smoothly with the heavier weight on the car. Many of you will argue that the tongue will now be too heavy to lift and we will agree. You can buy, for about \$15 to \$25, a trailer wheel and jack handle which fastens to the tongue. The jack lifts the tongue and the third wheel makes moving easy.

6. Put a positive ground wire from the tail lights to the car. Most trailers use the ball and connector to ground the lights which can lead to a Christmas tree blinking effect which will really confuse the opposition.

7. If the lights get dunked when you launch, a mounting up on the boat will simplify matters. The higher mounting of the lights also makes them more visible to other drivers. Carl Cummings, Fleet 20, has a workable arrangement which he will explain if anyone wants to make a mounting for himself.

MAST AND BOOM HOLDERS FOR TRAILERING

Edition No. 4 carried drawings of gear to hold the mast and boom for trailering. He will not reproduce them now since the consensus seems to be that no special rig is needed. For example, "Regarding the position of the mast in trailering the boat, I find that if the balance point of the mast, which is near the shrouds, is placed halfway between the stern and the top of the cuddy, that the mast trails very well without any other apparatus being necessary. Of course, a life preserver under each point where it touches the boat is necessary."

Another example, "... I just wrap a carpet sample around it (the mast) between the halliard cleats on the cuddy top, and support it on two life-preserver cushions on the after deck, well lashed at these two points. A light line at the bow prevents it from whipping at high speeds."

We have wooden mounts on the cuddy and the after-deck which support both the mast and boom and which are tied with shock cord. A light line from mast to bow eye prevents whipping. The stern mounting also holds the trailer lights. We figure the trailer under DS 605 has about 15,000 miles without mishap. However, if you want to make some sort of special mounting, let us know and we will send you drawings of two workable arrangements.

STEPPING THE MAST

Stepping the mast can be a one man job. Start with the boat on the trailer and the mast on the boat in its trailering position. Stand on the cuddy top and grasp the mast at its center of gravity (near the spreaders). Swing it upright and stand it on the ground next to the boat. This may sound difficult but it really isn't, simply because you are high enough when standing on the cuddy to be able to hold the mast near its center of gravity. You will want to think about the next move before you try it. You are going to lift the mast straight up, over the cuddy top and let it down through the mast hole onto the mast pin. The easy way for you may consist of kneeling before lifting so that you will not have to change your hand holds; the easy way may be to lift the mast by changing hand holds; or you may wish to have someone on the ground holding the base steady. However, if you use an assistant, be sure that he understands that he is one end of a long lever and that you, on the other end, will get his moves magnified many times. Some skippers have an assistant inside the boat to guide the mast down onto the mast pin, but I find that I am able to sight the pin through the hole in the cuddy. One skipper has his crew hold down one end of the mast while he walks it upright next to the boat. We have tried this and think it is harder because when we are on the ground, the long lever is working against us and the mast becomes mighty heavy before it gets to the vertical position. Another skipper broke something trying to step the mast while the boat was in a surging sea. We agree with him, if you have to step the mast while the boat is in the water, hinge the mast at the cuddy top first. We know of several skippers who have hinged their masts but we do not have plans. He know Stu Weiner, Fleet 33, has done this for some West Coast boats. You might write him, if interested.

STANDING RIGGING

The mast should be jacked up enough to make the shrouds tight but not taut. In light winds, you may

want to leave them fairly slack; in a blow, very tight. But, they should never be tight enough to play a tune on them. In either case, when you are sailing, the lee shroud will always be slack.

Turnbuckles are now legal so you may want one on the forestay to permit easy changing of the mast rake. Turnbuckles could also be used to balance the lengths of the shrouds if you have that problem. We have noticed that if we tighten the rigging while 605 is on the trailer, we will have just about the right amount of slack when the boat is in the water.

HOIST RINGS

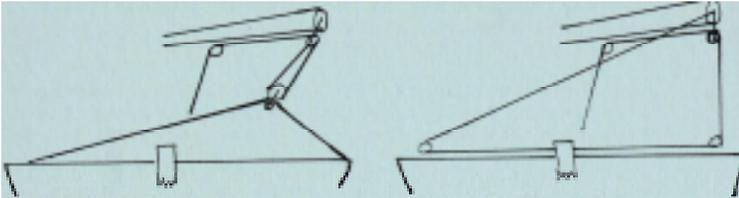
We have long contended the O'Day should equip the boats with hoist rings (others have written of this in the Day Sailer), but since he does not, here are some of the ways to make them.

1. Put a fairly large bolt through the inverted U frame between the centerboard trunk and the mast. Equip this with a wire saddle and a shackle. Put a shackle in each of the stern cleats and bring these points to a central balanced ring.
2. Drill small holes in the chain plates and affix shackles there and to the stern cleats. Bring these four points to a ring on the centerline over the forward end of the centerboard trunk. We have seen a large square metal frame used to bring the four points to the center position.
3. Epoxy 2 x 4's under the deck near the chain plates - you could glue the boards to the deck and sides both, probably. Put eye bolts through the two by fours and fasten a third eye to the after end of the center board trunk. Bring these three points to a central ring. This method scares us a little because the deck and hull seem to be fastened together with staples.
4. It is easy to build a sling out of wire cable threaded through rubber hose. Secure the ends of two cables to a single ring and put rings on the other ends. The two cables can be slipped under the boat and back to the hoist to make a neat simple sling. The rubber hose prevents scratching and slipping. The forward cable goes forward of the shrouds and the after cable after three-four feet forward of the stern. This simple sling could be left at the club hoist for use by all DS's.

MAIN SHEET RIGGING

In light winds, the main sheet should bring the boom inboard nearly to the centerline of the boat, but it should not pull the boom down and flatten the main. However, in heavy winds, the main sheet should pull the boom down to flatten the main, but it should not bring the boom inboard past about the stern quarter. The correct main sheet rig is one which would give the skipper independent control of the boom in both the horizontal and vertical directions.

MAIN SHEET RIGGING

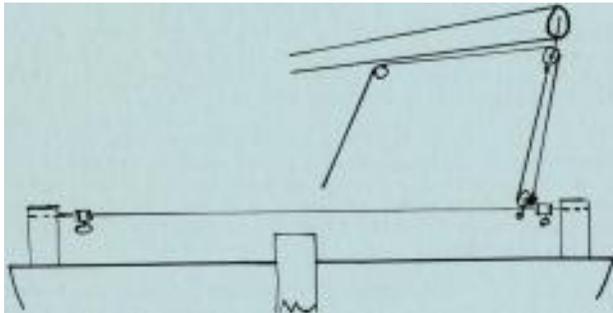


A. Wire Horse on older boats

B. Lightning Type on newer boats

The Day Sailer comes with one of two rigs (A and B on the drawing) and neither one gives the skipper the independent control in two directions. The B rig, mounted on more recent boats, does tend to adjust itself to wind conditions and is somewhat better than the A rig. The C rig is a homemade traveler using wood blocks and about 1/4 inch wire. It should work well depending upon the control which the skipper has on the stops. To be effective, the traveler stops should be adjustable by the skipper from his normal sailing position.

Several boats have rigged the mainsheet from double blocks on the boom and centerboard trunk as shown in D. This rig does not improve the horizontal versus vertical control very much, but it does simplify jibing. There are no lines at the stern to get fouled with the cleats, rudder head or outboard motor.



C. Home-built Main Sheet Traveler

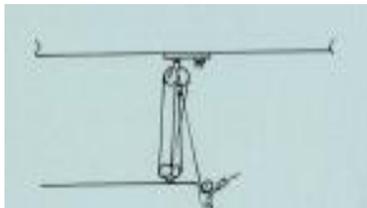
The most effective rig would consist of a combination of the C and D rigs; that is, with a double block at about midboom and a double block on a thwartships traveler at centerboard height placed at about the after end of the centerboard trunk. However, we think such a rig would be in the way most of the time.

The early Day Sailers were equipped with a jam cleat on the centerboard trunk for the main sheet; newer ones come with a swivel block and cam cleat rig. The jam cleat is ridiculous and dangerous - if you still have one, replace it now!

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BOOM VANG

The boom vang consists of a block and tackle from the boom to the centerline of the boat near, or on the mast (the DS rules say within six inches of the mast). The number of parts to the tackle is optional. The idea of the boom vang is to be able to pull down on the boom without pulling in, and to be able to do this independently of the setting of the main sheet.



D. Mid-boom Rig to eliminate fouling when jibing.

Every boat should be equipped with a boom vang - In fact, we think they should be standard equipment. The boom vang is useful in racing but it is also important in cruising. When running, the boom vang counteracts the natural forces which tend to lift the boom. Holding the boom down increases the driving power of the sail and decreases the chances of an accidental jibe. When sailing to windward in heavy winds, the boom vang can be used to help flatten the main sail.

He believe that the boom vang is a safety device and every boat should have one, especially the boat belonging to the novice skipper. If you want to build one yourself, we can furnish you with drawings, or you can buy one from O'Day.

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JIB SHEET LEADS

There is no single place which is the best place to put jib sheet fairleads on all Day Sailers. The position depends both upon the cut of the jib and the winds in which you normally sail. Some of the real racing machines have gear to enable the positions to be varied during races both in the fore and aft, and thwartships directions. If you want to go that far. Lew Wagoner has such an arrangement and might be enticed into describing it.

The thwartship position of the fairleads is often described in terms of a specific angle from the centerline of the boat, usually 10-1/2 degrees. We can't recommend that you set your fairleads up at 10-1/2 degrees for two reasons. First, if you have followed the West Coast racing results, you will have noticed that eight or so boats are usually among the top ten finishers. We have inspected those boats and can report that the fairleads are everywhere; some are on the outboard edge of the deck, some are on the inboard edge and some are inside the combing. Secondly, we have been reading C. A. Marchaj, "Sailing Theory and Practice" and now we wonder if we shouldn't be moving the fairleads still farther outboard. As we read his section on jib fairleads, it seems to say that 10-1/2 degrees is just right for a 5.5 meter, but that 17-18 degrees might be better for a boat like the Day Sailer. In practice, we guess there is only one way to determine the position on the Day Sailer; experimentation and comparison. Does your boat go to weather better than most? If so, don't change the position of the leads. If worse, see if you can't rig up a temporary arrangement to move them either in or out and see if that improves your performance.

According to books which we read, there seem to be three preferred methods for getting the proper fore-and-aft position of the jib fairleads.

1. Set the fairleads in a direct line with the mitre of the jib. We think this is the least satisfactory method, since the proper position is dependent upon the wind conditions as well as boat and sail geometry.

2. Set the fairleads so that when the jib begins to luff, it will do so uniformly along its total length. Since the skipper tends to watch the lower part of the luff, it may be best to set the fairlead so that the lower part luffs somewhat ahead of the upper part. This setting will definitely depend upon the wind conditions and should be rechecked whenever conditions change significantly.

3. Set the fairleads so that the leech of the jib falls off in a line parallel with the major draft of the main sail. This setting should produce a uniform slot with lots of drive. This method appeals to us most, in theory; but we have a hard time trying to judge the setting in practice. I suspect that most of the time, we set the fairleads according to the luff, not the leech of the jib.

One thing seems to be certain, the single position fairlead which came as standard equipment on the older boats is not adequate. Replace it now with a track so that you can find the proper position for the fairleads on your boat.

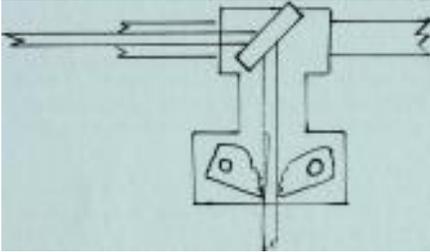
Whether you lead the jib sheets inside or outside of the shrouds seems to be a matter of personal preference.

Now that the fairleads are set, the next question is how do you cleat the jib sheet - unless you agree with Ian Proctor who says that "... no sheet should ever be cleated on a dinghy." There are several ways to handle the cleating of the jib sheet and, in our opinion, the jam cleat which O'Day puts on the centerboard trunk is not one of the acceptable methods. The jam cleat makes no sense at all; the crew has to move inboard to adjust the sheet (and there goes your hard-earned balance), minor adjustments are difficult because of the wrapping around that is required, and finally, it's neatly positioned to rip shorts.

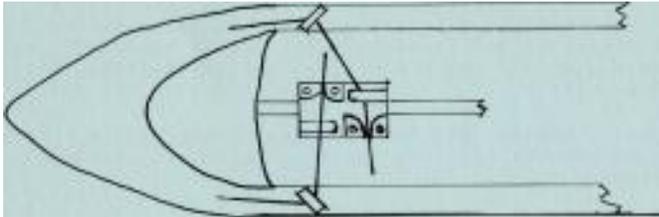
Most skippers we know use cam action cleats. We have tried to show three of the mountings which we have seen and which seem to be very workable - at least, the owner of each is sold on it.

1. The fairlead and cam cleats are part of a single assembly which is mounted on a track on the deck. The track may be inboard, outboard or angled. We have Mariner part No. 136 on which the fairlead and cams swivel independently through 360 degrees. This means that the jib sheet can be handled from any position in the cockpit - very nice for singlehanded sailing. We have seen cheaper devices than the Mariner, but they didn't swivel as completely.

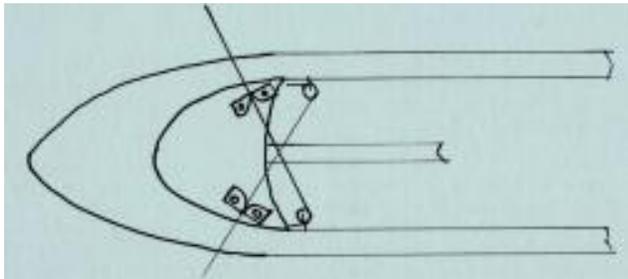
JIB SHEET RIGGING



1. Fair-lead and cam cleat assembly for deck mounting.



2. Fairlead and cam cleats on center-board trunk.



3. Cam cleats on cuddy top.

2. A board or plate is mounted on the centerboard trunk and two cam cleat assemblies are mounted on the board. The two cleats face in opposite directions (we suppose they could be angled) and each has its own fairlead. He suggest the open-end type of fairlead so that the unused windward sheet can be released completely.

3. Single cam action cleats without fairleads are mounted on the cuddy top. The jib sheet is taken from the deck fairlead or block across to the cam cleat on the opposite side.

SPINNAKERS

There have been several interesting letters on how to use spinnakers. Here is a summary of them.

First, spinnaker gear. Use light weight aluminum Brummel or Allen hooks to secure the spinnaker lines to the spinnaker. Brummel hooks require two hands to fasten and unfasten but they do not part accidentally. The spinnaker is stowed in a plastic clothes basket. Always stow the spinnaker from bottom to top with the three corners outside of the basket and accessible. Start by gathering the foot of the sail, working from the center toward the ends. Put the foot in the basket with the two corners outside. Flake the sail down on top of the foot, working toward the head and keeping the luffs straight. Finish by putting the head fitting outside of the basket. The three corners of the sail should be marked so that the crew can always tell which is port, starboard and head. (Our sailmaker used red and green tabling on the luffs.)

We have Mariner Red Snapper fittings (part No.175) on our spinnaker pole. There are cheaper fittings, but we like the easy way the Red Snapper slips on and releases from the mast ring and the guy.

Lead the spinnaker halyard through a hole drilled in the cuddy top just forward and to the side of the mast, down through a block mounted on the inverted U near the mast step and aft to a fairlead and cam cleat mounted under the halyard.

Before leaving the dock, lead the sheet fitting outside of the shrouds and around the forestay and fasten it to the guy fitting. The two fittings will then be close to the chain plate and on the side of the boat which will be the windward side when the spinnaker is raised. It may not be possible to predict which side will be the windward side before the start of the race, or the fittings may end up on the wrong side at the end of the first spinnaker leg, and you will have to haul the fittings around the forestay to the proper side while sailing before you reach the windward mark.

A very light line can be lead from the top jib hank, through a small block on the forestay fitting and back so the crew can lower the jib from the cockpit.

Shock cord makes a good lift for the pole and a downhaul does not seem to be needed.

Now, we are ready to sail.

If you can approach and round the mark on the same tack as the spinnaker leg, do the following. As you near the mark, put the basket on the leeward side of the boat and secure the sheet, guy and halyard fittings to the spinnaker fittings. Be sure that you bring the three lines through the same foretriangle. Fasten the pole to the mast ring and to the guy (just slip the pole fitting right over the guy rope) on the windward side. After rounding the mark, the skipper eases the main and then begins to haul up on the halyard while the crew raises the centerboard and checks that the sail feeds out without twisting. When the sail is nearly up, the crew takes the sheet with one hand and with the other pushes the pole forward against the forestay and the skipper hauls on the guy to bring the spinnaker around the forestay. The crew now takes over both guy and sheet and the skipper hauls the sail up the last few inches and then begins to think about steering the boat again.

If you have to jibe around the mark, you will not be able to secure everything before the mark. But, do secure the pole and halyard as soon as the jibe is complete and before you begin to raise the spinnaker. Depending upon the point of sailing, you may want to lower the jib. If both sails are drawing full, leave the jib up.

In this procedure, the spinnaker will have been raised behind the main sail; it should be lowered behind the main also. If the jib was lowered, be sure to raise it before dousing the chute. The lowering procedure goes like this; ease up on the guy until the spinnaker collapses, haul it behind the main with the sheet and the crew flakes it back into the basket as the skipper pays out the halyard. Hopefully it will be ready to go again on the next spinnaker leg.

The technique described here is termed setting the spinnaker flying. Big boats usually set the spinnaker stopped. It seems that Day Sailer don't use stops for two reasons; 1) it can be stopped only for the first spinnaker leg, and 2) there is a danger that a stop will not break open.

SPINNAKER POLE

The O'Day pole does not meet with the 1965 Handbook specifications. Here is a part of a letter from Jim Hunt to Hans.

"You dropped me a note on the Day Sailer spinnaker pole being over length and there is no question that it is, as I measured a number of them in the stockroom and they measure 5' 3-1/2", whereas the class measurement is 5'2". Poles in the field can be cut on one end only and the end cap reinstalled by using two expansion rivets. Would appreciate your advising all class members of this discrepancy and telling them to contact us, and we will forward them a modification sheet along with the necessary hardware to accomplish the job."

TILLER EXTENSION OR HIKING STICK

The tiller extension is simply a piece of wood or metal tube bolted to the end of the tiller. It should be bolted so that it can be swiveled through 360 degrees and should be about 2-1/2 to 3 feet long (it should reach from the tiller when on the centerline of the boat to the gunwale where you would like to have your tiller hand when sailing to windward). The idea is simply to allow the skipper to steer the boat while hiking or sitting clear forward or lounging while cruising. The tiller extension is a must for the racing skipper, and is also important on the cruising boat if for no other reason than the skipper's comfort. We made our own, but you can buy one from O'Day.

RUNNING LIGHTS

The question is there but a specific answer is not. We suggest separate lights mounted on either side of the cuddy. Jim Hunt suggests writing Wilcox-Crittenden Division, North & Judd Manufacturing Co., Hiddletown, Connecticut, and asking about part number 3885.

COMBING AND HIKING OUT

The consensus is that hiking out on the combing hurts. There seem to be two solutions; 1) cut the combing down to deck level, and 2) build up the deck with padding to the height of the combing. We prefer the first solution but have heard the objection that the combing is needed to keep from getting so much water in the boat. We find that if we sail on the wind and keep up in the puffs, we don't take on much water, but when the skipper goofs and we get into trouble and begin to take on water, the combing wouldn't have helped much anyway. We left the full height for about 1-1/2 feet forward of the after end.

CENTERBOARD

Some have problems keeping the board down. "I replaced the gasket on the centerboard lever assembly the first year we had the boat, and this year I expect to replace the whole assembly. During the latter part of the summer the board was given to gradually floating up as the boat tore through the water, and no amount of screw-tightening seemed to change it. He finally adopted the makeshift of having the crew keep an eye on the lever, and as it rose we shoved it back down, and occasionally had a crew member keep his foot on it. I'm hopeful that a whole new assembly will cure the boat of this peculiarity."

Some have no problems. "Strangely, in view of several beefs in The Day Sailer, I haven't had any trouble with centerboard - yet: In fact, having the board kick up fairly easily is handy in shoal waters."

Several have had problems with leaking centerboards. Here is one solution. "... may have the same defect that I discovered, namely, an uneven mating surface on the C. B. trunk. Like a lot of others, I have substituted stainless bolts for bronze on the C. B. gasket; and I deliberately bought them longer than the original, using nuts to lock them against the trunk so that they won't back out, and more nuts to position and lock the lever in place. This doesn't look pretty but it solves the original problem of the bolts working loose and loosening up the whole shebang. The use of stainless bolts, of course, eliminates the headache that numerous folk have had with bolts breaking off inside the trunk."

Here is a second solution. "... here is how I stopped the leak in my boat. First, get a 1/4 inch thick neoprene gasket, or piece of truck tire inertube, and cut for tight fit around the pin that goes through the board. Then a twist of oakum to use as an 'O' ring around the pin and 1/8 inch thick washer of aluminum the size of the hub of the lever. Assemble these on the pin, and glue the gasket directly to the trunk with Pliobond. The aluminum washer also being a close fit on the pin distributes the pressure and compresses the gasket and oakum close to the pin. ... In fact, I can back off the 3 bolts in the triangular plate to be almost loose and still not leak. When working the lever, neither the gasket nor washer turns with the lever, which should keep wear to a minimum"

And the editors have a third solution. We sanded the centerboard trunk surface and glued the gasket to the surface. We also used stainless bolts but we filled the bolt holes with bathtub caulking compound, since we noticed that most of our leaking was through the bolt holes themselves.

And finally, the board doesn't come up all the way into the centerboard well. "I'm having one problem with my centerboard that doesn't seem to be too common and I wondered if you have run into this difficulty. I have serious difficulty starting the centerboard down, after trailing, for the first 6" or so. After that it moves quite easily. Also, it is impossible to pull the centerboard completely into the hull with the handle. I have to put the boat in the trailer and face the boat down to push the centerboard up. I wonder if any other members had experienced the same difficulty and if so, what they did about it?"

Hans had a partial answer. "The editor has the second problem and pulls the boat partly onto the trailer, then loosens the centerboard handle from its catch and pushes it forward as far as it will go. This brings the entire board completely into the well."

We have the same problem - the board does not raise completely into the well housing, but one roller support on our trailer pushes the board up flush and supports it during tralling so we have done nothing about the problem. It is possible that supporting the board during trailering would eliminate the sticking problems.

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FLOATATION - MAST

There is no clear story here, but it appears that the mast cannot contain sufficient floatation to keep the boat from turning over. The answer seems to be speed; either right the boat before it has a chance to turn over, or carry a buoyant cushion or life jacket out to the end of the mast.

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FLOATATION - THE DAY SAILER

O'Day seems to have solved the problems in the newer boats by using positive floatation instead of air tanks. If your boat predates 1963, and you have not added foam, you had better do so now - unless you are certain that you will never capsize. The old boats with wooden seats, like 605, are particularly vulnerable to leaking air tanks because of the dozens of screw holes securing the seats and combing.

On the subject of floatation, if you are really worried about a capsize, sail with life jackets all the time. Then if you do capsize, you can work at saving the boat without having to first worry about yourself. If you find that the Coast Guard approved jackets are too cumbersome, buy one of the Paul Elvstrom or Jack Holt type of

life vests. They are not approved by the CG because they would not support your head in case you were knocked out but then, no life jacket will also not support your head if you are knocked out.

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COMPASS

Take a look at Taylor compass model No. 2965 - that's the kind we recommend. It can be mounted either hanging down inside the cuddy or upright on the inverted U just forward of the centerboard trunk. He find the latter position can be seen from most places in the boat.

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RUDDER ANGLE

The newer boats have a modified rudder head which permits the rudder blade to be nearly vertical. The older rudders can be modified - either cut away the wood in the head or cut a piece of the rudder blade.

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THAT RACING FINISH

Once in a while, DS 605 gets a coat of automotive wax on her bottom, but this season we plan to follow Ed Smith's (Rochester, New York) advice.

"Another technique we worked out which may or may not be of interest is the preparation of our hull this season. Since the boat is relatively new and has been dry sailed most of the time, the bottom was fairly clean. However, it was rough. We bought a quarter's worth of pumice from a drug store, put this on damp cloths and rubbed the entire hull thoroughly. This smoothed the hull greatly. The next step was to use dry pumice and dry soft cloths for a final polish. Then, the last step was to apply a coat of good paste wax. Our hull glistens and we are all convinced that the boat goes appreciably faster."

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PROTECTING THE SPARS

If you rinse off the salt water after each sail, you will have less corrosion of the mast and boom. Also, a good coat of wax will inhibit pitting. We know of a five-year old mast which looks like new - regular washing with fresh water and lots of floor wax (the 30¢ variety).

STORM SAILS

Here is a suggestion that the jib could be used as a main in the case of a real blow or damaged main. "... by taking some "I" section aluminum just thick enough to fit in the bolt rope slot of the mast, I made some slides that can be hanked to the jib snaps. ... And then hoist the jib on the mast. ... When the jib is hoisted this way, the lead of the miter goes right to the boom end." We have seen small plastic gadgets equipped with eyes and which just fit into the bolt rope slot in the mast; they could be used for this purpose.

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WEATHER HELM

A perfectly balanced sailboat in a steady breeze will maintain its course whether or not the tiller is free. The sailboat is perfectly balanced when several conditions are obtained; 1) the sail plan is properly designed to match the hull shape and displacement, 2) the sails are properly trimmed to apparent wind speed and direction, and 3) the crew and other ballast are placed to give the proper waterline trim. If one or more of these balance conditions is not obtained, the boat with a free tiller will either head up into the wind (weather helm), or fall off from the wind (lee helm). Weather helm is not necessarily bad, but lee helm is. Some weather helm serves as insurance - if the tiller is accidentally let go free (for instances, if the skipper falls overboard), the boat will round up into the wind and stall. However, lee helm is bad because in the same conditions, the lee helm boat will continue to sail away and may even fall off sufficiently to capsize.

Before correcting weather helm, be sure that you really have it and that it is bad enough to need correcting. If it takes most of your strength to hold the tiller on the centerline or if you have to hold the tiller more than about 5 degrees off the centerline, then you should correct the weather helm. But, first, be sure that you are not confusing weather helm with weather helmsman.

When sailing in a steady breeze if the boat tends to round up into the wind, that's weather helm. When sailing in gusty winds, when a gust hits and the boat tends to round up into the wind, that's natural and should not be confused with weather helm. Many beginning skippers try to hold the boat on its original course after being hit with a gust of wind and that's weather helmsman. These two effects should not be confused. Although the results are the same, the causes and the corrective actions are very different.

First, let's discuss weather helmsman. The proper corrective action here is simply to learn to sail the boat on the apparent wind and to stay on the apparent wind even

when it changes speed and direction. The apparent wind is the result of the true wind (the wind you would feel if you were standing still) and the boat wind (the wind that is generated by the movement of the boat). Since the apparent wind is a resultant, its speed and direction are determined by the speed and direction of the two real winds (true and boat). If either of these real winds changes in speed or direction, the speed and direction of the apparent wind must also change. The sails should be trimmed to the apparent wind.

Now when the gust hits the boat (the true wind changes its speed), the apparent wind will move aft immediately - sailing on the old heading with the old trim no longer correct. The winning skipper gently moves the boat up onto the new apparent wind, but the weather helmsman attempts to hold the boat off the wind and loses. In very strong gusts, the weather helmsman will be unable to keep the boat from heading up into the wind. Even though he may pull the tiller right up into his lap, the boat will round up until the jib is luffing. When the gust hits, let the boat head up with the puff, but be careful, don't push the tiller to help unless you want to scoop up several buckets of water as the boat rounds up.

Weather or lee helm happens because the center of effort of the sail plan does not line up with the center of resistance of the hull shape. The balance between these two centers can be altered on a Day Sailer by:

- 1) Changing the rake of the mast,
forward to correct weather helm or
aft to correct lee helm

or

- 2) Changing the underwater hull shape
by
 - a) moving the ballast, i.e., crew,
aft to correct weather helm and
forward to correct lee helm,

or

- b) changing the setting of the
centerboard,
up to correct weather helm, and
down to correct lee helm.

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