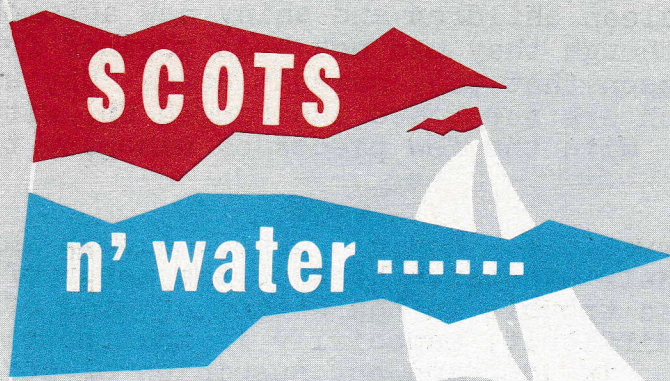


Office Copy



fleets

- 1 - COWAN LAKE, OHIO
- 2 - COLUMBUS, OHIO
- 3 - WILMETTE, ILL.
- 4 - MANSFIELD, OHIO
- 5 - BURLINGTON, VT.
- 6 - OAKLAND, MD.
- 7 - RIVERSIDE, CONN.
- 8 - DETROIT, MICH. (EDISON)
- 9 - STURGIS, MICH.
- 10 - MANHASSET BAY, N. Y.
- 11 - ROCKPORT, MASS.
- 12 - CLEVELAND, OHIO  
(EDGEWATER YC)
- 13 - CHATTANOOGA, TENN.
- 14 - SPRINGFIELD, OHIO  
(KISER LAKE)
- 15 - GULL LAKE, (KALAMAZOO) MICH.
- 16 - DETROIT, MICH. (DYC)
- 17 - GROSSE POINTE, MICH.
- 18 - DETROIT, MICH. (DBC)
- 19 - BERLIN LAKE, OHIO
- 20 - PORTAGE LAKE, MICH.
- 21 -
- 22 - SPRAY BEACH, N. J.
- 23 - WHITE ROCK LAKE, DALLAS, TEX.
- 24 - CANDLEWOOD LAKE, CONN.
- 25 - MILWAUKEE, WISC.
- 26 - TOLEDO, OHIO
- 27 - RALEIGH, N. C.
- 28 - SHEEPSHEAD BAY, N. Y.
- 29 - MUNCIE, IND.
- 30 - CARBONDALE, ILL.
- 31 - SHORE ACRES, N. J.
- 32 - GALVESTON BAY, TEX.
- 33 - LONDON, ONTARIO
- 34 - RAY, INDIANA
- 35 - CHAUTAUQUA, N. Y.
- 36 - MONTREAL, QUEBEC
- 37 - WESTERVILLE, OHIO
- 38 - MOBILE, ALA.
- 39 - PORT GROVE, OKLA.
- 40 - INVERNESS, CALIF.
- 41 - CRYSTAL LAKE, MICH.
- 42 - WASHINGTON, D. C.
- 43 - SOUTHPORT, CONN.
- 44 - EPHRAIM, WISC.
- 45 - JACKSON, MISS.
- 46 - HEMPSTEAD BAY, L. I., N. Y.
- 47 - EGG HARBOR, WISC.
- 48 - CHARLOTTE, N. C.
- 49 - LAKE GRANITE SHOALS, TEXAS
- 50 - OKLAHOMA CITY, OKLAHOMA

Vol. VIII No. 4  
February, 1966

SANDY SAYS: BEAUTY SOMETIMES IS MOSTLY SKIN DEEP

Once again the Douglass family wishes to thank the loyal members of our Flying Scot "family" for the many Christmas cards we have received. During the past year we have been most happy to welcome so many new members to the Flying Scot, and we regret that the size of the Class makes it physically impossible to send personal cards to all of our friends. And so we send none, rather than to make it an empty formality. But we do like to receive them!

While the Flying Scot has just cause for being proud of the growth of the Class and of the fine organization we are developing, nevertheless I am disturbed by an attitude of mind which I run across all too often among our members, an attitude which I suspect has been encouraged by the fiberglass industry in its promotion of fiberglass construction for small boats.

Fiberglass is a superb material for small boat construction. It permits us to build the Flying Scot as a long-lasting boat of which we can be proud. We, the builders, are doing our best to give you the finest boat possible in construction and appearance. Properly cared for, our boats will keep their appearance for a long time - and in the Class we have some outstanding examples of early boats of which, after many years of hard use, still look almost new. The owners of these Scots have every right to be proud of their boats in any company.

But can this be said of the entire Class? Unfortunately it cannot. Fiberglass has been promoted as being durable with a minimum of maintenance. Some owners apparently have taken this to mean indestructible with no maintenance - and their boats look it! Why is it that nice peo-

ple, people with fine homes, clean children and shiny new automobiles, will let their boats look as though they had not been cleaned from one year to the next? For the reason that they haven't been? Why will they go to regattas with boats which are scratched and banged up, with filthy topsides, decks and cockpits? With the few pieces of mahogany trim all bare and gray?

Nothing made by man is indestructible. How can owners expect anything but trouble when they leave their expensive boat to the mercy of the elements? We are finding balsa trouble in the bottom of some of the older boats. (Repair is not difficult, especially if the trouble can be caught in its early stages. If you find any suspicion of softness in the floor of your boat, ask me for advice.) In most cases we have been able to trace this directly to serious abuse by the owner. Several such boats have come to us with a high-water mark half-way up the centerboard trunk, showing that the boat had been stored for the winter out-of-doors with no cover and no drain hole, and had become half filled with tons of rain and ice. And the owner wonders why his boat has developed trouble? No boat can withstand such abuse, not even the best. The tons of pressure resulting from alternate freezing and thawing eventually will wreck any boat.

If your boat must be stored out of doors it is safest when turned upside down resting on the bowplate or mast step at the bow, and the edge of the transom at the stern, not the deck. If stored on the trailer or on the ground, right side up, be sure the bow is elevated enough for the water to drain out through the transom drain hole. The principal weight of the boat should be on blocks under the keel under the ends of the centerboard trunk. This is adequate shoring if the boat remains empty. Be sure to check the drain hole occasionally to make sure it has not become plugged. No method of blocking will prevent damage if the boat fills with water and ice.

As for general appearance - have you never experienced the miracle, and the great satisfaction, achieved by a Brillo pad with just a little elbow grease added? Followed by a good rub with Vista wax, and not forgetting to polish the gunwale moulding, bowplate and other hardware? Try this once a year, combined with an occasional thorough cleaning with soap and water during the season and see what a healthy glow of satisfaction you will have!

Then, perhaps, sports writers will be able to write about the Flying Scot as one did about the Star last summer, that every boat at the regatta was a show piece. We are proud of our boats, too, so let's show it! It will pay dividends. Can we expect to attract new owners to our fleets when our boats are a disgrace? You may become accustomed to the crud and scum, but how does it look in the eyes of the other members of your club?

Once upon a time, not so many years ago, a charter was issued to a new and enthusiastic Flying Scot fleet in a beautiful club which had some very fine yachts in addition to the Scots. The yachts were outstanding in their spit and polish, but unfortunately the Scotters did not believe in elbow grease, and soon their boats looked simply awful. The Scotters could not understand why they were unable to attract new members to their fleet. When they came to a big regatta their boats were the worst looking of all. In just a few years the fleet disintegrated. They couldn't understand it, but I could. And I think you could have, too, if you had seen those boats.

S-&-W

J. Binkley Connor has graciously forwarded to Bob Lindgren, our National FSSA Secretary, a check for \$25.00 as a contribution toward the FLYING SCOT PERPETUAL TROPHY. Although "Bink" who is in the Yacht Brokerage and Marine Sales Business in White Plains, New York and Candlewood Shores, Connecticut, is no longer able to sail personally, he will continue as the area SCOT dealer and his family will still be sailing #136. This donation brings the Trophy Fund up to \$50.00.

S-&-W

Bob Lindgren has also given us a personal report on the F/S Mid-Winter Meeting in New York City on January 21st. Highlights -

(1) After a year's testing of the shortened rudder blade, it was found to improve the boats performance, does not kick up as readily and has little tendency to bend in high weather - all results are on the "plus" side.

(2) Bob Smith is preparing a single official FSSA blazer patch.

(3) Two fleets will experiment with hiking straps in 1966 and longer hand safety lines are authorized as a trial. A wider centerboard cap with 1" to 1½" overhang is also under consideration.

(4) Fred Weintz is appointed as head of a committee to investigate the possibility of more new F/S Fleets.

(5) Between thirty and forty enjoyed the dinner following the Executive Committee Meeting.

(6) Ralph Hidge will carry much of the load along with Tom Meaney, to make the 1966 Nationals at Cleveland a success.

(7) Nationals-Measuring on Monday, August 15th and also Tuesday morning the 16th. First race will be Tuesday afternoon. It will not be too convenient for those who also wish to attend the Regatta at Put-in-Bay unless you have a couple of weeks available as the Put-in-Bay event ends on Wednesday, August 10th.

(8) The Ohio group was encouraged to form a F/S District.

(9) Renewed effort to obtain an annual fleet report from each fleet according to the FSSA Constitution.

S-&-W

It is a pleasure to learn that a Charter has been issued to new Fleet #50, Lake Hefner, Oklahoma City, Oklahoma, with Charter Members being- E.P. Kerr (#751) Fleet Captain, Carlton D. Chapman (#721) Correspondent, Walter A. Locker (#782) and Dr. O'Tar T. Norwood (#805). Nice to have a lake so handy; if it were in Chicago or New York, the local characters would probably call it Bunny Lake. The fleet should be a success right from the start, with such nautical names as "Tar" and likely it's "Bosun's Locker." Much success, and Carlton, do keep SCOTS n' WATER posted with Fleet #50 news during the year. We'll appreciate it.

S-&-W

There are only four new Associate Members this month - E.P. Rawson, 379 Wilshire Ave., Jackson, Miss. who sails with Fleet #45; and the three Jefferies, Carolyn S., Joan D., and Robert K. III, all of 7719 Chadwick Road, Waco, Texas 76710. Sounds like Robert K. Sr. has some pretty good crew lined up for #837 - SCOTTI.

S-&-W

Sandy Douglass, with Fred Weintz as crew, is expected to represent the Flying Scot Class at YACHTING'S "ONE-OF-A-KIND-REGATTA" in Florida on March 20-23.

S-&-W

NEW BOAT NUMBERS ASSIGNED:-

Dr. L. H. Lokvam, 7115 3rd Ave.  
Kenosha, Wisc. #736

Roger Jordan, 1013 Augusta St.  
Racine, Wisc. #739

Jeremy Zimmerman, 3231 So. 121st St.  
Milwaukee, Wisc. #741

W. J. Rutledge, III  
1840 Lisa Lane, Wichita, Kansas #755

James Maltman, 615 So. Pine,  
Arlington Heights, Ill. #766

Ephraim Yacht Club, Box 112,  
Sister Bay, Wisc. 54234. #771  
was presented by Mr. Wm. Caley.

Mark Anderson, 215 Fleming Drive  
Alma, Michigan. #831

Robert L. Lindgren, 1047 Blackthorne  
Lane, Northbrook, Ill. (Ex.-#390) and  
Jerry Chambers, 1161 Laurel Ave.,  
Winnetka, Ill. (Also Ex-#390) - #883.  
(Jerry also had owned #47 and Bob's  
earlier F/S was #475.

H. L. Browns, M.D., 2145 Bennett,  
Evanston, Ill. formerly owned #295.  
New boat is #834.

Dr. Kearns R. Thompson, 288 S. Lime-  
stone, Lexington, Ky. #845.

John W. Dunkin, 11218 Timberline,  
Rt. 8, Houston, Texas 77024. #847

William Myatt, 1415 St. Marys.  
Raleigh, N. C. (Ex-#750) - #855.

Detroit Boat Club, Belle Isle,  
Detroit, Mich. #860 and #861.

S-&-W

Newly elected Fleet #5 Correspondent Duncan Case informs us that their Mallet's Bay, Vt. yacht club is looking for a sailing instructor for the 1966 summer season. This is an ideal location on Lake Champlain, and they would like a coach, teacher or similar mature individual who could supervise the entire waterfront. Write L. W. Weitzel, 13 Dean St., South Burlington, Vermont. Duncan also explains their local scoring system that might be of interest to others, with two series of eight to ten races each, on alternate Saturday and Sunday afternoons. Each boat may drop two races in each series. This system, which was tried out in 1965, has proven to be the least controversial of any used to date. In each race, the scoring will be based upon a constant "scoring number." This "scoring number" will be obtained by adding "three" to the total number of boats in the fleet June first. The winning boat would therefore receive this "scoring number" plus  $\frac{1}{4}$  point for winning; second boat would receive one less than the "scoring number", third boat two less, etc. A starter who withdraws would receive one point and any boat that is disqualified by the race or protest committee and any boat that does not sail would receive no points.

S-&-W

(FLEET) 36) Orville White sends us the Montreal fleet's January monthly letter, but we're afraid that Orville is slipping a bit. The previous letter was eight typed pages and the recent one was only seven, with half of one page taken up with Sandy's picture. Orville included one of the attractive Elvstrom Sails small plastic "Protest Boats", an effective and useful gift. Thanks, Orville. In addition to comments about Canada's first SCOT-John McGugan's #9, Tanzer's 1966 plans, hiking straps to be experimented with, the Canadian F/S mailing list and 1966 Regattas up that way, Orville described Dr. Ford Stevens' new personally handcrafted silver F/S badge, incorporating the Canadian Maple Leaf, F/S symbol and encircling rope device, with the suggestion that it be worn on a Glengarry. A larger version has already been made up as a trophy.

S-&-W

May we assist some of the dilatory movers who just never get around to sending SCOTS n'WATER their new address? We suggest Post Office card 3573. We too are occasionally at fault, for example a change of address card mailed April 23, 1965 that just reached me this past week. For the January issue, bulk mailing, we included "Return Requested", and on some days during the past two weeks, we have received as high as ten copies returned because of address change. For a bit of statistics, based on the latest data, in 1965, with 546 active members in the FSSA (and they are the ones who carry the load, paying full dues), and nine months cost of S&W running over \$2500.00, this means 51 cents for every copy. On each returned copy, for the January issue, we paid 8 cents, and then another 10 cents to remail, a total of nearly 70 cents per copy, plus all of the extra time required to handle the details. So, it will be most helpful if FSSA members who move will please notify us of your new address as promptly as possible. Thanks.  
-Ed.

S-&-W

Mr. E. Lee Andrews, 680 Lombardy Lane, Deerfield, Illinois 60015, is looking for a used SCOT. Anyone may contact Mr. Andrews direct.

S-&-W

Pat Barry, Edison Boat Club Correspondent for this Detroit group, tells us that their F/S Fleet #8 Novice Sailing Instructions will start in early March, and for the first time in the Club's 52-year history gals are allowed to join and learn to sail. We quote - "Fortunately, Sandy designed a very sturdy boat in the SCOT. Give us strength to endure!" Pat also comments on hiking straps, stating that all you have to do is to do as he did in 1965, picking up a novice Irishman named Gerry Piplowski, who, with his 6'3" and 225 pounds, could get 75 to 80% of his weight outside the boat - that's ballast where you need it. Gerry also went on to win their 1965 Fleet 8 Novice Championship.

S-&-W

Lew Howe's Fleet #7 report arrived just too late for the previous issue, so we will extract from their annual meeting minutes that Lew included. The 1965 results of this Riverside, Conn. fleet competition were: - 1st, Bloomer-Pugh; 2nd, Sawyer; 3rd, Howe; 4th, Parmelee; 5th, Rettie; 6th, Weintz, etc. For 1966, G. Kendall Parmelee was elected Fleet Captain, David F. Griffin, Sec. -Treas., Bearns Smith, Recorder and William H. Searles, Measurer. Most of the awards were gathered in by Messrs. Bloomer, Howe, Sawyer, Parmelee, Rettie and Weintz, with a special award to Lew Howe for underwater sailing.

S-&-W

John C. Batte, Jr., reports that Fleet 45, Jackson, Mississippi, elected, for 1966, W. E. Suddath, Fleet Captain, Dr. B. F. Banahan, Ass't Fleet Captain, Harold Whitley, Race Committee Chairman and himself as Secretary-Treasurer. John reminds us that Fleet 45 is in the enviable position of being able to sail twelve months out of the year and that they would be delighted to have some of our F/S snowbound sailors come down and sail with them.

S-&-W

You know what? At least through New Years Day, Fleet #46, Hempstead Bay, Long Island, N.Y. was continuing its 1965 season sailing, not frost-bite, but just ordinary sailing. These latest snow storms have probably changed conditions somewhat, but Linda Rich reported that she and Bob, incredible as it might appear for that area in January, were pleased to sail in 60-degree weather. Linda also tells us that the Hempstead Bay Sailing Club has recently leased a piece of property on the water which has a good sized house, currently being renovated by club members to serve as a club facility. A hoist will be installed during the coming months and they hope to invite fleets in the area to sail with them during the coming season. This should be an added impetus for new SCOT owners to sail with Fleet #46 and to join the fleet. They hope for a significant increase in number in '66.

S-&-W

The FSSA National Publicity Committee for 1966 consists of Linda Rich, Edwin A. Batte (Jackson, Miss. Fleet #45), and Charles Silsbee to continue as Chairman. We may add some others later.

S-&-W

Note to Fleet #23, Dallas, Texas:- Will you continue Kil Adam's local BAGPIPE in 1966? SCOTS n' WATER would like some Fleet #23 news whenever available.

S-&-W

Our corresponding secretary, Mrs. Helen M. Rippel, reminds us that, according to the official FSSA By-Laws, Article B-II, 7, after February 15th an additional charge of fifty cents will be added to unpaid 1966 dues. Also, only members who have paid their dues prior to July 1st will be eligible to compete in the District Eliminations and the Nationals (Art. B-II 8). Each F/S Fleet is also required to file an annual report during January of each year, to the Secretary (Art. B-III and Art. B-IV, By-Laws).

S-&-W

By now, probably just about all SCOT enthusiasts have read Irmgard Schildroth's excellent article in the January 1966 issue of YACHTING - "The Joys of Cruising...In A 19 Footer". If not, we suggest you do so. Every SCOT sailor isn't interested in the highly competitive racing, important and enjoyable as it is. And some of us who have raced, are no longer able to do so. For many, the article by Mrs. Schildroth about the cruising ability of a Flying Scot, based on the two weeks trip of the Schildroth's (Mr. & Mrs. George Schildroth, F/S #244, Manchester, N. H., no fleet) is refreshing and presents new ideas, some maybe on the rugged side.....We hope to have an article by Irmgard Schildroth in an issue of SCOTS n' WATER before long.

This also brings to mind another most rewarding use of a SCOT (and of course other boats) other than for racing activities - - - the regular instructions and sailing experience afforded to Girl Scout Mariners which our daughter, for one, has done with her troop for several years. In our area, the girls seem much more active in sailing than do the Boy Scouts, and often end up with outstanding boat handling ability, as well as the fine training and discipline they receive. I would like to quote a letter received following the 1965 sailing season - "Dear Mr. Silsbee:- A belated thank you note to you for the use of your wonderful boat. All the girls enjoyed your boat very much during the summer. Please thank Miss Silsbee for the wonderful leadership she is giving the girls in sailing and scouting. - Sincerely, Beth Stokes, Secretary, Troop 100.

S-&-W

An innovation - at the Chicago Boat Show, March 5-13, for the first time a "One-Design Racing Fleet Information" booth will be available, with the space donated by Boat Show Executive Producer Guy Hughes.

S-&-W

TRANSFERS:-

Jerry Schnoff now owns #67, formerly owned by Peter Gallagher, and Sails with Fleet #46, Hempstead Bay, L.I., N. Y. (Linda - What's Jerry's Address?

#777 is now owned by Frank Licari, 3497 Frederick, Oceanside, L.I., N.Y. and sails with Fleet #46. Donald Bailey used to won #777.

-----S-&-W-----

Herbert S. Bernstein has purchased #538 from Donald Wynne. Herb's address is 15567 Broadway, Maple Hts., Ohio 44137

- #206 - Frank C. Piku  
22507 Ardmore Park,  
St. Clair Shores, Mich. 48081  
Sails on Lake St. Clair with  
The Crescent Sail Yacht Club  
in PINCHED PENNY
- #246 - Alex G. McLeod  
121 Montgomery Ave., Riverview Hgts.  
Albert Co., N.B., Canada  
Sails BANSHEE with Shediac Bay YC  
on Shediac Bay and Nortumberland  
Straits near Moncton, N. B.
- #262 - G. A. Kuechenmeister  
2040 Beaufait, Grosse Pointe, Mich.  
48236. Sails on Lake St. Clair,  
Grosse Pte. Woods Boat Club.
- #341 - Dr. James A. Taylor, Sr.  
510 S. Tillotison, Muncie, Ind.  
and Dr. Robert M. Clark, Jr.  
2809 W. Godman Ave., Muncie, Ind.  
Sail TYPANIC with Fleet 29.  
Muncie Sailing Club. (Records aren't  
clear whether the Sr. and Jr. refer  
to the respective doctors or to the  
boat ownership).
- #694 - Andre Trottier  
P.O. Box 775, Sherbrooke, Quebec.  
Sails on Little Lake Magog near  
Sherbrooke.
- #705 - Dr. Wm. B. Newberry, Jr.  
2259 Delamere Dr., Cleveland Hts.,  
Ohio 44106. Sails with Fleet 12.
- #708 - Adam S. Burch, Jr.  
486 R.D. #2, Owego, N. Y. 13827  
Sails ADAM'S RIB on Lake Cayuga  
near Ithaca, N. Y.
- #755 - W. J. Rutledge, III  
1840 Lisa Lane, Wichita, Kas. 67203  
Sails on Cheney Reservoir near  
Wichita with Ninnescah YC.
- #780 - Walter P. Jensen, Jr.  
1927 Chaparral, Houston, Tex. 77043  
Sails with Fleet #32.
- #805 - Dr. O'Tar T. Norwood  
2625 Kings Way, Oklahoma City,  
Okla. Is a new member of Fleet #50.  
Sails MARY ANN. Good luck, doctor.
- #810 - James C. Reeves,  
5558 Hartsdale Dr., Jackson, Miss.  
39211. Sails SKYE VIKING, Fl. 45.
- #824 Jack Lester, 614 - 19th Ave.  
South, Fargo, North Dakota.  
Sails FLYING JENNY
- #826 - Duane P. Smith, 1118 Marigold  
Ave., East Lansing, Mich. 48823  
Sails with Crystal Sailing Club,  
Fleet #41.
- #828 - Dr. James McMahon, 15 Terrell  
Ave., Rockville Center, L. I., N. Y.  
Sails with Fleet #46.
- #837 Robert K. Jefferies,  
7719 Chadwick Rd., Waco, Tex. 76710  
Sails SCOTTI on Lake Waco.
- #845 - Kearns R. Thompson, Jr.  
1828 Richmond Rd., Lexington, Ky.  
Belongs to Lexington Boat Club and  
usually sails on Herrington,  
Cumberland and Kentucky Lakes.
- #846 - Mark E. Houser, Jr., 3249  
Eugenia Dr., Groves, Texas 77619  
Usually sails THERAPY on Sabine Lake.  
Port Arthur Yacht Club.
- #--- (None as yet) - Louis G. Cos-  
entine, with Mrs. Cosentine as Co-  
owner. 2500 Calypso Rd., Madison,  
Wisc. Chicago Yacht Club.
- S-&-W-----

THE SELECTION AND CARE OF YOUR FLYING SCOT SAILS  
By Vince DiMaio

(Continued from January)

Sail draft is the amount (not location) of belly from the plane formed by the mast and boom. Generally speaking, baggier sails are used in lighter airs and flatter sails in heavier airs. On a Scot this can vary from 20 inches deep (full) to 12 inches deep (flat). Because a full sail has a larger angle to the plane of the mast and boom at its luff and leach, several characteristics become apparent. First, it will luff sooner and cannot point as close as a flatter sail. Second, because its center of effort is further from the plane of the mast and boom than a flat sail, it develops greater weather helm especially in

heavy air. Third, because its back half curves back deeper than a flat sail, it develops more drag and heeling moment-especially at higher velocities. However when pointed at a greater angle of attack to the wind than a flatter sail it also develops more forward drive than a flat sail. Consequently several performance conclusions can be drawn from these facts. In light air, full sails should be used and they should be sailed without pinching or trying to point real close to the wind. If the course is triangular with two reach legs or a reach and a run, a fuller sail can be an advantage. A flatter sail may be advantageous if the course is windward-leeward since the boat travels twice the distance going to windward than it does off the wind. If the boat and crew are heavy, fuller sails can be used even in heavy winds. It is advantageous to use the biggest sails which your heaviest crew can hold down in strong winds (see Sandy Douglass's article in October 1965 One-Design Yachtsman). My own general rule is when in doubt use the fuller sails. I feel that it is more harmful to be caught in a dying breeze with flat sails than to be caught in a rising wind with full sails, especially if the course is a triangle with two reach legs and the start was to weather. A certain amount of variation in sail fullness can be accomplished by the tension applied to the hoist and outhaul. Stretching the sail tighter on the spars reduces the draft some (although this also changes its location). On the off-wind legs, slacking the outhaul and halyard an inch or two makes the sail a bit fuller. Cunningham holes and zippers change the fullness (and also the shape). The small cost of a simple variable outhaul device on a Scot may pay dividends. In simplest form this can be a line lead inboard where it can be reached by the crew.

Sail shape is the illusive, mysterious, expensive ingredient in sails. Each sailmaker has his own formula and technique of construction supposedly guaranteed to win races. Let us examine the ways used to shape a sail from a flat piece of fabric. The first and least expensive method is to curve the luff and foot of an otherwise flat sail. When this curved edge is hoisted on straight spars, the curved slice of material produces a belly in the sail. The degree of curvature on the two edges form curve with the maximum draft just forward of the middle of the sail. By varying the shape of the curve on the luff, the pocket can be moved up or down and made larger or smaller. By varying the shape of the curve on the foot, the pocket can be moved fore or aft (within limits). This method of sail shaping is used on relatively inexpensive sails. A far superior method and more precise one (though more expensive) is to shape the individual panels making up the sail so that when they are sewn together the curve and location of the maximum draft or point of deepest belly can be controlled. This method makes the panels widest at the first  $1/3$  or  $1/2$  of the sail (from front to back) and narrower at the luff and leach, like the outer surface of orange sections. By varying the location of the widest part of the panels the location and degree of maximum draft can be controlled. Tapering of panels may be combined with curved luff and foot for added shaping. It can be seen that narrower panels allow more opportunity for shaping sails in smaller increments for smoother more uniform curves. Mitered mains permit added shaping in a fore and aft direction; also they create more seam turbulence and less chance of duplicability. Mold cut sails represent an effort to shape sails more consistently, but it would appear impractical or uneconomical to stock molds for the myriad of one-design Classes, and the various degrees of fullness for each Class. Sails may also be shaped by the amount of tension applied to them at various points when hoisted. Differential roping (in combination with the other two methods) is another way. If the foot of the sail is sewn to the bolt rope a short distance from the tack while under a slight tension, then another short distance under more tension, etc, when the tension is



released, the sail is puckered at one end and smooth at the other. When put on the spars and pulled out on the boom, that portion of the sail originally sewn with the least tension is flattened out first and pulled tighter than the next part of the sail, etc. A great degree of sail shape can thus be achieved by the amount of pull on the sail extremities.

As a sail is stretched tightly on the luff and foot, it not only flattens out reducing the belly, but also moves the point of maximum draft closer to the spars. This forms sort of a sharp hook or wrinkle along the mast and boom when the sail has no pressure in it. Within limits this stretching permits some change in shape from the original shape sewn into the sail.

Now that we have seen how a sail is shaped, what are the characteristics of various shapes? Why does a sail work at all? Because a sail is curved, the flow of air around the leeward side must travel a longer distance and is speeded up producing a vacuum on its lee side. As we increase the draft or belly, the velocity on the leeward side increases, producing more vacuum and drive, but also more drag in the aft portion of the sail. By shaping the sail in an airfoil (airplane wing shape) we provide a greater expanse of sail tangential to the incoming flow where forward driving forces are more effective, and at the same time maintain a flat leach in order to minimize the negative forces of drag. If we measure forward drive against location of maximum draft at constant velocity and angle of attack to the wind for a series of sails with the same amount of belly, we find that the greatest forward drive occurs when the deepest part of the sail is between  $1/3$  and  $1/2$  of the distance from the mast to the leach for its entire height. With larger angles of attack and constant velocities and draft, maximum drive is developed with the point of deepest draft moving aft and the sail shape getting more circular and away from the airplane wing section. Increases in velocity for small angles of attack give maximum drive with hooked shape sails getting flatter as velocities increase. The above facts apply in a fore and aft direction. In a vertical direction, the material above the boom can be expanded to form a deep shelf theoretically better for entrapping the air which spills out under the boom and directing it aft for greater forward thrust. I personally have found no advantage whatever going to windward, and very little noticeable difference off the wind with a deep shelf. I actually believe the drag at the clew is detrimental on weather work although I have no actual test results to prove this. Let's now translate some of this shape data to sailing characteristics. Consider a sail on the wind in light air. It should have good draft with its deepest part about  $1/3$  of the distance from the mast to the leach. It should be hoisted so that there are just no wrinkles in the luff or foot and there should be no bumps or ridges under the battens. The corners should be wrinkle free (no crow's feet) and it should be sailed without luffing. There should be no flutter of the leach to create turbulence and drag, yet the leach should not hook-in or fall off. We want the air to leave the sail in a smooth flow. The sail should be trimmed in snugly but not horsed down hard since this curls the leach to windward, creating drag. As the wind increases, the pocket should be moved forward and the belly should be reduced. By pulling the sail harder on the foot and luff, the pocket can be moved forward and the sail flattened some. If the crew can still hold the boat down, we are still at maximum efficiency. If the wind increases still more, and after pulling out the sail all we can we have to luff the main to keep from heeling, our efficiency drops and we would be farther ahead to be using a flatter smaller sail which the crew could hold down and which we would not have to luff.

-Vince will conclude this article in an early issue.

CAVEAT EMPTOR

FOR SALE - F/S #14 - "Cloud Nine" - white hull, blue-gray deck, new mast, new Boston sails, complete with all rigging, but no spinnaker. Has cover, outboard bracket, new copper bronze bottom paint. No trailer is included. Very good condition. \$1,750.00. Richard B. Edelen, 3452 Chapel Drive, Toledo, Ohio 43615.

FOR SALE - F/S #469 - "Hotspur" - Complete with jib, mainsail, spinnaker and all gear, anchor line, cockpit cover, outboard motor bracket, paddle, compass, spare rudder pin and cranks. The hull and all gear are in excellent condition. For sale at \$2000.00. A one hundred pound mushroom anchor and buoy are also available. John W. Hyde, 26 Winthrop Drive, Riverside, Conn. 06878. Tele. AC 203, No. 637-0530

FOR SALE - F/S #286 - "Miriam" - Red hull, oyster white deck and white boot-top; Boston Dacron mail and jib, cockpit cover and Gator trailer. Boat has been dry sailed. Price \$1975.00. Contact John Eggum, 3708 Alden Road, Woodstock, Illinois 60098. Tele. AC 815, No. 338-5698.

(END)

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