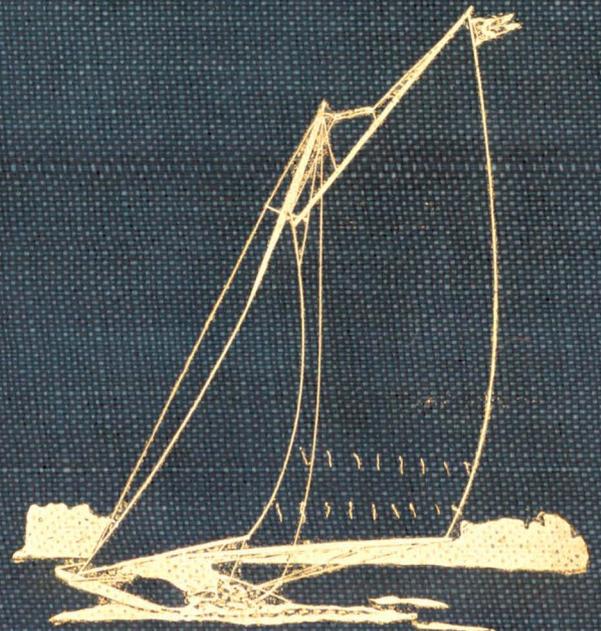


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HOW TO BUILD A RACING SLOOP





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HOW TO BUILD A RACING SLOOP

BY

C. D. MOWER

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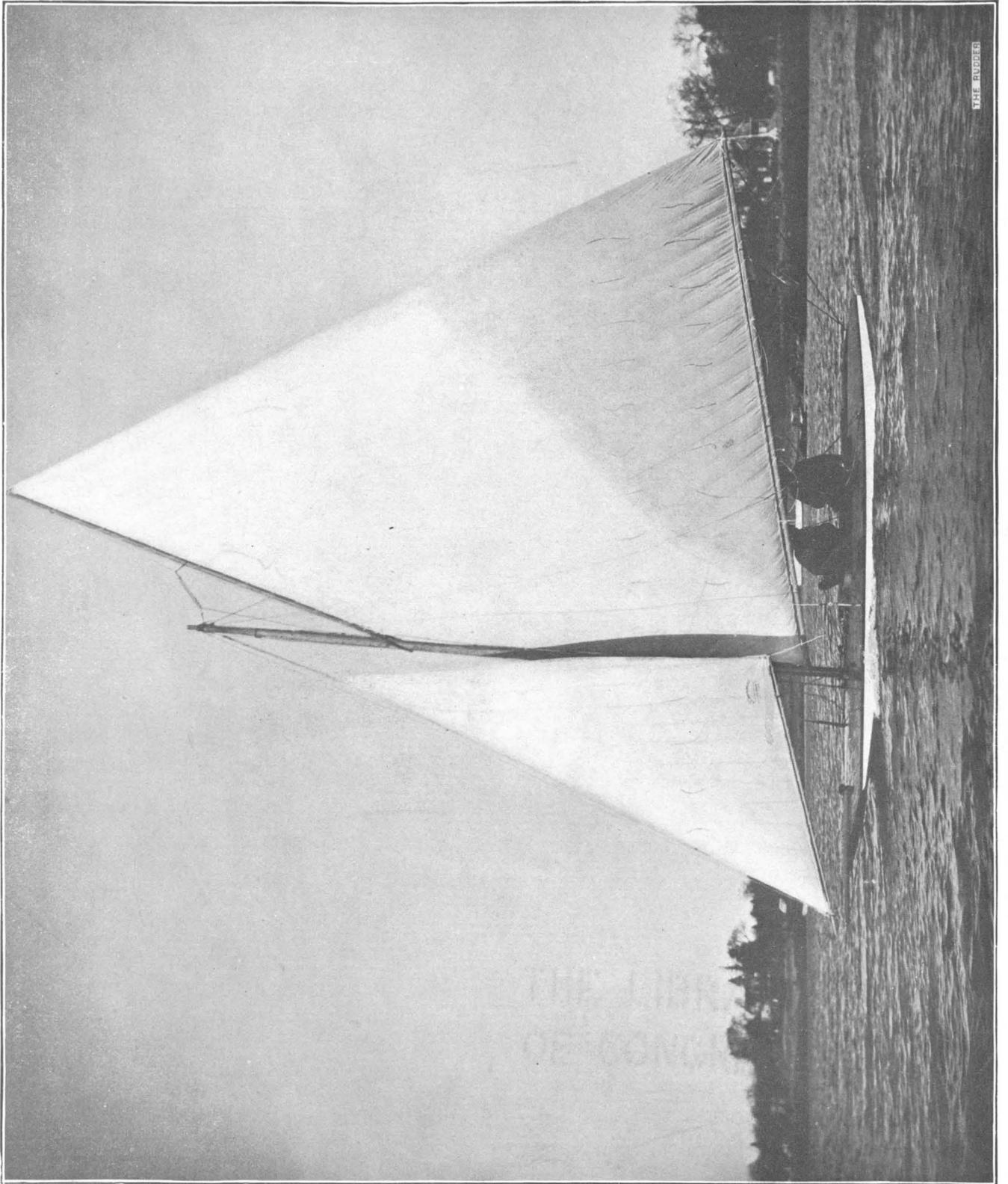
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THE RUDDER

SWALLOW

Introduction

SWALLOW is the third and most successful of THE RUDDER boats. She was designed by Mr. Mower, who has had an extensive experience with this type of racing machine, having with Vitesse and Heiress, boats of somewhat similar shape, captured the Massachusetts Yacht Racing Association pennant more than once. In outlining his work I restricted him to a boat the materials for which should not cost more than \$100 in the vicinity of New York, where boat stock is in comparison with many parts of the country very dear. Consequently the Swallow ought to be built much cheaper in other parts where lumber is less expensive. Before giving the plans to the public I had built a boat from the design, in the construction of which neither time or expense was spared, so as to be sure that the craft would prove satisfactory, and that it could be built for the price mentioned. Being satisfied after a trial that the boat was what we intended it should be we gave the plans to the world, and the world accepted

them. Swallow has been built and successfully raced in America, Europe, Asia and Australia. She has repeatedly defeated the best boats of her size that Herreshoff could turn out, boats costing five times what she did. In European waters she has beaten the best designs from the boards of the crack English designers. With this record it is unnecessary for me to say anything further about her claims to speed.

But to those who are about to build let me say this: Swallow is a racing machine, not a sailboat. She was designed and is intended for sailing in races, and is not a cruiser, a party boat, or boat for use in rough and exposed waters. If you want a cruiser we advice you to build a Sea Bird; if you want a party boat, take a Skip; but if you want a racer, something that will win if properly handled two out of three races against anything her length, try your hand at constructing a Swallow. If you build, I will be glad to receive photographs of your boat for publication in THE RUDDER.—*The Editor.*

How to Build a Racer for One Hundred Dollars

SWALLOW

THE success of Lark was so great, and as there is such a cry for a larger boat of the same idea, I have worked up this new design, which has been christened "Swallow," for THE RUDDER readers. The idea I have worked on is similar to that on which we got up Lark—that is, first, to get a boat that would be cheap to build, and of such construction as to be easily built by anyone accustomed to the use of tools, and having a taste for and perhaps a little knowledge of boatbuilding. Then, as we have called her from the first a racer, she must have speed and power to carry a good-size rig.

As most of the small-boat racing throughout the country is done in comparatively smooth water, I have planned a boat that will be at her best in a hard wind in fairly smooth water. At the same time she will have great speed in very rough water and heavy winds, if carefully handled, and I have confidence in her ability to whip almost anything of her water line afloat, except, perhaps, some racing machines of extremely light construction expensively fitted, for the old saying, "money makes the mare go," applies to the boat as well.

Then, too, there are some localities, which have for years been developing a boat exactly suited to their own peculiar conditions, and it must not be expected that this boat, designed for ordinary conditions, will always be able to leave them, as though they were anchored.

Then, of course, some people will say: "Why, she hasn't any seats in her cockpit," or that "She wouldn't be any good in which to take the whole family of ladies and children out for a sail—that she will pound and throw water in a seaway."

Therefore, I will say right now that it is not possible to combine the racer and the boat for general knocking about without sacrificing either one or the other, and usually the result is that you get neither. The Swallow is a racer intended to be handled by a crew of three or four, who are content to sit on a deck that is sometimes a little wet and think it part of the fun. Then, too, she will pound; but it seems to be an established fact that the more they pound the faster they go.

I am giving you all this at the start, so that you will be able to see whether she is or not the sort of boat you want, and that you won't expect a great deal more than it is possible to get in a small, cheap boat. The great trouble with Lark was that people expected too much, and then condemned the boat for not doing what anyone with common sense should have seen before building she was not capable of.

On the other hand there were hundreds of people who used them, and were greatly pleased finding them just what they were represented to be; and so I believe that this new boat will take hold and please a large majority of our readers. Of course, I expect some growls; but to them I say,

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

go to a designer and commission him to get up the boat you want, for this is not intended for you but for the people who are satisfied with it. Now for the boat herself: You will see that she is quite a bit larger than Lark, and is rigged jib and mainsail. Then, too, she has enough freeboard and a fair amount of sheer, and her overhangs are such that she will *sit and sail* on her designed lines with no danger of sticking her bow under water and turning head over heels. Then, in the shape and construction of the bow, I have departed from Lark by cutting her off square and putting in a flat transom with enough rake, so that she will lift and slide over a sea instead of plunging into it and stopping, as I have seen some square-bowed boats do. This makes a much easier boat to build and gives her the up-to-date racey look that is found in some of the fastest boats of to-day. The stern has a good overhang, but is not spun out unnecessarily long, and is perhaps the great improvement over the Lark model. Of course, I could not hang the rudder on the outside of the transom as on Lark, and as this type of boat requires a very deep rudder to be effective, which is a source of great trouble in beaching or hauling out, or where the boat grounds at low water, I have adopted the scheme of shipping it through a case, so that it can be easily taken out at any time without taking off the rudder head and tiller.

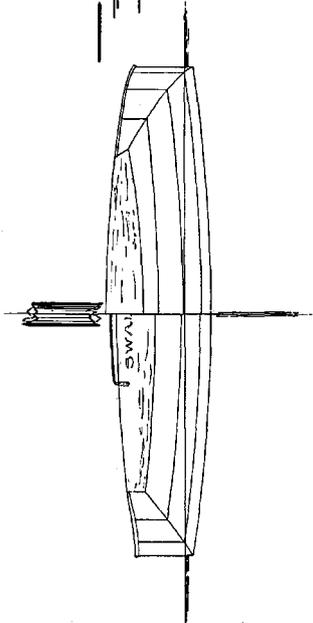
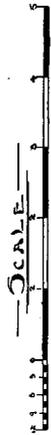
I will explain this more fully when I come to the construction, but speak of it now as one of the features of the boat. The centerboard is the dagger type, and is so hung that it may be shifted fore and aft in the case. The construction will call for more work, and rather more careful work, than Lark, as she is a much larger boat and proportionally lighter, which means careful fitting

and fastening to secure a good and strong result. Still the whole thing is so simple that any amateur should have no trouble with it, and I will be glad to explain any points which I fail to make clear either in the drawings or description.

It will be well first for you to look over and study the drawings carefully, so as to thoroughly understand what you are about before going ahead at all. In general the construction is as follows: First, there is the double backbone forming the centerboard and rudder wells, and giving the boat longitudinal stiffness. At the forward end I have bolted a piece of oak between them to form the mast step and stem piece. The transoms at either end are flat oak boards, and on stations 2 and 6 are permanent moulds of spruce, which form bulkheads and stiffen the boat greatly. The sides are of $\frac{3}{4}$ -inch pine or cedar with a chime screwed each inside lower edge to take the ends of the frame. After the backbone is gotten out and the transoms and moulds in place, then the sides can be fastened on and you are ready, after being sure that it is perfectly true and not twisted or sprung in any way, to fit in the frames, and then the deck beams. The stations, numbered from 0 to 8, which are shown on all the drawings, are spaced 3 feet, and should be plainly marked on both backbone and sides to act as a guide in setting the boat up and in spacing the frames and beams, locating the mast, centerboard box, rudder trunk, etc.

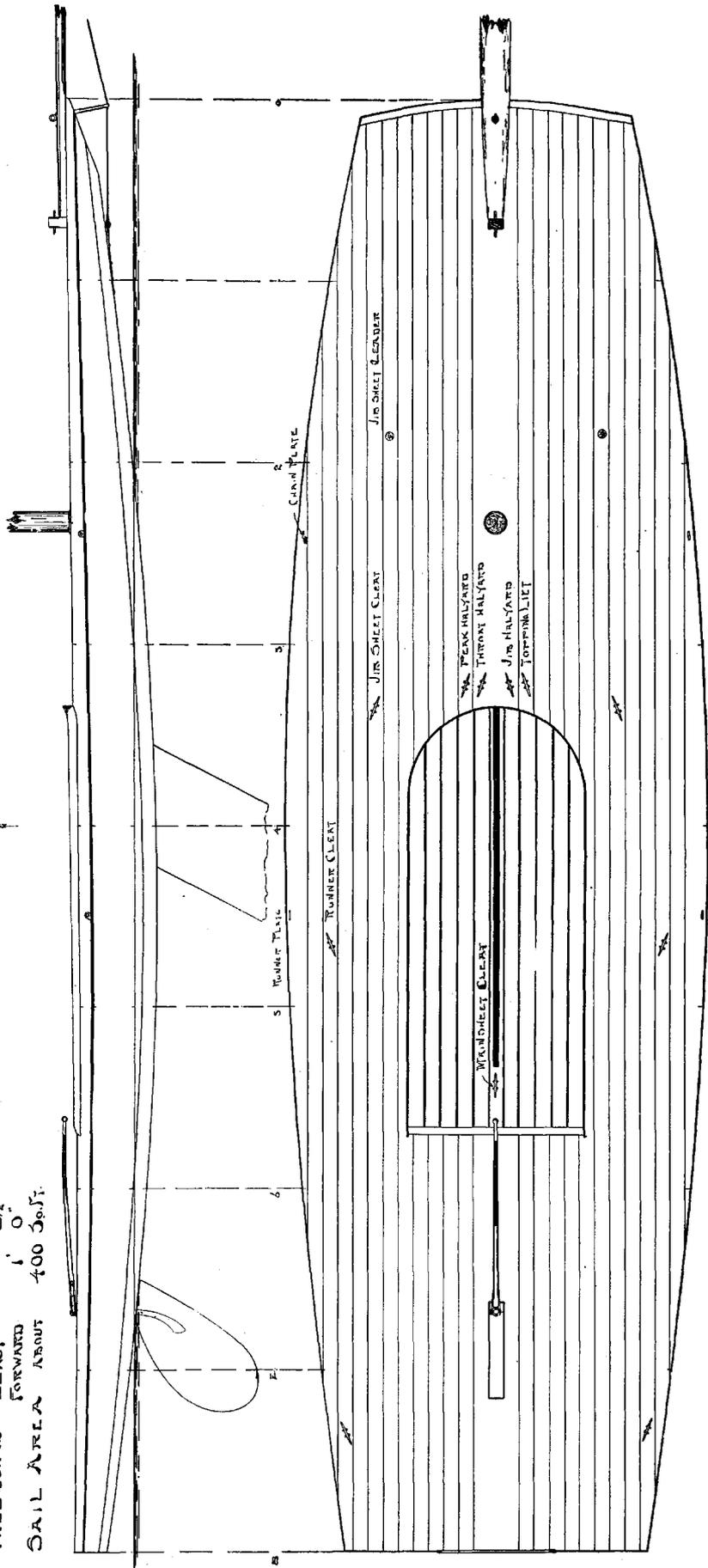
In explaining the construction I intend to assume that the builder has enough mechanical ability, so that it won't be necessary for me to describe every little point, such as—to drive a nail you should place the point against the board, then strike the end called the head with some heavy implement like a hammer, taking

RACING JIB & MAINSAIL "SWALLOW"
 DESIGNED FOR THE RUDDER
 BY CHAS D MOWER



DIMENSIONS

LENGTH ON DECK	24' 0"
" LWL	14' 6"
BEAM	7' 4"
DRAFT OF HULL	0' 0"
OVERHANG FORWARD	6' 0"
" AFT	3' 6"
FREE BOARD	1' 0"
FORWARD	8 1/2"
SAIL AREA	ABOUT 400 SQ. FT.



SWALLOW

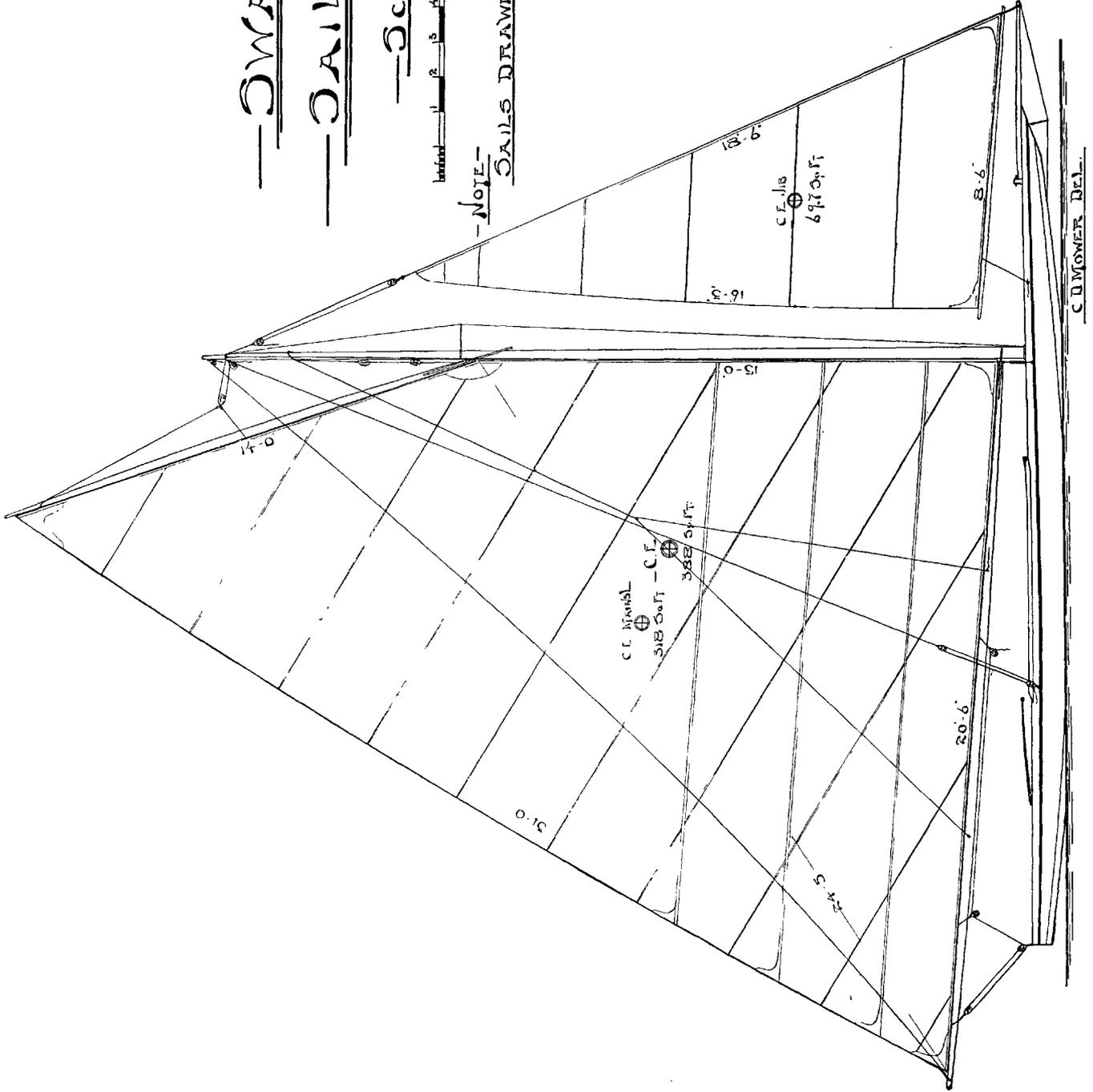
SAIL PLAN

SCALE



NOTE

SAILS DRAWN TO SIZE WHEN STRETCHED



CUMMER DEL.

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

care to strike the nail and not your fingers, and other such important details. I will try, though, to show where the fastenings should be placed and how driven to the best advantage, for it is the care and method of fastening more than the weight of material that makes a strong boat. While we are on the subject of fastening it might be well to say that in boatbuilding always bore for every nail or bolt, however small, using a bit just a trifle smaller than the fastening, and always bore countersink for the head. This removes all possibility of splitting, and will also make the nail hold much better than if forced in so as to separate and break the fibre of the wood.

In driving a chisel-pointed nail place it so that the point crosses the grain of the wood, for if it is driven with the grain it will act as a wedge and force the layers apart, causing a split. In clinching a nail drive it nearly home, allowing the point to come through, then turn it down and hold an iron on it while you drive the nail home and countersink it. In riveting drive your nail home and countersink it, then put on the burr or washer and drive it down to place, then cut off the nail, leaving just enough to head up nicely. Be sure and cut it short enough, for riveting will always draw the nail through somewhat and so give enough of a head, while if it is too long you cannot get a good, tight job. In soft woods it is much better to use a bolt with a nut than a rivet—that is, for large fastenings that would require, say, a $\frac{1}{4}$ -inch rivet. In regard to screws, of course the brass screws make the best fastening, but are expensive, and the galvanized-iron screws are as good for all practical purposes, except for very light work. As I have said before, it is of great importance to use care and

judgment in placing and driving your fastenings, and while it takes time you must remember that anything worth doing at all is worth doing well.

Now for the actual work on the boat. The first step is to get out the backbone, which is the foundation for the whole boat. This will require two boards, each 15 inches by 18 feet, of pine, 1 inch thick. If it is not possible to get a board of this width then use two boards with the joint well above the water line. First strike a line to represent the water line as shown on the drawing parallel with one edge, then draw, square with it, the stations, spaced three feet, and number them like drawing. Next lay off the dimensions above and below the line that are given on the drawing. Then with a long batten, about $\frac{7}{8}$ inch by $1\frac{1}{4}$ inches placed flatwise and held in place by awls and nails, strike a line through the points. If the batten refuses to make a fair curve through all the points it may be allowed to go a trifle in or out from them as necessary to make a perfectly true sweep. Then mark the exact location of the end pieces for the centerboard and rudder slots and saw it out and plane the edges perfectly square and true. Mark out the second by the first and tack them together for the final trueing-up and squaring of edges. It is of great importance to get the lower edges perfectly square, so that the bottom planks will fit to them nicely, so that there will be no chance of a leak. On the outside of each, along the centerboard and rudder slots, fasten a piece of oak, $\frac{7}{8}$ inch by $2\frac{1}{2}$ inches, to take the heels of the frames. Fasten this with rivets or screws from the inside of box into the oak piece, taking care to place the fastenings, so as not to be in the way when you come to cut the mor-

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

tises for the frame ends; or, better still, cut the mortises before you fasten the pieces on. Then paint the insides, put the end pieces of the slots in place, using plenty of thick paint and a strip of canton flannel on either side, and then put them together, fastening with rivets or $\frac{3}{8}$ -inch carriage bolts, preferably the latter, through the end pieces of the slots.

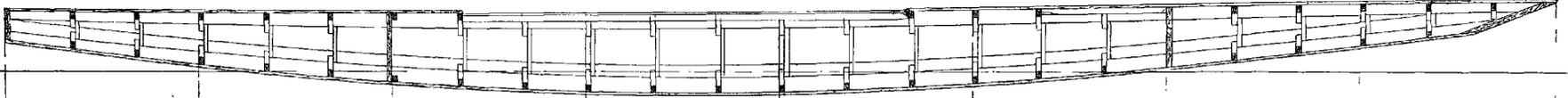
Next get out the stem piece of 1-inch oak and bolt it between the bed pieces, taking care to get the proper position by extending the water line from the backbone and measuring up from that to the underside of the stem piece. After the backbone is complete it would be well to get out the two side planks. It should be possible to get a board long enough for these, but if not they may be made of two boards scarphed together. By carefully following the dimensions given I think there will be no trouble with them. Next get out the bow transom from oak, 1 inch thick, according to the dimensioned drawing on the construction detail sheet; also the stern transom of $\frac{3}{4}$ -inch oak and the permanent mould for stations 2 and 6. These moulds should be of spruce, as it is lighter than oak and strong enough. The forward one will strengthen and hold the boat in shape around the heel of the mast, which is a vital point of these flat boats. The after one on station 6 will have to be cut in two, and three inches taken out of the middle to allow for the backbone. A short piece of frame and deck beam should be jogged into the backbone and fastened to the mould to tie it together. The middle of each half of this mould may be cut out to give access to the after part of the boat, if desired.

The bow transom should be riveted or bolted to the stem piece and the stern transom fastened

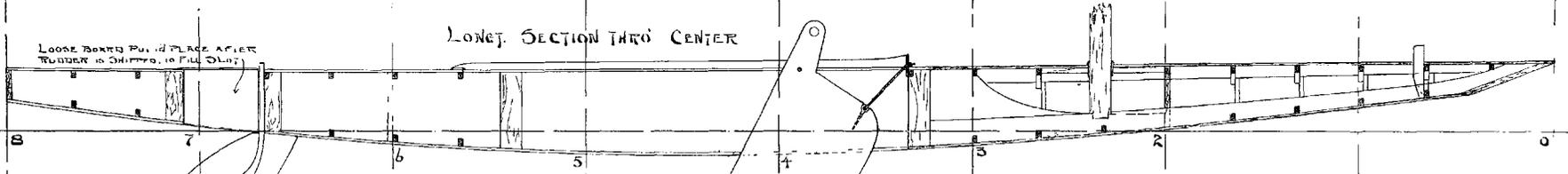
with long wire nails. Before putting on the side planks you must fasten to the lower inside edge of each a strip of oak, $\frac{7}{8}$ inch by $2\frac{1}{2}$ inches to take the ends of the frames. This may be fastened with screws from the outside, or nails driven through the oak and clinched on the inside. Care must be taken here also to place the fastenings so as not to interfere with the mortises that must be cut out for the frame ends to fit into. After this work is finished place the backbone on the floor bottom up and fasten it, so that the center line is perfectly straight and the moulds and transoms blocked up, so they are square and level. Then you can put on the side planks and fasten them either with screws or long galvanized wire nails. It would be well now to go over the frame again to make sure it is perfectly true and not twisted or wracked in the least. Now is the time to look after this, for things will go along much nicer if started aright, and then after the work is farther advanced it will not be possible to correct wrongs contracted in its early days.

The next thing to think about is the frames; these are to be of oak, $1\frac{1}{4}$ inches by $\frac{3}{4}$ inch, all having the same crown or round—that is, 3 inches in 7 feet. The first step is to lay off, and make a pattern to mark them out by; this pattern is given with dimensions on the construction detail sheet and requires no explanation. The idea is to take a wide board and mark around your pattern on the edge farthest from you, then move the pattern toward you $1\frac{1}{4}$ inches and mark another, and so on. After marking out a sufficient number of oak ones for the bottom I would then lay off the deck beams the same way on a spruce board, then take the whole lot to a saw-mill and have them sawn out on the band

LONGITUDINAL SECTION THRO' PORT SIDE



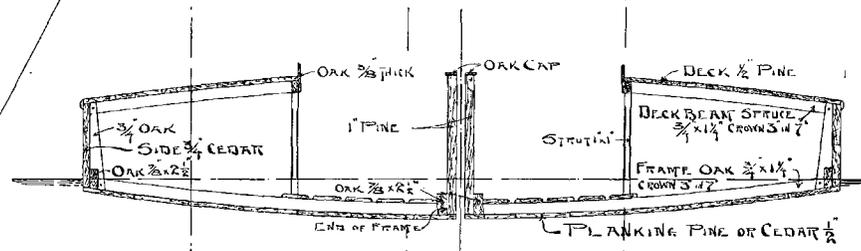
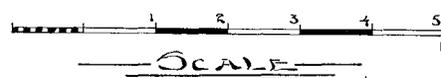
LONG. SECTION THRO' CENTER



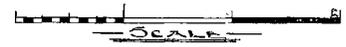
LOOSE BORED PILING PLACE AFTER
RIGGER IS SHIPPED TO FULL OILY

$\frac{3}{4}$ " OAK

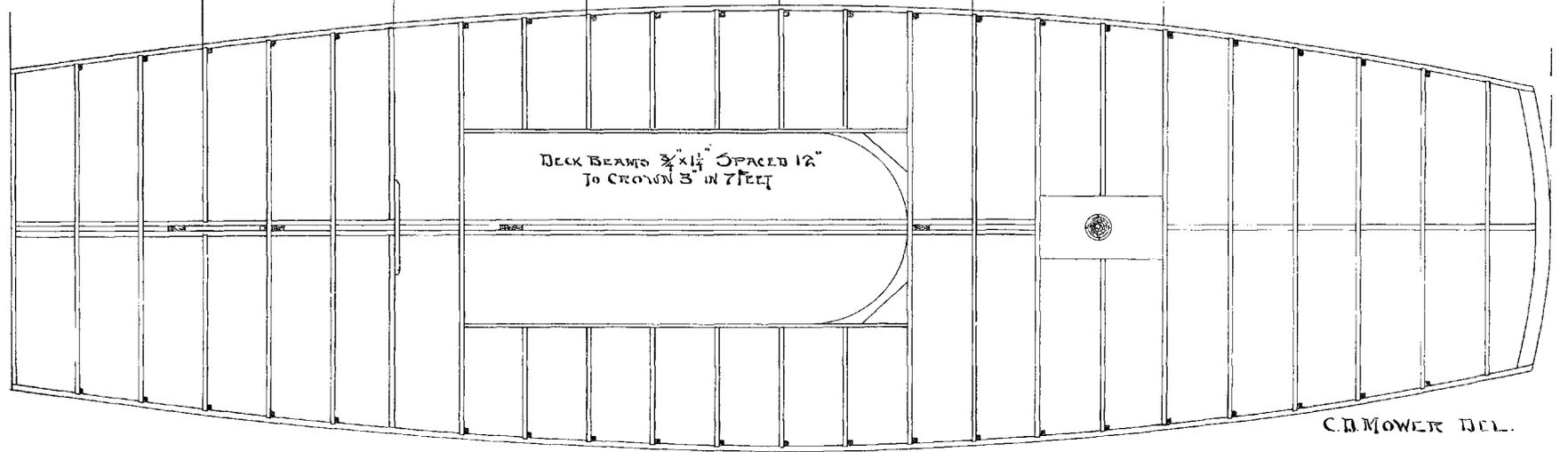
— SWALLOW —
— CONSTRUCTION PLANS —



CONSTRUCTION SECTION



DECK BEAM PLAN



C.B. MOWER DEL.

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

saw. This will cost but little, and will save almost stock enough to pay for the sawing, besides giving you a much better job and saving a whole lot of very hard work.

The frames should be carefully and tightly fitted at both ends and fastened by one rivet up through the chine piece, as shown in the small sketch. After all the frames are in and the edges of the sides planed down, so as to be perfectly fair and even with the bottoms of the frames, the boat is ready to plank, and this had better be done before the boat is disturbed from her fastening and blocking on the floor.

The plank should be of $\frac{1}{2}$ -inch pine or cedar in long lengths, so that there may be as few butts as possible. The center planks should be put on first with a seam down the center line of the boat, so that the slots for centerboard and rudder may be cut half out of each plank. It will not be necessary to taper the planks, so they may be of one width, say about 5 inches for their whole length. The two outside planks, which will go on last, should be quite wide, so that there will be few seams running out at the sides of the boat. The planks should be made to fit closely on the inside, while on the outside seam about $\frac{1}{8}$ inch should be left for calking and putty. Care must be taken that the plank break joints where the butts come; that is, two planks should not be butted in the same frame space, unless several other planks intervene. For fastenings use $1\frac{1}{2}$ -inch galvanized wire nails, for which holes must be bored, and an iron held against the frame on the inside while the nail is being driven. When it is necessary to use two boards to get the full length of a plank the butt or joint should be made as follows: Cut both ends off at a slight bevel, so that the joint will be slightly

open on the outside for calking, and so that it will come midway between two frames. Then cut a piece of $\frac{3}{4}$ -inch oak slightly wider than the plank and long enough to fill the space between the frames; the end of each plank may be fastened to the block with screws, or copper nails riveted, as preferred by the builder. The forward ends of the plank should be riveted to the bow transom, and care must be taken to place the fastenings far enough back, so that the plank ends may be planed off fair with the face of the bow transom. Use long wire nails in the stern transom aft. Before the outside planks are put on it would be well to lay a strip of Canton flannel, well-painted, along the edge of the side plank. This will avoid all danger of a leak. Use long wire nails to fasten the bottom plank to the side planks. After the boat is all planked she may be turned right side up to receive her deck frame and decking.

When she is turned over and is resting securely and evenly on horses built to fit the curve of the bottom the first thing to do is to fit and fasten in the side frames. They should be cut out of $\frac{3}{4}$ -inch oak and securely fastened to the side plank, and also have the lower end riveted to the side of the bottom frame. When all the side frames are in, spaced the same as the bottom frames, you can go ahead and fit in the deck beams. Cut a mortise for each end halfway through the side plank, so that the beam will fit closely against the side frame to which each end must be riveted.

If it is desired to make a still stronger job than this you can put in a clamp of spruce about $1\frac{1}{2}$ inches by $1\frac{1}{2}$ inches, riveting it to the frames, so that the under side of the deck beams will rest upon it. With the beams fastened to this as

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

well as to the frames there will be no chance of any weakness.

When all the beams are in place, the partner piece for the mast in, the pieces to make the round at the forward end of the cockpit, and the bitt forward to take the heel of the bowsprit fitted and fastened, then you can go ahead laying the deck. For decking use $\frac{1}{2}$ -inch pine about 3 inches wide, with matched edges, and as it is to be covered with cloth no special care need be taken to make the joints water-tight. Before the cloth is put on the deck must be planed perfectly smooth—for any ridges or uneven places would soon wear a hole in the cloth—the mast hole cut, the outside edge and the opening for the cockpit planed perfectly fair and true, so that the chafing strip and coaming will fit nicely. For cloth get the heaviest unbleached cotton sheeting, $2\frac{1}{2}$ yards wide, that you can buy. This may seem very light, but when laid in paint and thoroughly painted on the outside, will stand any amount of hard wear. The method of putting it on is this: Give the deck a coat of very thick paint composed of white lead and oil, then put on the cloth, perfectly dry, and stretch it as hard as possible fore and aft and fasten it; then stretch it athwartship, commencing in the middle and working toward either end. It is a good plan to make a mark down the center of the cloth, and then take care to keep it on the center line of the boat, so that you may be sure you are stretching the cloth evenly. Draw the cloth down over the sides and fasten it with copper tacks, placing them so that the one-inch finishing or chafing strip will cover all. The bow and stern transoms will look better if, instead of drawing the cloth down over, it is fastened on top of the deck and a thin strip of oak about

2 inches wide put on to cover the nails and make a finish.

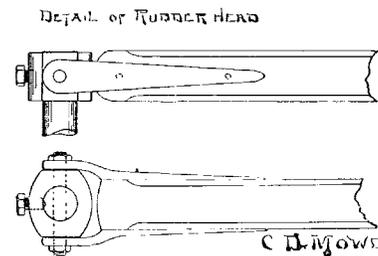
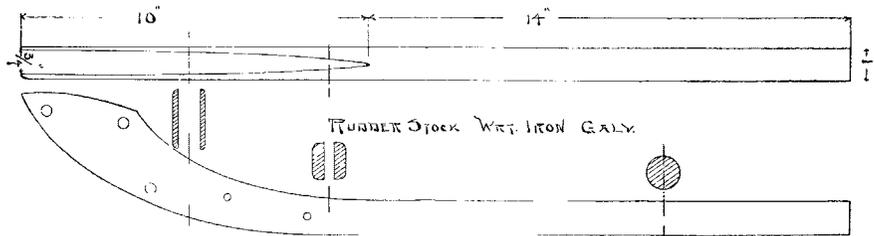
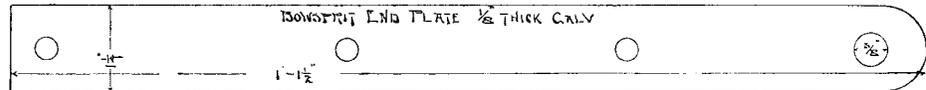
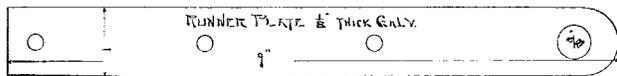
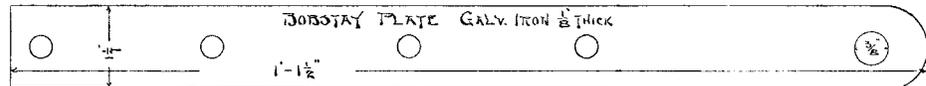
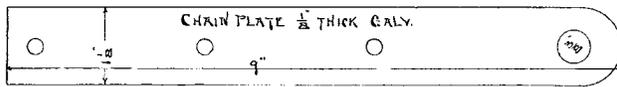
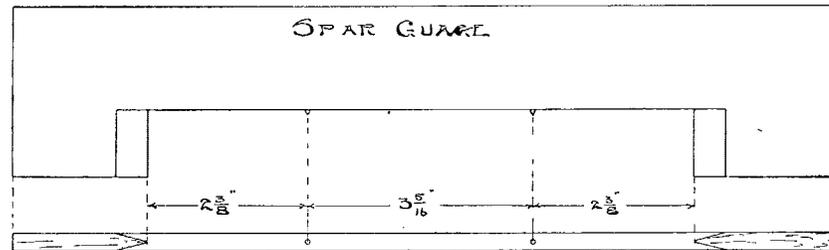
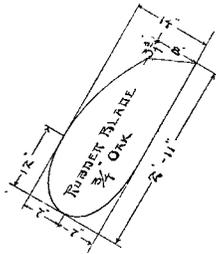
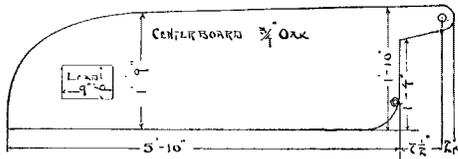
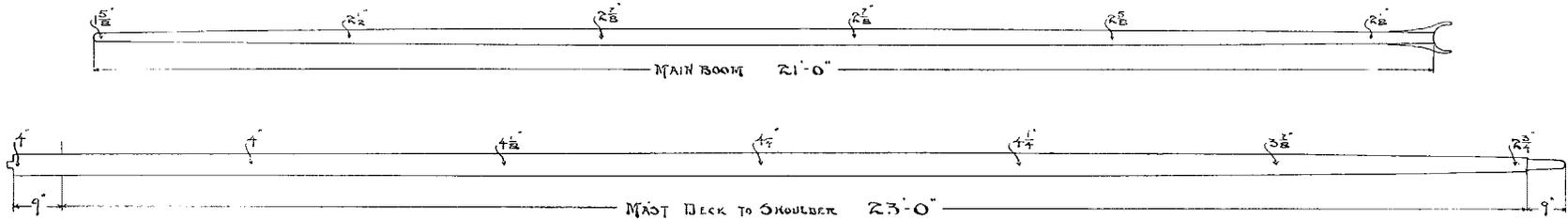
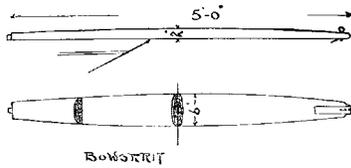
For the coaming get a piece of oak, $\frac{3}{8}$ inch x 3 inches, and bend it into place by wrapping cloths around where the bend comes, and then giving it a generous bath of hot water, allowing it to steam a little while before the cloths are taken off and the attempt at bending made. The coaming will not extend across the after end of the cockpit, but in its place put a piece of oak, $\frac{3}{8}$ inch x 3 inches, flatwise, to make the finish. Fasten the coaming with screws and countersink the heads, so that they may be covered with putty the same color as the oak when varnished. A piece of $\frac{3}{8}$ -inch oak should also be put on the deck to make a finish around the rudder slot.

The only work on the inside of the boat will be a light floor in the cockpit, with part arranged to take up for convenience in bailing, and a couple of light struts on either side of the cockpit to support the deck.

The centerboard should be made of two $\frac{3}{4}$ -inch oak boards is doveled together and neatly tapered at the edges. After the board is fastened together a hole should be cut out of the lower part in which the lead is to be run. The best way to put the lead in is this: All around the edges of the opening drive nails, so that only about an inch of the head remains in sight, so that the hot lead will run ahead and so be held securely in place. On either side of the centerboard fasten with screws a good, dry piece of pine, in one side cutting a hole in which to pour the lead and other smaller ones to allow the air to escape as the lead runs in. When the lead is cold the side pieces can be taken off, and the lead planed smooth with a small block plane. The board is to be hung by a line leading from

SWALLOW

DETAILS OF SPARS IRON WORK ETC.

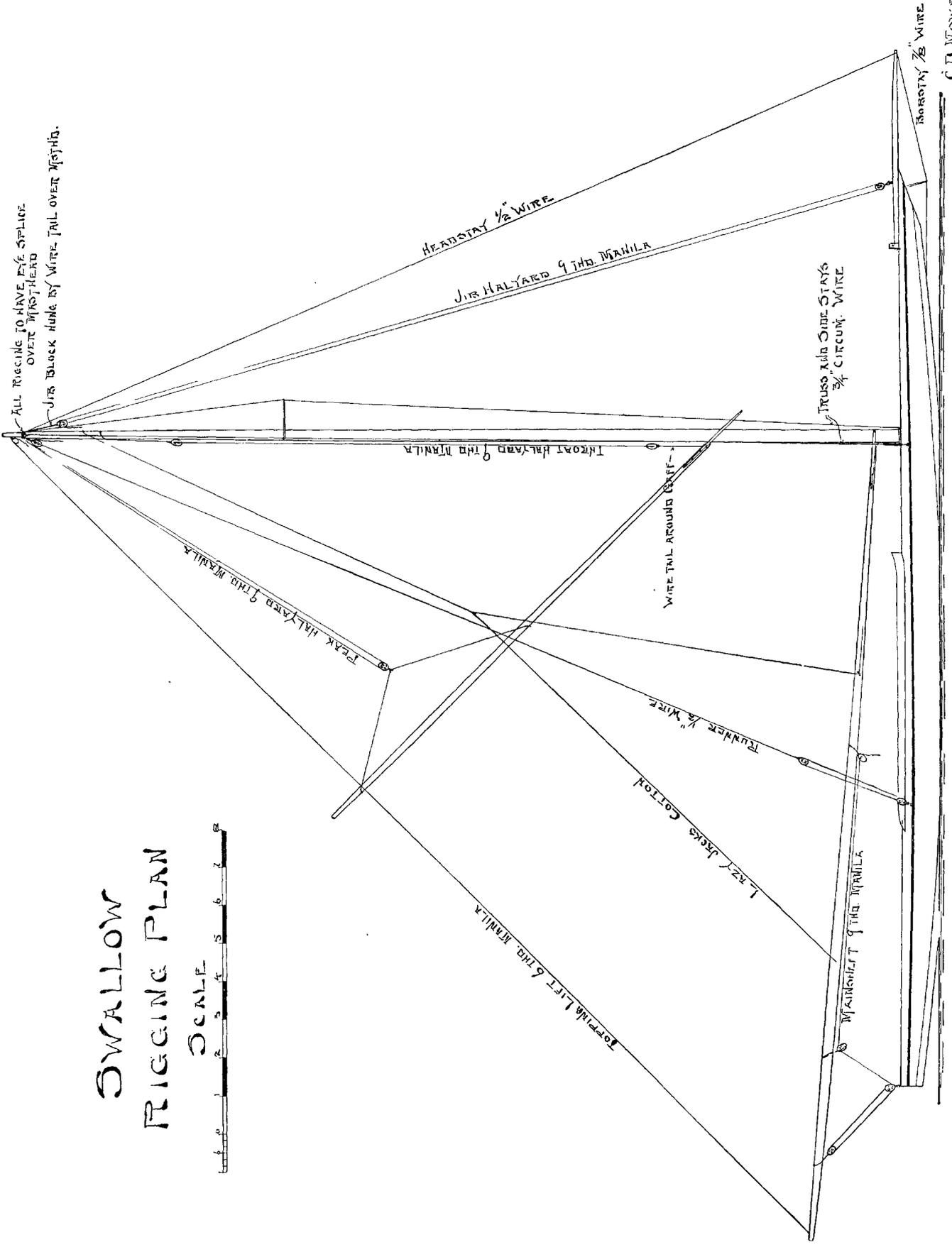


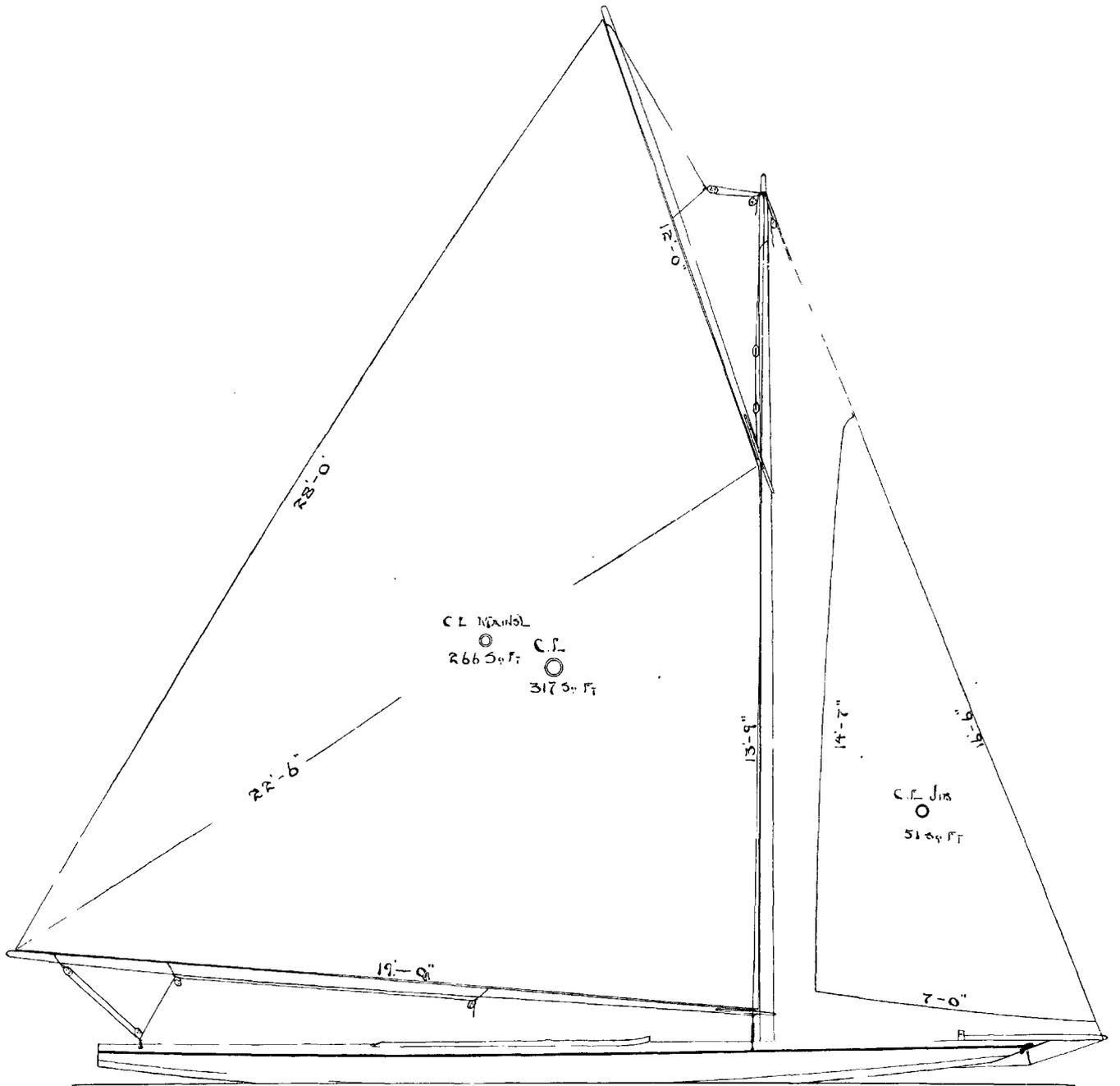
C. D. MOWER DEL.

SWALLOW RIGGING PLAN



ALL RIGGING TO HAVE EYE SPLICE
OVER THE MASTHEAD
JIB BLOCK HOOK BY WIRE TAIL OVER MASTHEAD.





REDUCED RIG FOR SWALLOW

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

a cleat on deck through the coaming to the screw-eye in the centerboard. By this means the board can be moved fore and aft in the box to any desired position. The rudder is also made of $\frac{3}{4}$ -inch oak, and the stock must be let into it enough so that it will go through the slot without difficulty. The chain plates and runner plates must be fastened in place on the inside of the side planks with $\frac{1}{4}$ -inch galvanized bolts, and then the boat is ready to be again turned over so that the bottom may be calked, smoothed up and painted. While calking seems comparatively easy it really requires a good deal of skill and experience to do the job properly, and I am sure you will never regret the slight extra expense if you hire a calker to do the work for you, for then you are sure of having a tight boat, and of the calking being so driven that it will not fall out the first time the boat gets a good pounding in rough water. After the calking is driven it should be payed or painted with thick paint, which must be allowed to dry before the seams are puttied. When the bottom is calked and puttied it may be painted any desired color, though for salt water I recommend the red copper paint as giving the best satisfaction. When the bottom is finished the little ship can again be turned right side up, and we hope she will stay so from now on. The only work remaining is the putting on of the oak chafing strips, after which she can be painted inside and out to please the fancy of her owner.

While the various coats of paint are drying we can start work on our spars. For these you must pick out some nice straight and clear spruce plank, and have sawn from them the pieces of the size you want for your mast, boom and gaff. When you have the square pieces of

the right size you must taper them to the sizes given on the spar plan, and then you can take the first step toward rounding them up. To do this you use the spar gauge which has been made according to the dimension given on the plan. The scheme for using the gauge is to hold it diagonally across the spar, so that the ends of the opening on the lower edge bear against the sides of the spar; then by moving it along the two nail points will scratch the face of the spar. After this has been done to all four sides and the corners of the spar trimmed off to the marks you will find your stick is exactly eight-sided; from which it can be made sixteen-sided by your eye, and then easily planed and sandpapered perfectly round. The jaws can be made of oak and riveted to boom and gaff and the bowsprit gotten out of a piece of 2-inch plank, and then your spars are ready for a coat of varnish. The only iron work on the mast is a $\frac{3}{8}$ -inch eye-bolt just below the shoulder to hold the peak halyard block. The rigging is very fully shown on the rigging plan, and will require but little explanation. All the standing rigging is fitted with an eye splice over the masthead. The bobstay is a wire rope shackled to the plate on the bottom of the boat at one end, and at the other spliced to turnbuckle which is shackled to the plate, which is bent over the bowsprit end.

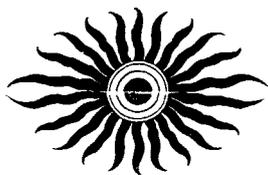
The question of blocks, cleats, deck leaders for the halyards, etc., I will leave to the builder, that he may decide for himself what kind and style are most suited to his fancy and expense account. The struts or spreaders shown on the bobstay and truss stay can be made of oak or forged from iron rods as preferred; two light spreaders about 16 inches long, must also be

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

made and fitted to the mast at the height of the truss spreader to spread the sidestays and avoid the buckling of the mast at the throat of the gaff.

The sails should be made of about $4\frac{1}{2}$ or 5-oz. cotton, or twill of some sort, and can be either "cross-cut" or "up-and-down." The price of the sails will depend upon the sailmaker you employ, as we have received estimates ranging from \$16 to \$35 for the mainsail and jib. In regard to the size of the sail plan I consider it a moderate rig for the boat, and will say that if the owner is a racing man and intends to com-

pete with boats of unrestricted sail area, I would recommend a considerable increase. For racing you will need a spinnaker also; but as its size is very often restricted I have given no drawing of the sail. I have not attempted to go into all the details of the rigging, for it will be much better for the young amateur to go about and see how things are done by others, and thus get by observation and experience not only what you need for this boat, but a great deal that may be valuable to you later on in your yachting career.



Proof of the Pudding

First Flight of Swallow*

THIS trial came off on Saturday, December 9th, 1898, and the result, so far as the editor and builder were competent to judge, was extremely satisfactory. Mr. Mower, the designer, was unfortunately absent, having been called home, so that we missed his services and consequent valuable summing up. But under the prevailing conditions Swallow proved both able and fast, and handled like a child's toy.

The morning appointed for the venture broke clear and cold, quite a bit of a change from the warm, unseasonable weather that ushered in the month. With a photographer in tow, I made an early march for New Rochelle, and before the sun had begun to make its southing the expedition was at the clubhouse on Echo Bay, off which the new craft was riding at anchor. The wind was northwest and very puffy, as such a breeze is apt to be, and besides being various it had that winter weight to it that makes sailing in December very different from sailing in August.

Swinging at anchor, Swallow made a pretty picture, perhaps the prettier, because she was the only yacht with one exception to be seen in the bay, usually so crowded with pleasure craft. Then, again, it was the first time I had seen her in the proper element, and that perhaps gave her additional beauty in my eyes. But that as may be, admitting her to be an out-and-out machine, Swallow had much in her appearance to com-

pensate for certain ugly features that attend all boats of the scow type. She is a scow, but not an ugly scow. In fact, to one familiar with this type she is a far more pleasant picture to look at than many of her fast and famous ancestors.

Putting the photograph man in a rowboat, with a helper to swing him round, we got sail on the new craft and let her go. The crew was rather a light weight, my time on scales being at all seasons less than 1.40 o'clock, and the builder, L. D. Huntington, Jr., not going me many pounds better. Taken together with our clothes on and the money in the pockets, the lump of humanity manning Swallow was close to but not over 300 pounds. Neither of us was dressed for this sort of work, being in heavy coats and boots and Derby hats, the worst possible headgear for cutting up monkey shines on a racing machine.

To add to our troubles the gear was all green, and everything in consequence rendered with the ease of a rat-tail file going through a cylinder of sandpaper. The sails having just been bent, were not half hauled out, and the jib not being hanked to the stay would not hold a stiff luff, as you will notice in the picture. But knowing how anxious you all are to see her, I decided to take the pictures anyhow and not trust to getting another such day, rare things at this time of the year.

Once her canvas was filled, Sandow sprang

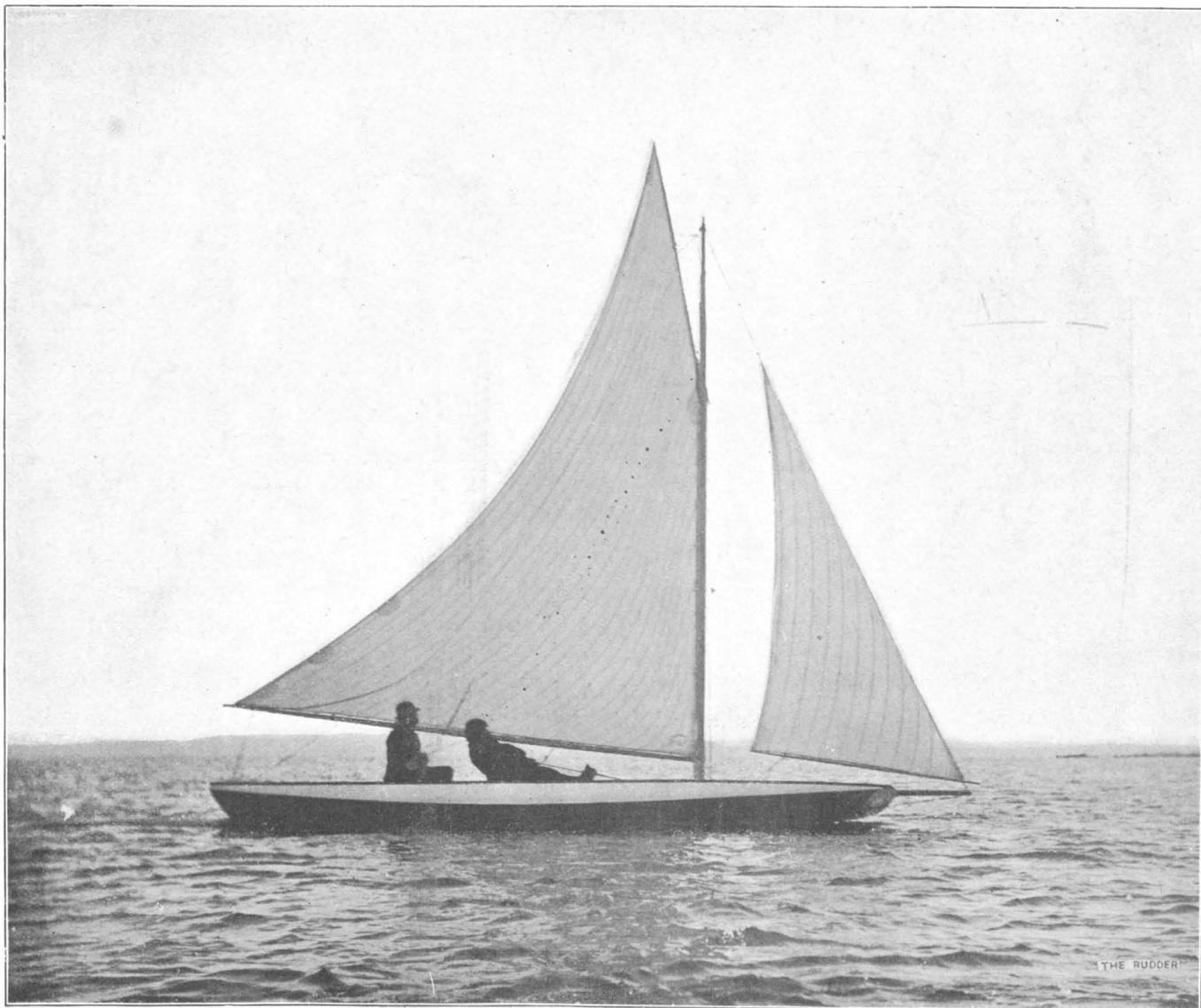
HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

off. These boats do not start, they spring. They do not gather way, like the ordinary type of boat, but shoot right into their speed at once. This necessitates very quick handling of sails, and this we could not give Swallow that morning. Two men are not crew enough to handle her for racing; to do so properly will take three, and, better still, four—helmsman, two sheet tenders and one general helper.

I drove Swallow back and forth across the bay, so as to give the photographer ample time and many opportunities to get good shots, but owing to the puffs always hitting us at the

wrong time he did not get her when heeled clean up. The one showing her with the side out and the water flying along the lee rail was taken when holding a good stiff puff. A short time afterwards she took a knockdown and went right over on her ends. It was my fault, as I let her lose way, and the wind hit her broadside when standing still. As soon as the rudder was out I joined the builder up on the side, and throwing our weight out she righted easily and went on about her business.

To race this boat in a strong breeze will require four men. A crew weighing 500 pounds



SWALLOW

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

could keep her up in any breeze that could be raced in. But if you build your boat for a general knockaround craft and not to race I advise a cutting down of the plan as given in December. But if you want an out-and-out racer, or if you sail in waters where light winds prevail, I advise you to carry the original sails.

This boat, which we had built of the very best materials and in the most workmanlike manner, cost \$250. She is very strongly fastened throughout with the best of fastenings, and is much more expensively built than the majority of scow boats. Mr. Huntington, who is past-

master in the art of building this type, took especial pains, and the result is a job that is a credit to all concerned. I give below a table of costs, including all the materials, of which a careful reckoning was kept:

Lumber	\$57.00
Fastenings.....	10.04
Paints and Varnish... ..	7.01
Fittings and Rigging.....	23.10
Sails	16.00
	<hr/>
	\$113.15

This brings the total cost of materials a little higher than the \$100 we advertised, but it must be remembered that not only have prices advanced 20 per cent. since the first estimate was made, but that we put in much more expensive materials than are necessary. If ordinary blocks and fittings are used the cost can be readily brought down to the original figure.

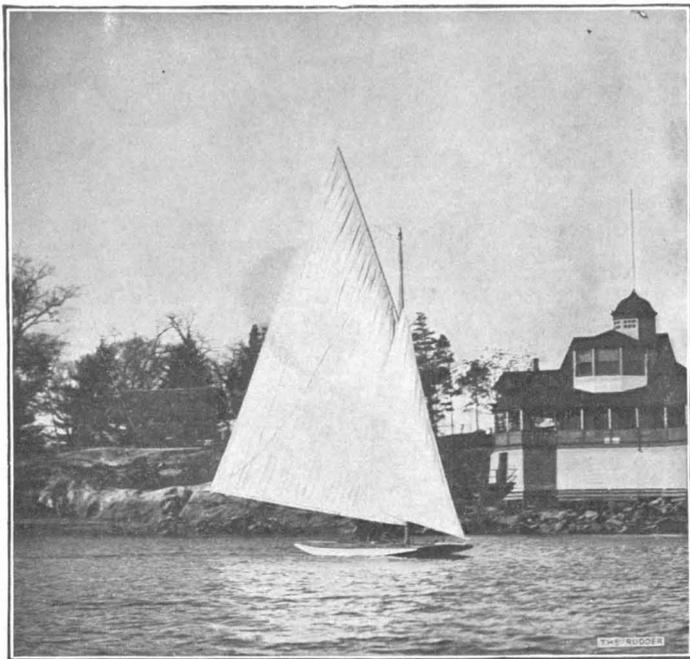
The rudder stock and tiller was made by Charles D. Durkee & Co., and cost \$6. The sails came from the loft of John C. Hopkins & Co., and are of excellent material and well made. When properly stretched and bent they will look to sit much better than they do in the photograph. As shown, they were hastily bent, and we had no chance to haul them out or set them up properly.

A little account of the performance of the original Swallow may be of interest to those who have built boats of the same de-



SWALLOW

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

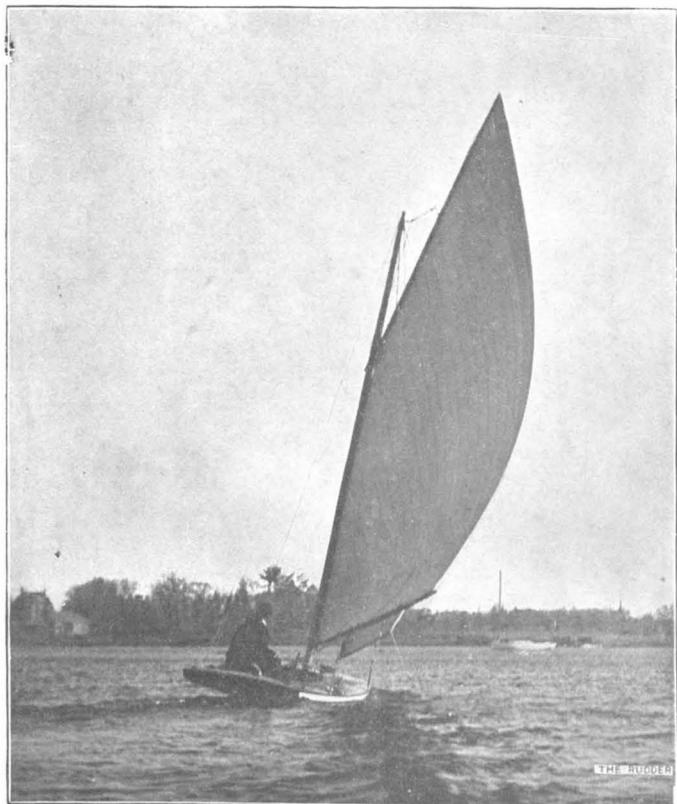


sign, and possibly to some who have only seen the plans. It will be remembered that she was built last fall, given a trial, and then hauled out at Huntington's yard for the winter. In this spring she was again put in commission and sailed about New Rochelle for a few weeks, then sold to Mr. H. S. Borden, to be used on the Shrewsbury River, near Red Bank. The trip from New Rochelle to Red Bank was quite an exciting one, and when down off Sandy Hook, Swallow came very near ending her career. We towed her down behind the 25-foot knockabout Jessica, also a Mower design, in a very nasty northeaster, which kicked up a bad sea outside the Narrows. We were driving Jessica pretty hard, but Swallow seemed to tow nicely, shipping only a little water now and then, and everything went well till we reached the main channel, where it runs in close to the Hook. Here it was very rough, and Swallow caught one sea over her bow and another under her stern at the same time, and down she dove, as we were towing her very fast. It was blowing so hard that we had to cut her adrift and run inside the Horseshoe, where we tied in

close reefs, and then went out again to try to right her

After several attempts we found it was impossible to do anything with her, so we anchored her and ran back into smooth water. Meanwhile the lifeboat crew had seen us working over a capsized boat, so they manned their surf boat and came out to lend a hand. They succeeded in getting the mast out and righted her up, and towed her into us a total wreck. We could not but admire the way in which they did their work, for even out in that rough sea they had carefully unscrewed turnbuckles, so as not to cut the shrouds and had coiled down all the rigging nicely, so that nothing was lost, except a jib which floated away before they reached her, and the rigging was all in good shape to be used again. After reaching Red Bank Swallow was re-rigged and made ready to race against all comers.

Her first real race was with the Witch, and Swallow won by about 25 minutes on an 8-mile



HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

course. The second was against the boats of the South Shrewsbury River, designed by Gardner & Cox, and in this race Swallow was beaten, being the last boat to finish. The owner afterward decided that he had been sailing most of the time with his board on bottom, so he challenged one of them to a race out in the bay where there was plenty of water. The result was a win of nearly 10 minutes for Swallow. Mr. Borden did not like to acknowledge himself beaten in the South River, so challenged another of the boats there. As the other boats of the one-design class wanted to come in, the race was made a sweepstake, and Swallow, which had been given a different centerboard and new suit of sails, turned the tables by beating them all by a good, safe margin.

The result of this race was very satisfactory, as the South River boats had just sailed a match against the Marine and Field Club one-design class, and had beaten them badly. This made Swallow cock o' the walk, and her owner put up an open challenge for any boat on the river, but did not succeed in getting another race. The owner is well satisfied, for, as he says, "The Swallow has never been beaten except once, and I do not see how she could be expected to win with her board on bottom most of the time." In conclusion, Mr. Borden pays a pretty compliment to Mr. Mower, as her designer, and strongly advises any one wanting a racer to build a Swallow.



THE SWALLOW SQUID

THE fastest craft in Stonington Harbor is the Squid, owned by Charles T. Willard. The material for this Swallow model me from Fred Medart, of St. Louis, Mo, and

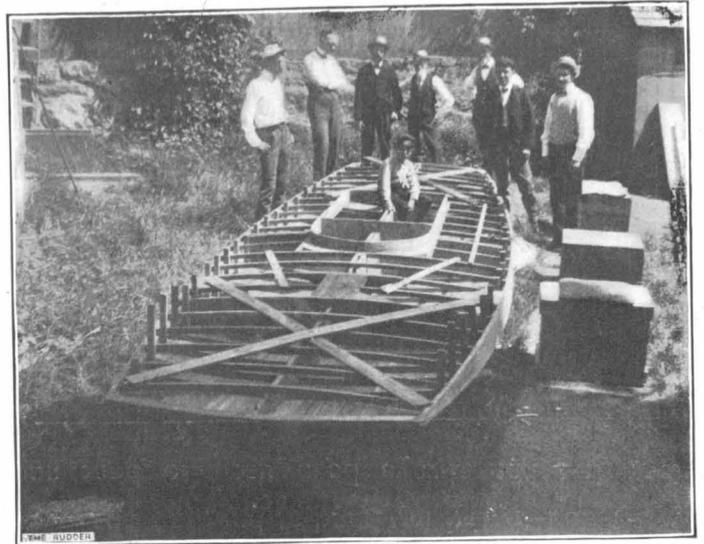
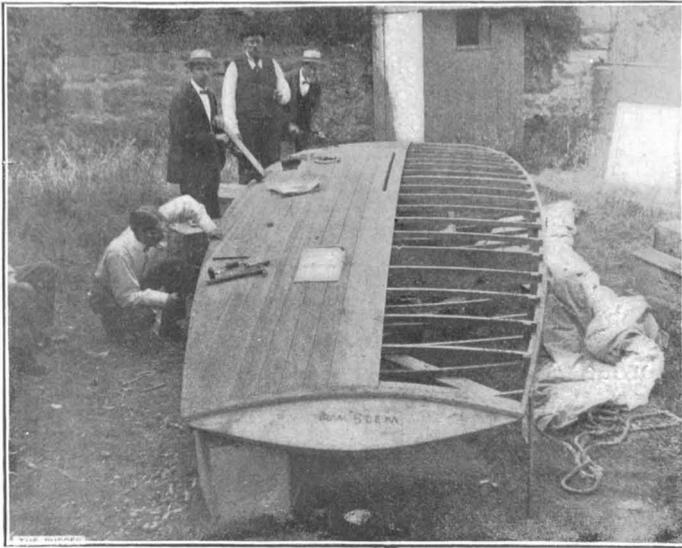
with the assistance of friends the boat was constructed in the yard of the pharmacy of Dr. C. E. Brayton, Main St., Stonington, Conn. The directions for building were followed closely, and the result was a staunch and strong hull, which has proved a wonder in the rough waters of Fisher Island Sound, where they roll in from the broad Atlantic.

While she was building men called to see the strange looking craft, for nothing of the kind had ever been seen in this section. The "old salts" shook their heads and predicted a failure. She was called a scow, a box, and other names too numerous to mention. A few, however, who had kept a close watch on the movements of other swallows through *THE RUDDER* expected great things.

The Squid was, on July 24th, taken on a large hay wagon from her building place to the shore and launched. A large crowd witnessed the ducking. The rigging was soon adjusted and a trial given her. She sailed well, but as she was alone the "salts" would not be convinced she could beat an ordinary boat of good sailing qualities. She was tuned up with about a dozen trials, in some of which she showed up well with some of the big catboats from Watch Hill.

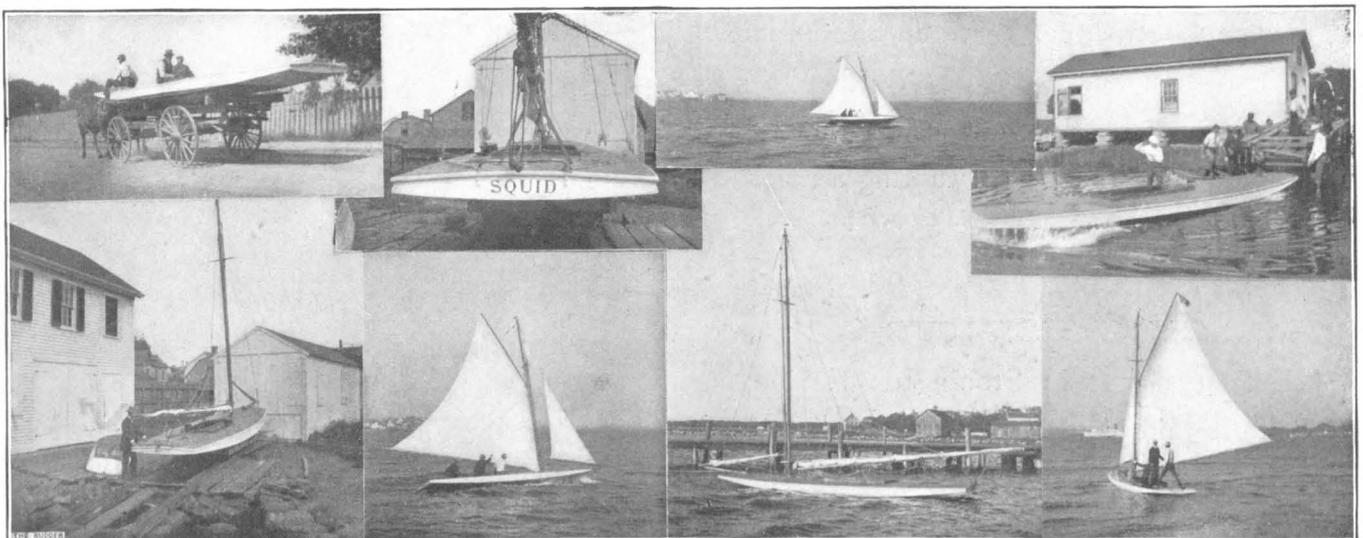
A chance for a race came. Mr. E. F. Darrell, of New York, offered a prize for a handicap race of boats owned at Stonington. The race was sailed on Sept. 3d, and the Swallow model came in a winner. She was tried on all points of sailing in this contest, and in the steady wind which blew proved more than a match for the twelve crafts that sailed with her. Captain Charles Shirley, of Stonington, handled her in a smart manner. A great crowd on the old harbor breakwater watched her movements with

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS



delight. The course was about 15 miles, and she covered it in 2:18:21. A second contest was held on Sept. 22d, and the Squid carried away her rudder in this race and had to withdraw. She was, however, well up at the head of the column of boats when disabled. In a heavy blow on Oct. 25th the Squid beat a remodeled Swanpscott Club Dory, owned by B. S. Cutler, of this place. The race was about eight and a half miles, and the Squid covered it in 58 minutes, beating the Mineola in, 9 minutes. On this occasion she was sailed by A. P. Loper. About a fourth of the course had to be sailed with an oar for steering apparatus, as a second time she carried away her rudder.

This boat has proved to be a wonder. She makes fast time and points high in a heavy wind, while in a light breeze she is sluggish and does not point well at all. This, we are inclined to think, is because her sail plan is too small. We hope there will be some suggestions in *THE RUDDER* in relation to this fault. There is lots of sport in a Swallow model, and they are easily built. The best of rigging, however, is needed in such a boat. The carrying away of the rudder is the only mishap that has taken place this season, and it failed both times when the boat had a free wind.



HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

SWALLOW IN THE SOUTH

IN reading your "Around the Clubhouse Fire" this morning I came across your statement that more than one thousand boats have been built from your designs, and it made me ashamed of myself for not writing you sooner about the Swallow I built in Savannah, Ga., last summer. She was a success in every way. In the two races she was in, last summer, I had the pleasure of showing them all the way home, with a margin to spare, and for taking a short spin in the afternoon she is just what a man wants.

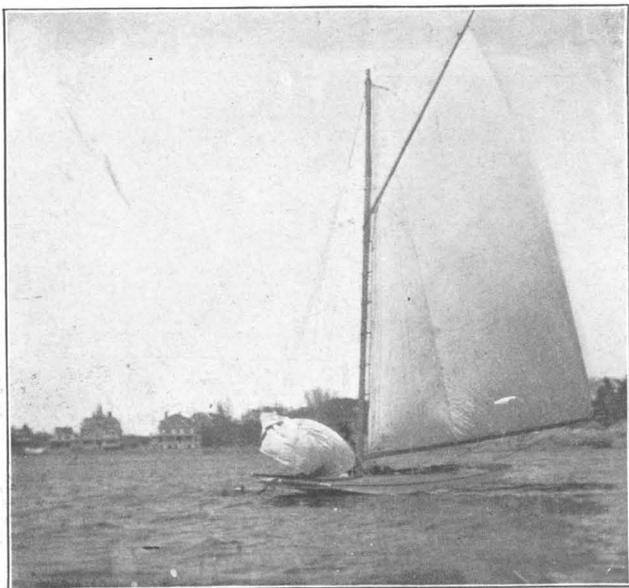
Macon, Ga.

HENRY L. BACKUS.

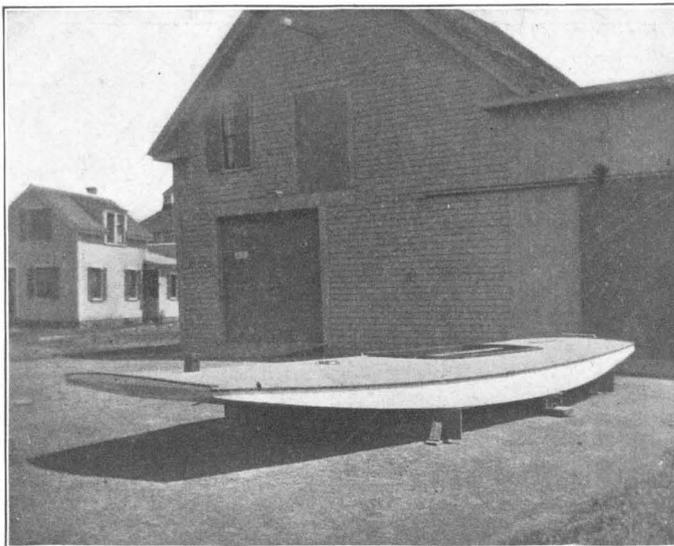


HOW I BUILT SWALLOW No. 3, MAPLE LEAF

I DO not know how to make a "story" of my first building venture, but I will try and tell all I can about it and give the different expenses and total cost. Finding I had from one to two hours a day spare time last winter, and being very much pleased with the design of Swallow, I decided to try my hand at building her. Although I had always been used to boat and



MAPLE LEAF

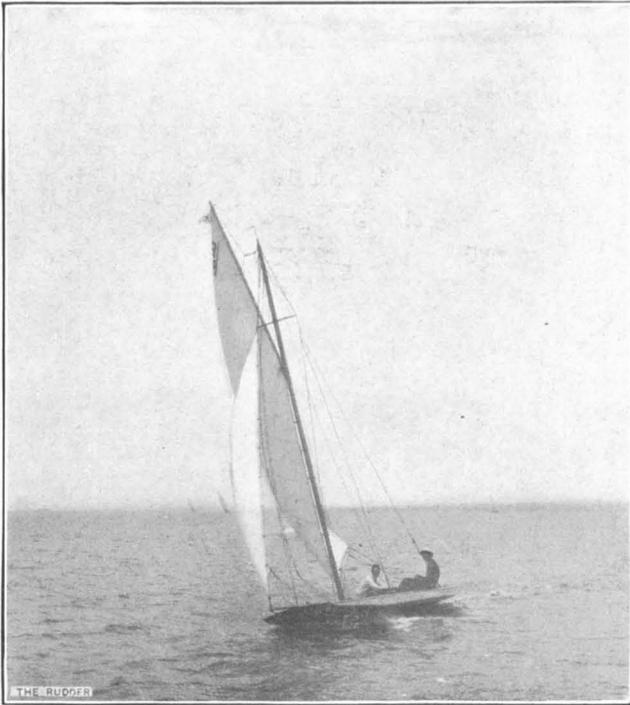


MAPLE LEAF

small yacht sailing, I had never tried to build one, and I don't know that I ever saw one built. However, I was willing to try, and I am pleased to state that I have succeeded.

I decided about February 1st to build, and I knew I would not have time to finish and fit her out for the first of the season if I did every bit of the heavy sawing, so I corresponded with Medart, St. Louis, Mo., who contracted to saw out the side pieces, frames, deck frames and backbone, and ship enough material to build a Swallow for the sum of \$50. The freight when landed amounted to \$8.75, and it took three weeks in passage. I was pleased with my bargain, and I found with a little fitting everything worked together quite as well as though I had had it sawed under my own inspection. I did every bit of the work myself, except for a few hours I had a small boy hold the iron when I nailed and riveted. I also hired out the calking, which cost me \$2. I made up all my spars, etc., according to THE RUDDER'S instructions, but had to make two masts and two gaffs before I was through on account of poor stock, with which I was not satisfied. This brought my total higher than I expected, as did also the making

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS



SORA, SWALLOW DESIGN

of two centerboards. I painted Maple Leaf a red-copper bottom, a white topsides, and a tan deck. My sails were purchased from John C. Hopkins & Co., are cross-cut, and set like a board. The rigging and fittings were purchased from Charles D. Durkee & Co., and cost, all told, \$24.

Below is a table of costs, which is higher than the plans call for, but they are the very best:

Boat building material.....	\$50.00
Freight and truckage	9.50
Paints and varnish.....	10.25
Calking.....	2.00
Sails and express charges	20.00
Rigging and fittings.....	24.00
Express charges.....	1.00
Extras	5.00
Fastenings.....	7.75

\$129.50

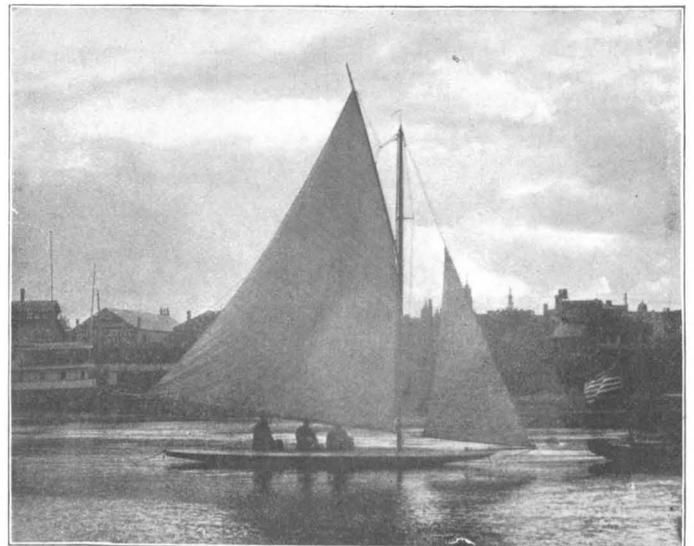
I was very much pleased when I launched my Swallow, on May 1st, and still more pleased to find she was very tight, leaking but very little for the first day or two after launching. Then, on Sunday morning, May 6th, I gave her a trial spin. It was blowing a very smart breeze, cold,

and a very heavy chop, but she behaved beautifully, being very stiff, and balancing so that a child could steer her. I found her awfully quick in stays, and I think she will prove remarkably fast when tuned up. Last Sunday, May 13th, I had another trial under very light conditions against three or four club dories, and I was surprised to find she held a much better course, and walked away from them quite easily. I am inclosing a couple of photographs, not very good, but still giving a good idea of what she looks like. One was taken the day before she was launched in front of the stable where she was built, and the other at her moorings with her sails loosened and up to dry. In conclusion, I can only say, I am more than satisfied, and feel sure I have a first-rate, up-to-date designed boat, and one that I hope will prove a winner. A. W. BOWER.



SWALLOW SORA

BEING somewhat handy with tools, both wood and metal-working, and of a mechanical turn of mind, I have for some time had a desire to try my hand at building a small racing boat, and determined to do so when I came across a design to my liking.



SWALLOW No. 17

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

With the Lark I was not impressed, so passed it by; but when the November, '99, *RUDDER* brought us the Swallow, her design and characteristics filled my eyes as being as nearly as possible what I had long waited for—a good, weathery little boat, not altogether uncomfortable for pleasure-sailing on the Sound, and whose very lines suggest the query, “What is there to prevent her going fast?”

At the outset I encountered a difficulty, the last I had anticipated, namely, to find full length plank for the sides and backbone, and soon realized that twenty-four foot cedar of the requisite shape, and eighteen-foot pine fifteen inches wide do not grow on every tree. Of course, scarfing the former and doubling the latter endwise were easily practicable, and would make a good job, but I had an ambition to use single planks, and to that end searched New York and Westchester County for a week. The quest seemed for a time almost hopeless, when by great good fortune I ran across just the stuff I wanted in two lumber yards at New Rochelle—old stock, forgotten even by the foremen, but on that very account the better for the purpose, being hard and thoroughly seasoned. One yard had thirteen cedar planks, twenty-four and twenty-five feet long, and out of two of which, by close figuring, I succeeded in getting the sides; the other eleven were cut into half-inch planking for the bottom. In the second yard I found the long, wide pine boards. As a happy consequence the sides and backbone of my boat are without scarf or seam, and the bottom planking would be free from butts, except the bad places in the boards compelled me to introduce three or four.

I followed Mr. Mower's design and plans

closely, and everything came out right to a hair. In the details of construction I departed in some instances, all for the purpose of obtaining greater strength, as I want the boat to last some years and not go to pieces in one season's hard racing, as I have seen many pounders do in these waters during the past year or two.

I found nothing difficult or perplexing to an amateur of ordinary cleverness, though the actual work was, perhaps, more laborious than I looked for, as there are 848 screws, by actual count, in the bottom, and nearly as many in the deck, and altogether over two thousand holes were bored, all (with the exception of those in the pine deck, which required only to be driven flush, as the deck is canvas-covered) countersunk and plugged or puttied. This will give the intending builder of the Swallow an idea what he will have to do; that is, if he builds as I have done.

Since writing the foregoing, which I commenced with the intention of competing for the *RUDDER* prize for the first Swallow built by an amateur, and photographed under sail, I raced Sora all last season in class R (18-foot R. M. sloops), Y. R. A. of Long Island Sound rules, and handily beat all boats in the class, her principal competitors being the Belmont, Dana and Iselin Herreshoff 15-foot water line knockabouts.

On the various points of sailing Sora ran as well as any of the flat boats of that type, and better than most; to windward she was very fast and pointed high, while in reaching (her best hold by far) she always beat the class above, and often showed her ability to stay with the 21-foot w. l. raceabouts of half her size again.

Sails, made by McClellan, Fall River, Mass., were admirable as to fit and draught and of ex-

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

cellent material, and the unusually low price charged compels this tribute to his skill, workmanship and methods of business.

I early found that the shallow wooden center-board, as designed by Mower, was insufficient except in the lightest breezes. The initial stability was quite considerable, but when the boat once "heeled" to any extent, with a crew of only two, as allowed by rule, there was nothing to keep her down. So I substituted a three-eighth inch galvanized steel plate of forty per cent. greater depth, and weighing 175 pounds, and that proved

pleasure sailing, until nearly December 1st, does not now.

New Rochelle, N. Y.

AMATEUR.



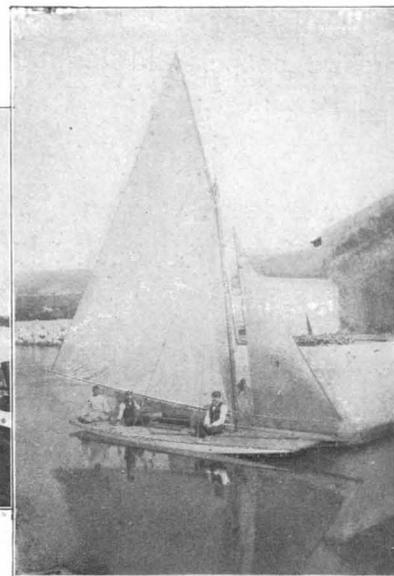
WE have had many good reports from the Swallows in last season's racing, and the latest comes from Fiume, Austria-Hungary, where four swallows and several larks have been built, and these have done so well that four more swallows are being built for next season. Two of the boats are shown in the cut—Spatz,



SPATZ



RACING FLEET



FORTELEONE

to be the one thing needful. Rigging was of the best and latest material, and most up-to-date character, consisting of phosphor-bronze turnbuckles, the new bronze yacht blocks, trim sail-fasteners, etc., all furnished (as well as the metal center-plate and rudder stock) by Durkee & Co., New York.

In conclusion, I may not without pardonable pride, I think, speak of the great strength of construction, the proof being that since launched, April 2d, 1900, Sora has not leaked one drop, and after a season's racing and almost constant

owned by Baron de Prenschen, which won all the first prizes at the Polo Regattas this year, and Forteleone, owned by Captain de Barry, which also did very well. It will be noticed that she has the regular English lug rig, which we do not believe so good as the regular jib and mainsail rig for this type of boat. In the center are some of the crack boats which the swallows have raced against. These boats are fin-keels, many of them being of English design and expensive construction, and it must have been rather disheartening to their owners to have a

HOW TO BUILD A RACER FOR ONE HUNDRED DOLLARS

craft of the swallow type beat them so badly on all points of sailing.

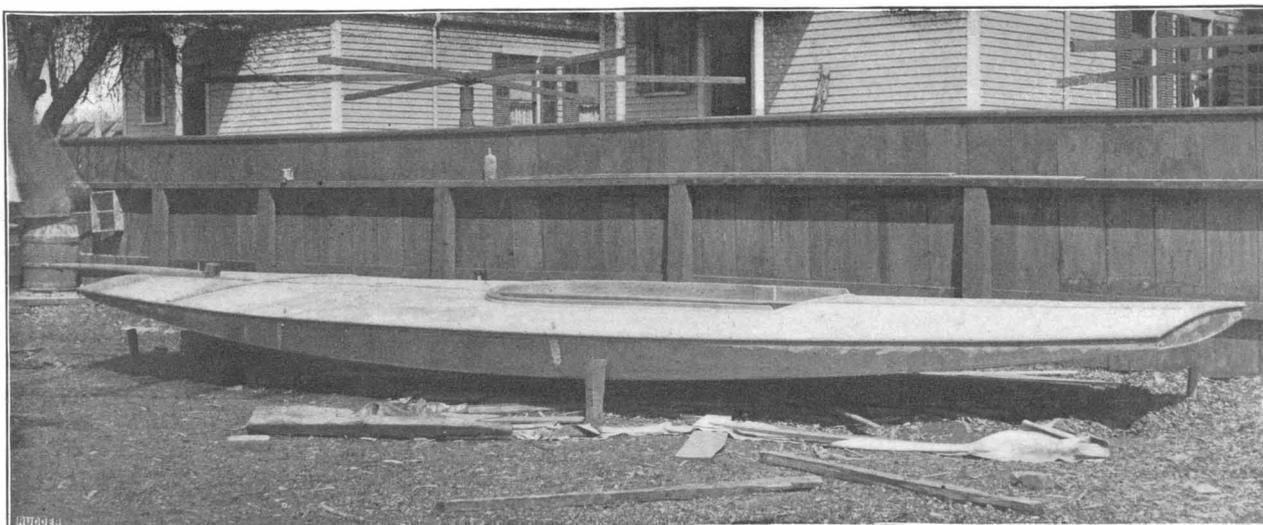


SWALLOW No. 17

ON this page is given a picture of a Swallow, built at Hartford, Conn., by Mr. J. H. Jones, who has had the boat under sail several times, and is very well satisfied with her performance. The only departure from the published plans was in the rudder, which was made of $\frac{3}{4}$ -inch steel and fitted so as to swing up, and thus go over shoal spots or rocks.

The utility of the scheme was shown on the trial trip when it struck a sunken log and swung up clear very nicely, whereas it would probably have broken off if it had been made rigid.

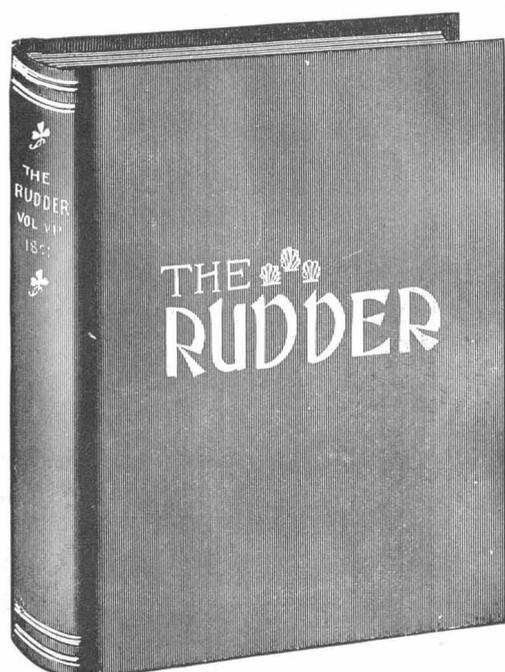
Some diagonal bracing was also put in the deck and bottom, which seemed to stiffen the hull very much. Altogether the material used including sails cost about eighty dollars, which is well within the estimated cost. The rig and fittings for the boat are very neatly made and show several original ideas of the owner.



SWALLOW No 17, BUILT BY J. H. JONES, HARTFORD, CONN.

Vol. XII, The Rudder

FOR THE YEAR 1901



FEATURES

It contains 482 pages
22 full-page supplements
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Over 100 designs and plans
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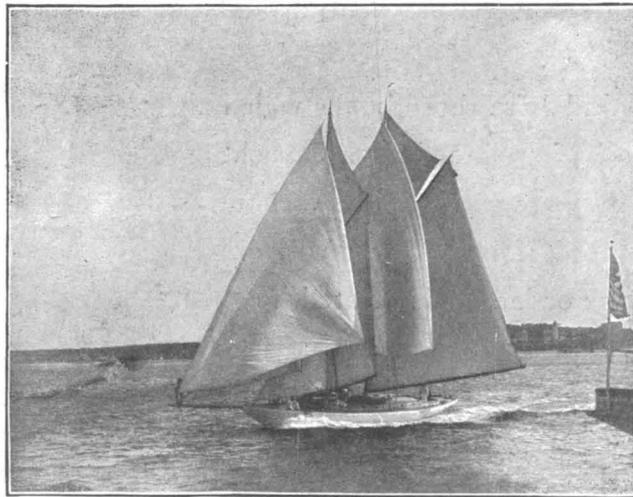
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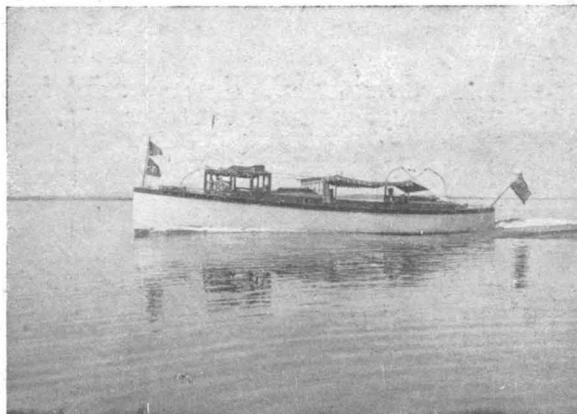
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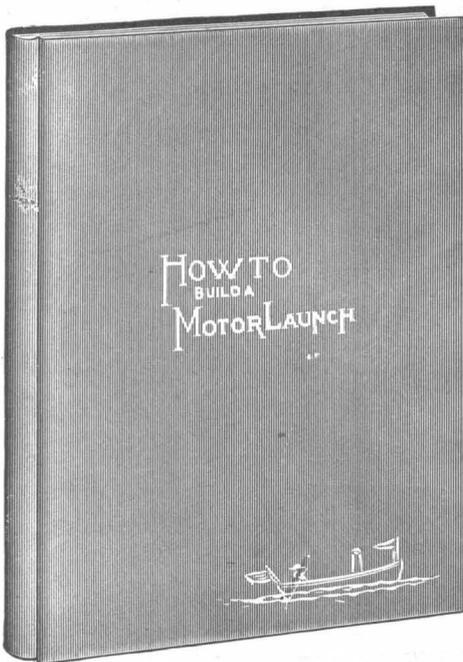


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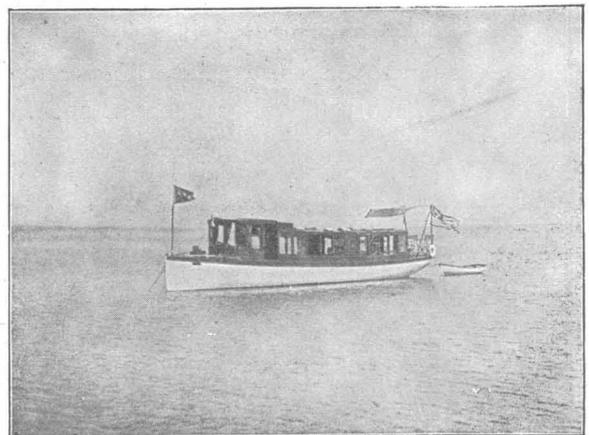
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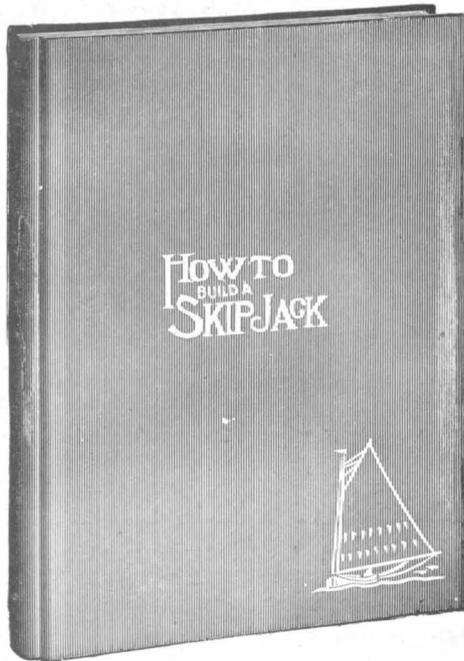


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