

The popularity of the original Snipe design, and the fact that hundreds of these little sailboats have been built and sailed, has led to the development of this practical sailing model. The original Snipe was not a model but a Marconi rigged knockabout 15'6" long adapted to one design racing. Snipe Junior is practically the same type hull modified to meet the needs of a good sailing model and so simplified that almost any boy or girl can make it successfully and for little or no money at all.

The original Snipe was equipped with a centerboard but practical experience has shown that a centerboard will not work successfully on a model of this type and so a fin keel with suitable lead weight has been added instead. The rig is somewhat higher than on Snipe and other minor changes have been made in the shape of the hull to make it a better sailing model.

The type of boat is known as vee bottom because, instead of having the usual rounded shape, the hull has a distinct knuckle that starts at the bow and runs clear through to the stern. This is called the chine and gives us a boat that is straight sided from the chine to the edge of the deck and from the chine down to the keel. If you will look at the sections of the model or of Snipe you will see that the bottom has a distinct vee to it and is therefore called a vee bottom.

The drawings explain practically everything necessary for the construction of this little model, which will be 20" long when you have it finished. Follow each operation by number, taking each one up in turn, and before long you will have some very definite results.

The mast and sail are of the most modern type and we would not advise changing them. The most important thing is to have a good suit of sails made of balloon silk or some similar light, strong material. When in place, these sails should fit just as perfectly as you can get them. Wrinkles are not tolerated in a racing sail as they seriously affect the efficiency of the sail and consequently the speed of the boat.

No rudder is incorporated in the design for the simple reason that it complicates things and is not absolutely necessary for successful

SNIFE JUNIOR A 20 IN. RACING MODEL DESIGNED ESPECIALLY FOR **THE RUDDER**

BY WILLIAM F. CROSBY

Reprinted from *The Model Yacht*
Newsletter of the
U.S. Vintage Model Yacht Group
www.usmyg.org

Editor's Foreword

William F. Crosby was the editor of *The Rudder* magazine and designer of the celebrated Snipe class of one design racing boats. In this 1932 article he gives detailed, step-by-step instructions for building and sailing a 20" LOA model of his most famous creation. We include Crosby's instructions (minus the dangerous advice about casting lead) for historical interest. The basic construction of carved bottom and sheet sides can be duplicated easily today with any soft wood for the bottom and model aircraft plywood for the sides. The original lead in the keel can be replaced with slabs of brass or well painted steel. This is a perfect class project for elementary students or as a "Grandparent's Boat."

sailing. If the boat is built exactly according to the plans with the sail and mast exactly as located and the keel in the proper place, you will find that Snipe Junior will sail back and forth across the lake in great shape without the necessity of carrying the drag of a rudder through the water. The only time that a model really needs a rudder is when it is running directly with the wind, and since a rudder for this work entails a very complicated steering apparatus on deck, it is believed that the model would be better without it. Absolutely no rudder is needed for all ordinary sailing.

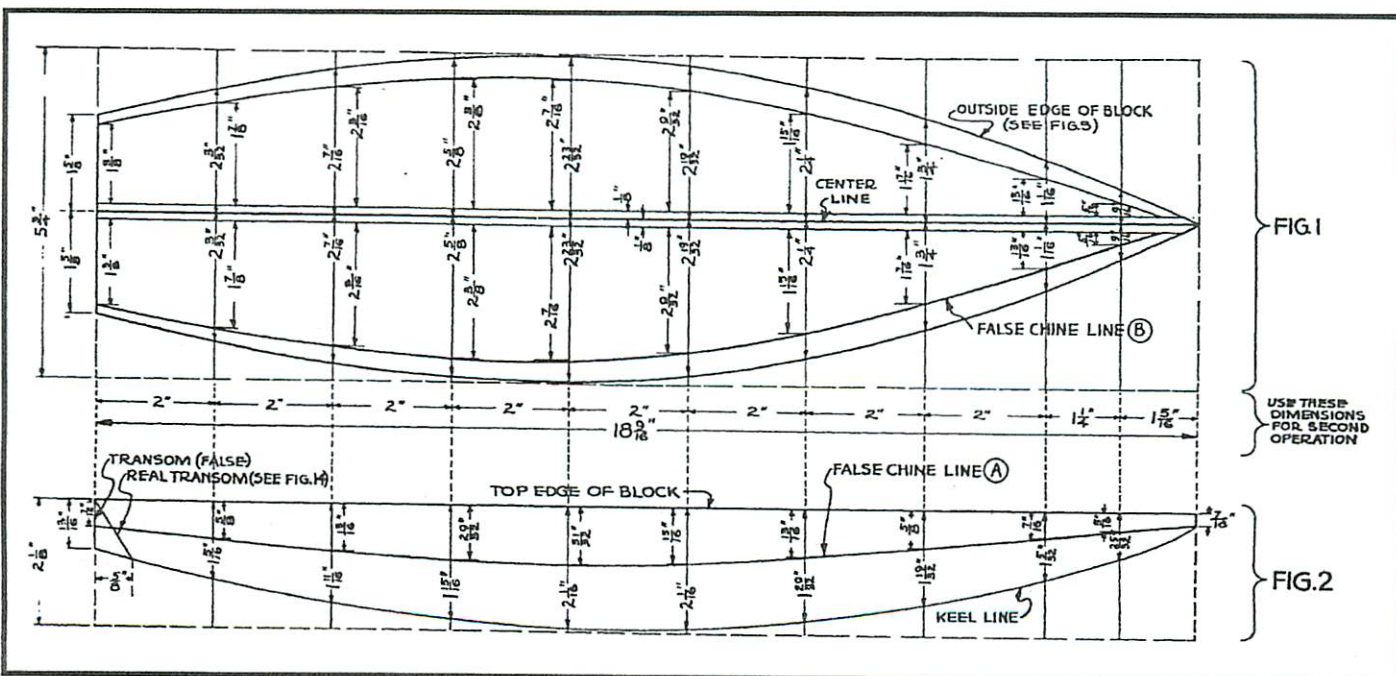
For the bottom part of the hull, which is made from a solid block, the best thing to have would be a nice block of what is known as pattern maker's kiln dried white pine. This is splendid material to work with because it is soft and will work nicely and will finish off as smooth as anyone could wish. The side pieces may also be made of the same material as well as bulkheads, stem piece and stern. The deck may be made from the same kind of wood or anything else that you happen to have handy. Sometimes it is possible to get large pieces of cigar box wood (Spanish cedar) and, if you can get this, the sides and deck will be very pretty when finished off with a little varnish. A thin piece of Philippine mahogany will also do very well and it is not as expensive as you might think. Some kinds of plywood are also suitable.

In putting on the thin side pieces, securely fasten them to the stem piece first, using $\frac{3}{4}$ " #0 flathead screws and then bend them in place slowly, fastening along the chine and to the bulkheads as you go. In order not to change the shape in any way it might be wise to work on both side pieces at the same time. The material should not be over $\frac{1}{8}$ " thick or there may be difficulty in bending it around. Soaking a piece of wood in water for several hours will make it somewhat softer and more pliable and may help you a lot.

The fin keel may be made from a piece of 16 gauge sheet brass or iron, cut to the shape as shown.

The entire hull must be sandpapered off carefully until you have an absolutely smooth surface. The nail heads ($\frac{1}{4}$ " brads) for fastening the side planks in place may be countersunk a trifle and the heads covered over with putty, Plastic Wood or some similar composition. Take particular care where the edge of the deck comes over the side planks. If the boat leaks here when heeled over under sail pressure she will surely fill in time and possibly sink in the middle of the lake. Smear Ambroid or some similar material along the edge before the deck is fastened down so that the joint will be absolutely watertight.

As an alternative for the brad fastenings, you might use $\frac{1}{4}$ " #0 brass flat head

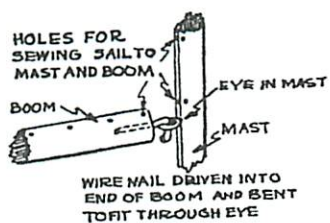
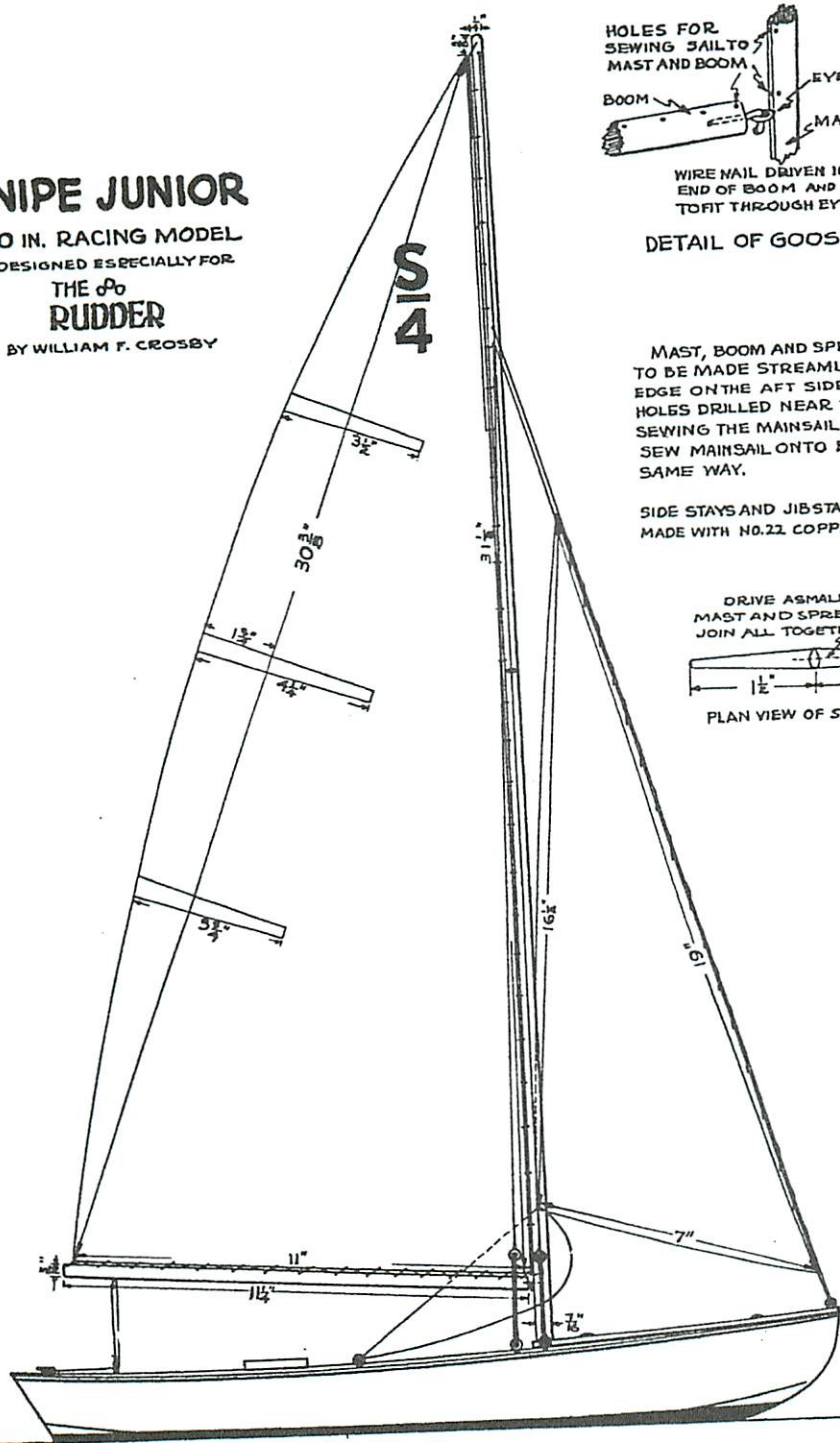


SHIPE JUNIOR

A 20 IN. RACING MODEL
DESIGNED ESPECIALLY FOR

THE  **RUDDER**

BY WILLIAM F. CROSBY

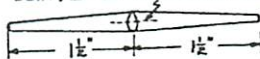


DETAIL OF GOOSENECK

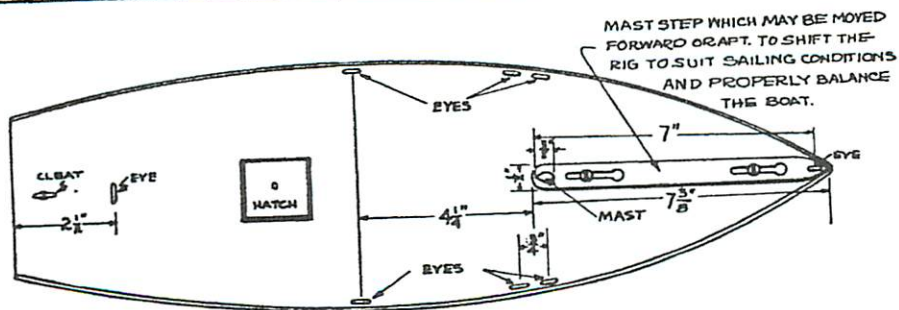
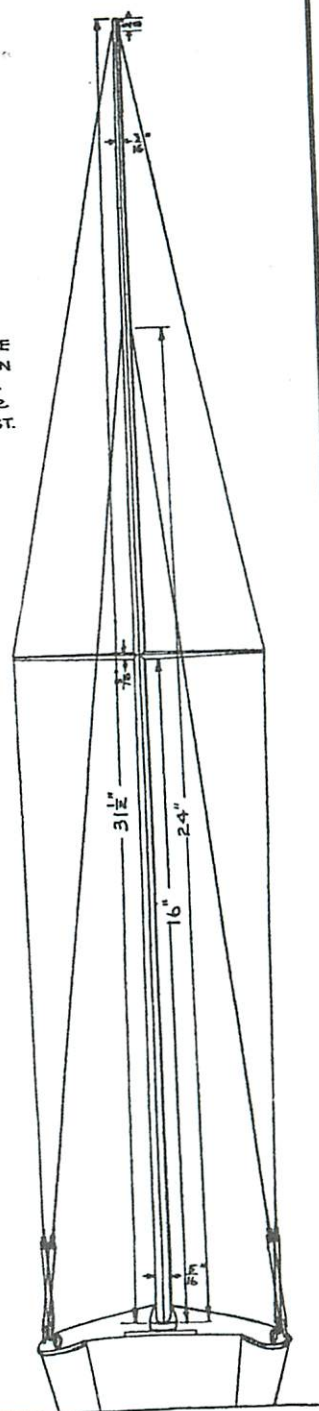
MAST, BOOM AND SPREADERS ARE TO BE MADE STREAMLINED, THE THIN EDGE ON THE AFT SIDE WITH SMALL HOLES DRILLED NEAR THE EDGE FOR SEWING THE MAINSAIL ONTO THE MAST. SEW MAINSAIL ONTO BOOM IN THE SAME WAY.

SIDE STAYS AND JIB STAY MAY BE MADE WITH NO. 22 COPPER WIRE

DRIVE A SMALL PIN THROUGH MAST AND SPREADERS AND JOIN ALL TOGETHER WITH GLUE



PLAN VIEW OF SPREADERS



MAST STEP WHICH MAY BE MOVED FORWARD OR AFT. TO SHIFT THE RIG TO SUIT SAILING CONDITIONS AND PROPERLY BALANCE THE BOAT.

screws which will make a very pretty job that may be varnished when complete. The hull, when sanded down perfectly smooth, may be painted in any way you wish. Some of the lacquers used for touching up automobiles are very good as they will lie smoothly on the wood, and if a couple of coats are given, with a light sandpapering between the first and second coats, you will have a real "racing finish." The deck may be sandpapered and coated with a light coat of good varnish. Don't make the mistake of putting on thick coats of paint. It is far better to use two or three thin coats rather than one heavy coat as the paint will not crawl but will finish off much smoother.

The stays from the mast to the deck are made of #22 copper wire which is passed around small screw eyes in the deck at the spots where they are supposed to come down. The jib is sewed directly to the jib stay. For

the sheets from the point of the jib to deck and from the end of the boom to deck use light linen thread. Don't use heavy, clumsy cord for this.

In sailing the model, remember that she will do her best when going across the wind. By this it is meant that if the wind is from the south, your model will sail best from east to west or from west to east. In sailing on large bodies of open water the model should be tended with a rowboat or you can attach a light cord to the bow, permit her to sail out to sea across the wind and then, by pulling gently on the cord, she may be turned about and will sail back to you. Of course, you must take in the light cord slowly so it will not retard her speed too much. Don't try to sail in too much wind. The best breeze is one that just barely ripples the surface of the water. Heavy breezes cause a model to lie way over on its side and will sometimes cause it to turn

around and start back to the place from which it was started.

After sailing the model a few times, you will discover by experiment just where the mast step should be to have her sail properly. One of the chief faults of most model sailers is to have the sails, and particularly the jib, too tightly pulled in or trimmed. Allow a little slack in the cord that holds the jib in place so that the jib can flow off in a nice curve and so that it draws properly. The end of the jib where the sheet is tied should be almost out to the side of the model. The same thing applies to the mainsail and where it is fastened. It should be allowed to swing out a little so that the boom is about over the edge of the deck. If pulled in too tightly she will not sail properly and if too slack or too far out the model may tend to get out in the middle of the lake and sail around in a circle where you may wait on shore for hours for her to come back.

There are many ways to race model yachts and some of the large model yacht associations have worked out complicated courses and systems of point scoring. Probably the easiest and simplest way to race such models as Snipe Junior would be to select some small body of water or lake where the models could be sailed directly across wind from one side to the other. The start could be made on one side by one boy while another waited across the lake to turn the model around when she

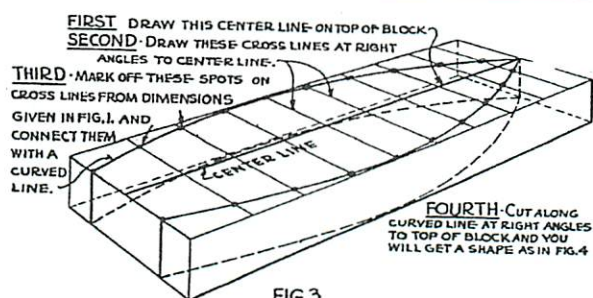


FIG. 3

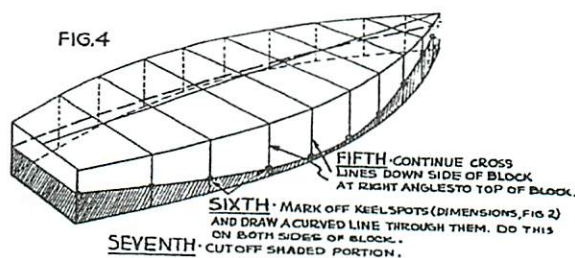


FIG. 4

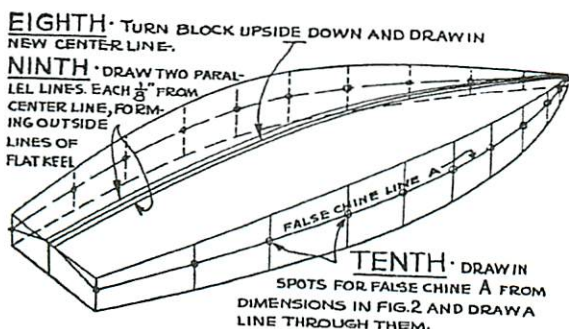


FIG. 5

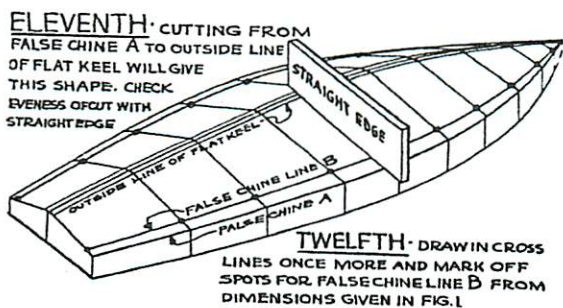


FIG. 6

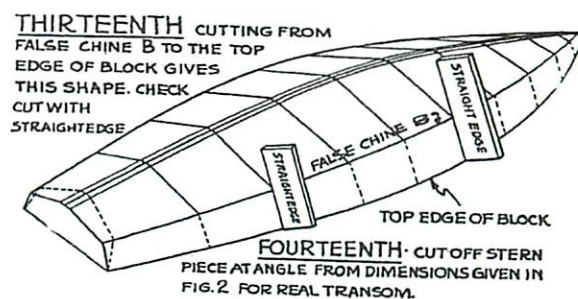


FIG. 7

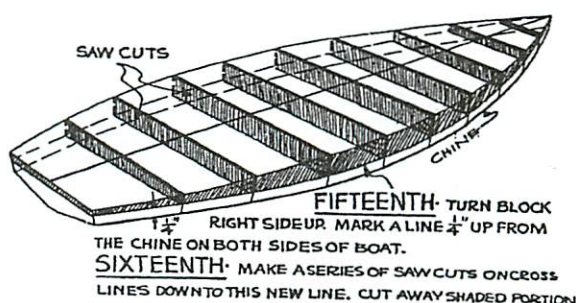


FIG. 8

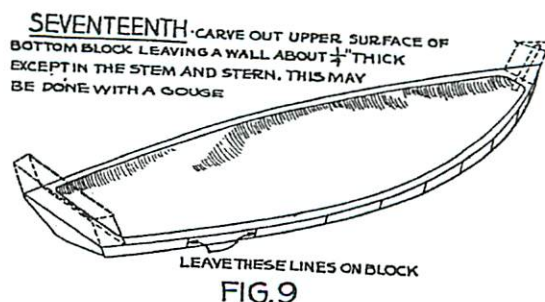


FIG. 9

reached there and so back to the start. At the start all models would be lined up and held by their sterns and, at the signal, released with a gentle push. Don't push them too hard as they will not carry their momentum and may possibly turn right around and come back to you.

The best model racers do not push their models at all but permit the wind to take the boats out of their hands when the starting signal is given. A race may be just once across the lake, it may be over and back or it may include several round trips according to the time available. In turning the boats around to return on their next laps, do not take them from the water. Simply use a short piece of wood to turn the bow so that it is facing the other way. Never push the model when doing this, as it is against all racing rules.

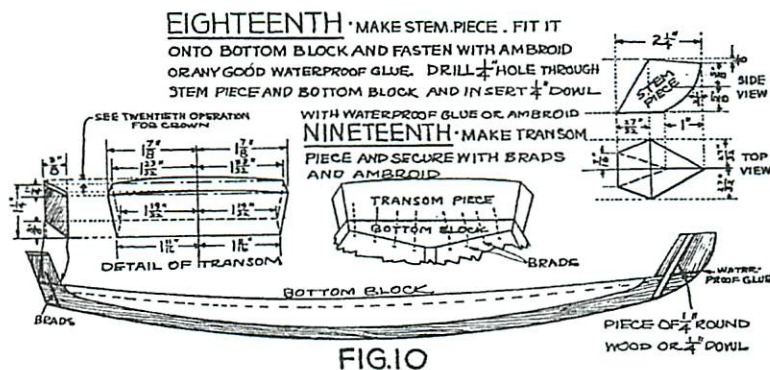
If you have your model properly built and properly balanced so that it will sail correctly, she will sail back and forth across the lake with the minimum amount of attention and, as a consequence, will have a splendid chance of winning races. This process of balancing is one that takes time, and while the drawings show the boat very carefully balanced, there may be minor changes in your boat that may necessitate some rebalancing before she sails correctly. The process is one that takes time and patience and if your model does not sail properly the first dozen or so times, it is up to you to experiment with the location of the mast step and the trim of the sails to see that an improvement is made. It is not an easy job to have a small model balance perfectly but it can be done and when accomplished the results are well worthwhile. A perfectly balanced model will win races.

Possibly you may not understand what is meant by balance, and in order to make it clearer we will briefly outline what it means. The pressure on the sails caused by the wind would cause the model to go sideways faster than she would go ahead were it not for the keel down underneath the water. This keel serves two purposes; the lead weight serves to hold the model upright and prevent capsizing, and the area of the metal causes a back pressure against the water when the pressure is applied to the sails, thus preventing the boat from sailing sideways.

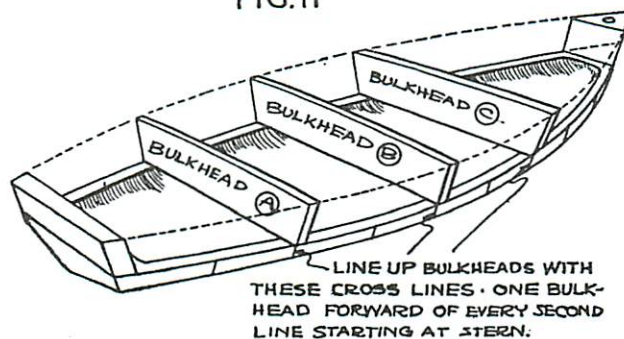
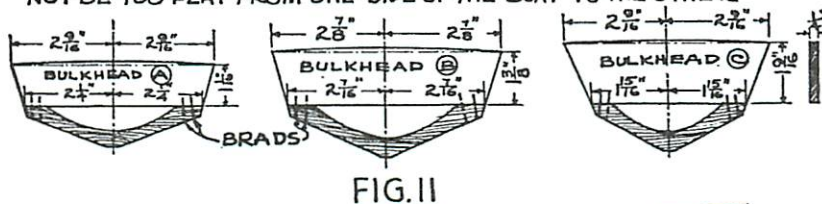
There is a very definite relation between the amount of pressure on the sails and the amount of pressure on the side of the keel and the sails' center of pressure is called the center of effort. The center of pressure on the keel is called the center of lateral plane and in a successful sailboat the designer has worked out by mathematics the locations of both centers and so placed the mast and keel that the center of effort comes in a certain relation to the center of lateral plane.

If the center of effort is too far ahead of the center of lateral plane, the boat's bow will tend to fall off or be pushed away from the direction of the wind, eventually causing the boat to turn around and start off in the other direction. If the center of effort is too far toward the stern, the boat will swing her bow up so that it faces into the wind eventually will swing over on the other tack and head back where she came from.

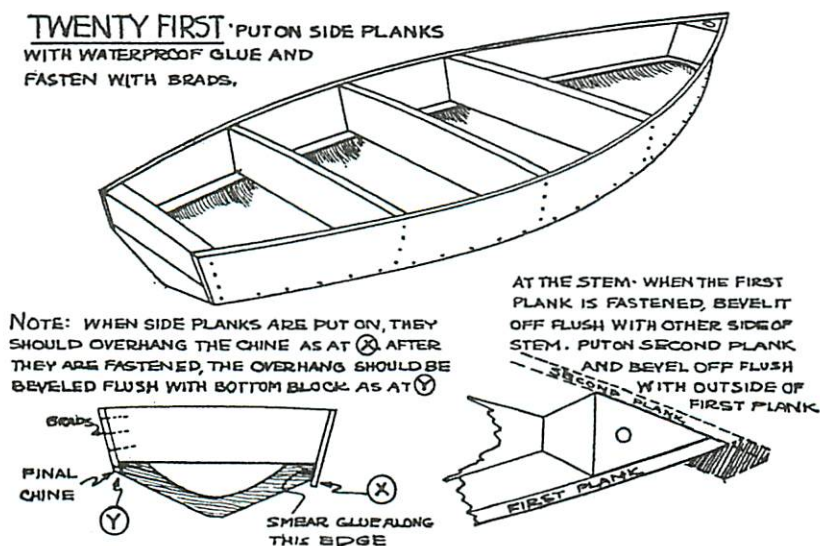
By moving the keel of Snipe Junior forward or aft a little it is possible to bring the center of lateral plane into different relation to the center of effort and, with care and a little head work, you can get the balance so fine that the model will sail a straight, true course clear across the lake and back. Naturally, a



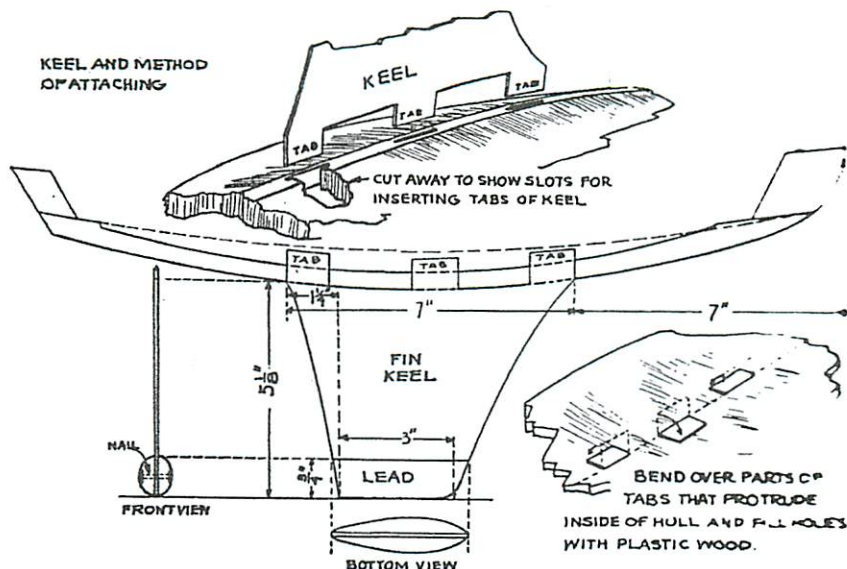
TWENTIETH MAKE THREE BULKHEADS AND FASTEN TO BOTTOM BLOCK WITH BRADS. BULKHEADS SHOULD HAVE A SLIGHT CROWN OR ROUNDED EFFECT ON TOP SO THAT THE DECK, WHEN LAID ON TOP OF THEM WILL NOT BE TOO FLAT FROM ONE SIDE OF THE BOAT TO THE OTHER.



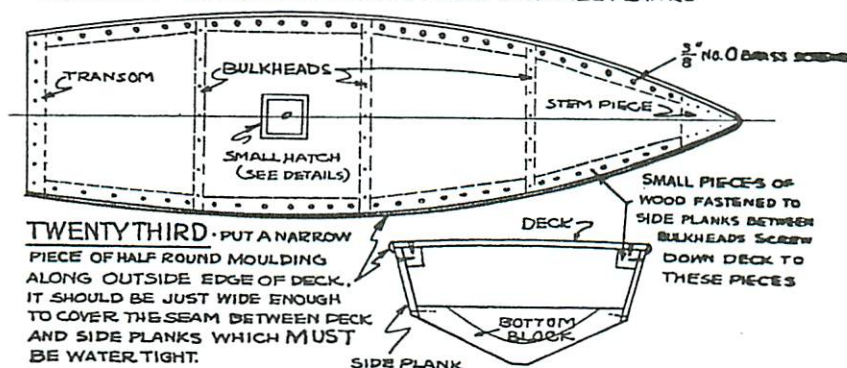
TWENTY FIRST PUT ON SIDE PLANKS WITH WATERPROOF GLUE AND FASTEN WITH BRADS.



KEEL AND METHOD OF ATTACHING

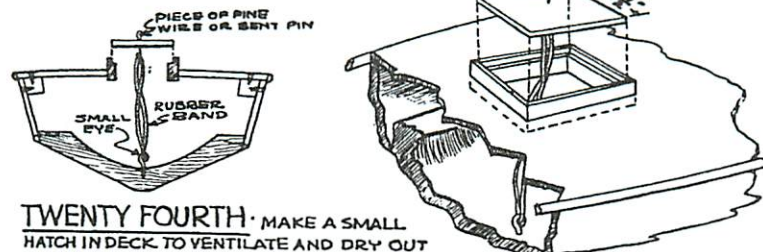


TWENTY SECOND - FIT THE DECK INTO PLACE AND FASTEN WITH BRADS DRIVEN INTO THE BULKHEADS, STEM AND TRANSOM. A COATING OF AMBROID SHOULD BE APPLIED TO TOP EDGES OF SIDES BEFORE FASTENING. TRIM EDGES OF DECK FLUSH WITH SIDE PLANKS



TWENTYTHIRD - PUT A NARROW PIECE OF HALF ROUND MOULDING ALONG OUTSIDE EDGE OF DECK. IT SHOULD BE JUST WIDE ENOUGH TO COVER THE SEAM BETWEEN DECK AND SIDE PLANKS WHICH MUST BE WATER TIGHT.

FIG.14



TWENTY FOURTH - MAKE A SMALL HATCH IN DECK TO VENTILATE AND DRY OUT INSIDE OF HULL AFTER RACING. MAY BE MADE FROM MATERIAL ABOUT $\frac{1}{8}$ " THICK. PUT A PIECE OF WIRE OR A BENT PIN THROUGH COVER AND CONNECT TO A SMALL EYE IN BOTTOM BLOCK WITH RUBBER BAND TO HOLD COVER DOWN TIGHT. HATCH MUST BE WATER TIGHT WHERE IT GOES THROUGH DECK.

FIG.15



model that sails the straightest course and does not go off on another tack every once in a while is going to be the model that will win all the races and careful balancing is well worthwhile.

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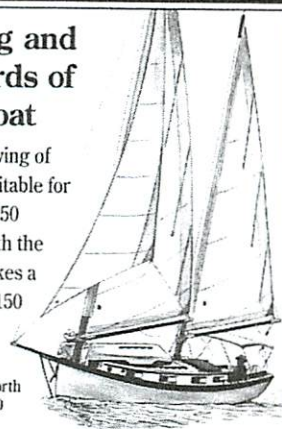
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