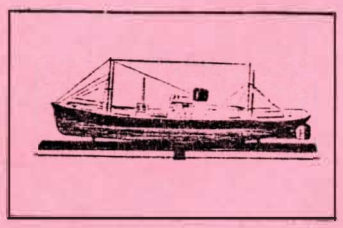
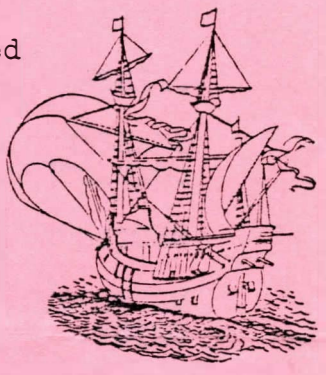
San Diego Ship Modelers Guild

Volume II NEWSLETTER -- February 1978 Number 2



"Wouldst thou, - so the helmsman answered
Learn the secret of the sea?
Only those who brave its dangers
Comprehend its mystery!"

.....Longfellow



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NOTES from the Last Meeting:

Since it was election time, the meeting was opened by Bill BENSON who asked for nominations for Captain (President.) Following the nomination of Doug MCFARLAND, it was moved that nominations be closed. Doug was voted in by what appeared to be a unaminous vote. Doug accepted the job enthusiastically but stated he thought we were a model ship club, not a "railroad" organization. It was then suggested that Bill replace Doug on the Steering Committee and Bill agreed to do this. Fred FRAAS and Bob BECKER were reelected to their posts as Logkeeper/Editor and Purser, respectively. (It appeared no one else wanted these jobs anyway.)

The subject of dues for 1978 was then discussed. A $12.00 per year fee appeared to reasonable, however Bill BENSON pointed out that he thought this to be a bit high in view of our encouragement to have all members also belong to the Maritime Museum Association. (An additional $12 per year minimum.) A compromise was then suggested which would limit dues to $6 for museum members and $12 per year for all non-members of the association. This won unaminous approval.

Among other business items discussed were the possibility of having a guest "speaker" each meeting, a club directory, newsletter costs, where to sell models and how to buy finished model cases. Our meeting room aboard BERKELEY is now essentially complete lacking only the glass which will enclose the model dislays around the outboard bulkheads. If you've missed the last few meeting, you'll be impressed by the quality of workmanship and effort that has gone into this area. Truly superb! Bill BENSON also announced that he was now the "Curator" for the museums' models and that his workshop/office would be open shortly. Additionally, he suggested that he hoped to have volunteers to help man the workshop in the future which would serve as sort of a ship model clinic. (It would be a very nice place to work on your models.) Thirty-eight attended this meeting including eight wives.

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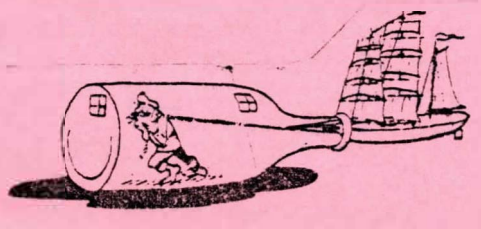

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SAN DIEGO SHIP MODELERS GUILD

Elected Officers

CAPTAIN: Doug McFarland /redacted/

LOGKEEPER/
EDITOR: Fred Fraas /redacted/

PURSER: Bob Becker /redacted/

STEERING
COMMITTEE: Bill Benson - Vic Crosby - Al Lheureux
MEETINGS: 3rd Friday of each month aboard the BERKELEY

MEMBERSHIP
DUES: $ 6.00 per year for members of the Maritime Museum of San Diego; $12.00 for all non-members.

Founded in 1971 by the late Russ Merrill and Bob Wright.

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MODELS DISPLAYED:

1. Bob BECKER - Lil Wonder II - Scratch; plank on frame
2. Bill BENSON - Hanalei (Cal '40') - Fiberglass hull with 24 carat gold & silver fittings
3. Bill BROWN - Chabeck - Scratch, plank on frame
   "Pepsi" - " " " "
4. Bob CRAWFORD - Star of India - Scratch (miniature)
5. Gordon JONES - "Abner Coburn" - Restoration of fully rigged "downeaster."
6. Dick LITTLE - Sultana - Kit
7. Doug McFARLAND - Norske Love - Plank on frame
   Chris Craft 63' - Motor yacht to be R/C elect.
8. Royce PRIVETT - Constitution - Kit (Bluejacket)
9. John SANDS - Steam cutter launch - Scratch, plank on frame in 1/8" scale
10. Don WESLEY - Dapper Tom - Kit
    Kate Cory - "

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MEMBERSHIP APPLICATIONS and INTEREST SURVEY:

A half page membership application has been inserted in this months' newsletter to update the mailing roster and determine composite interests. Please fill it out with your complete mailing address etc. The information you list will be used for our club directory which will (hopefully) enable you to find members with mutual interests. It will also help the Steering Committee to determine subjects of interest to the majority for future meeting topics, newsletter items etc. (i.e. if no one is interested in Phoenician galleys or battleships of the Imperial Russian Navy we'll get on to other things. If you have reasonable expertise in any area of modelling, please say so and don't be modest. Bring the form to the next meeting or better, mail it with a check to: BOB BECKER - 1802 S.Sante Fe - Vista, CA. 92283

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CALIFORNIA WHALE WATCH ~~CRUISE~~ DROWNING: (submitted by Doug McFarland)

It was a great day if you were a whale. The trouble is most of us aren't. However, 49 brave souls took a chance that the weather would hold and boarded the barkentine CALIFORNIA for our first and possibly last whale watch cruise.

The day before had been beautiful and the weatherman had promised only a 50% chance of occasional showers for Saturday afternoon. Well, he was right. What he didn't tell us was that there would be a 100% chance of a ~~drenching downpour~~ that would last all afternoon. Thank goodness the bar was open and the coffee was hot.

Naturally the whales had sense enough to stay in out of the rain so nary a plume was sighted. (For you non-whale watchers, a plume is when a whale comes up and blows its nose.) When it was evident that the weather wasn't going to break for us we turned about and headed for port. By the time we reached the dock everyone was pretty well soaked to the skin but spirits were high and I take my hat off to you all for that! In fact, when I did take off my hat I swear a fish swam down the back of my neck.

Although disappointing, I feel that not all was lost on the trip. For a couple of hours I was swept back through time to an era when clouds of sail ruled the horizon. I was one among the men of the sea, feeling the cold splash of rain on my face, tasting the salt spray as it crashed over the bow, feeling the surge of the deck under my feet as we raced down the face of a following sea, the welcome calm of the harbor as we entered the lee of Point Loma and finally the cozy warmth of home and a pair of sympathetic waiting arms. Disappointing? Yes. But rewarding? Definitely!

As luck would have it, the following Saturday was gorgeous. My wife and I took some visiting friends to Point Loma where we spotted four whales from the windward lookout. And as if that weren't enough, we then went to Sunset Cliffs and saw three more. Oh well.....

Will there be another cruise? I hope so; that will depend on you. But if we do and there is so much as one single little cloud in the sky.....

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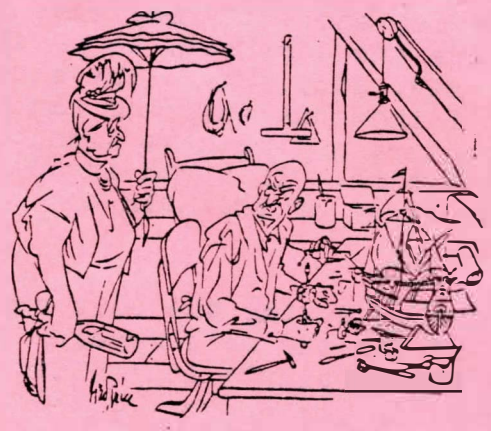

"Stop hanging around! When it's ready to be christened I'll tell you."

EDITORS' NOTE:

Doug McFARLAND has made numerous contributions to past newsletters and his efforts are sincerely appreciated. Joining the ranks of "contributing editors" now is Don WESLEY (he's the second) and think you will find his article on model sail making interesting and informative. Articles such as Dons' are exactly what the newsletter is supposed to be all about and perhaps we're finally getting off the ground floor in this respect. At the risk of being redundant, you needn't be a professional journalist to write an article on ship modelling for your fellow club members. Just jot it down and send it in. Let's get a forum going!

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STATIC MODEL SAILS: (submitted by Don WESLEY)

Several people have asked me how I make sails. I've tried two suits which hardly qualifies me as an expert and the method is basically described in Model Shipways' Catalog, so there is little which is original. Never-the-less, the procedure goes as follows:

The material is called "Balloon Cloth" and is a fine weave cotton. It is available from both Model Shipways and Bluejacket and is carried locally by the Gray Whale. First trace the patterns on paper including the panel seams (normally 2 foot wide canvas panels to whatever scale you are working), the reef bands, etc. I have experienced some shrinkage (of the order of 1/8" in approximately 6") after lacquering, so you may want to consider making some of the larger sails slightly oversize. Also, the shrinkage tends to be somewhat nonuniform in that the edges tend to shrink slightly less than the remainder of the sail, thus producing a slightly distorted shape with angles becoming slightly more acute after lacquering. At any rate, hold up the paper patterns to the yards, etc., to make sure they fit before you put in a lot of time and effort.

Before doing anything with the cloth, it should be washed in case it shrinks. The sail outlines, panel seams, reef bands, etc., are then traced lightly with pencil onto the cloth. About the only thing to watch out for here is to make sure the cloth is flat and not skewed at the time of tracing. The panel stitching is then sewn on (by my wife) using a sewing machine with as fine a stitch as possible and the ends are tied off to prevent unravelling at the edge. She uses an off-color white (tan or cream) for a little more contrast but this is certainly individual preference. At this point, we throw it back in the washing machine to take out any pencil marks which remain.

Next cut out the sails leaving approximately 1/16 to 3/32" edge allowance beyond the finished size. Rather than try to fold this edge over and sew it (which is a pain and also results in puckering, etc., of the edge), she uses an iron-on mending tape which is available in sewing stores. The brand name we use is "The Original 100% Polyamide Fusible Web Fabric Joiner." It looks like white tissue paper. Simply cut strips of the desired edge width, fold the edge over with the mending tape sandwiched in, and run an iron over it. It leaves a nice clean edge with no loose threads to unravel.

For edges which are unsupported by yards, etc., you may want to consider adding a piece of piano wire inside the edge seam to provide some stiffening; particularly for the courses, etc., where the sheets and fore tacks pull the corners of the sail into the ship and can cause the sail to buckle. If the sails you are making have iron clews, they can be shaped on the ends of the piano wire. If I had it to do over, I would use wire in the free (leech) edges of the main and fore sails of the schooner rigs also.

The most tedious part of the operation is sewing the bolt ropes to the sail edges. I use linen rigging line for the bolt ropes. It is sewn on with a very fine (bead) needle with a simple loop stitch about every 1/32". I have tried using both very fine (6-0 to 8-0) silk thread which works well and also limp monofilament nylon. The nylon shows up better since it has a slight tan tint.

After the bolt ropes have been completed, the sails are painted with clear lacquer. I have tried both thinned and unthinned with virtually identical results. I brush the lacquer but I suspect spraying would be better. I added a very little tan color to give a little new canvas effect but it's not enough that it's noticeable. The sails can be hung up to dry or placed on wax paper, foil, etc., which will not adhere to the cloth.

After the sails are dry, they are ironed with a low heat iron. It's possible to scorch them if the heat setting is too high. The sails will have a tendency to curl as the edge of the iron moves over the sail, so you should have in mind which way the sail will billow before ironing. While the sail is still warm it can be further shaped. I put an excessive amount of curl in mine since they tend to flatten as the tension in the sheets, etc., is increased.

Next the reef lines are attached. I simply tie an overhand knot in the line, put a small amount of glue at the knot, and pull it through until the knot is snug (again with a bead needle.) I leave both ends a little long and then trim all the reef lines to a uniform length after they have been installed. The sails are then attached to the yards, and blocks for clew lines, sheets, etc., are attached as much as possible before the yards are attached to the masts.

A final note on furled sails: These should not be lacquered, which should be kept in mind if you want to add any color to the lacquer and also want to keep all sails a uniform color. Also, I found a problem with the edges of reefed sails looking bulky, which may mean the Balloon Cloth is not to scale as far as thickness. You may want to consider cheating a little and foreshortening the sail to overcome this. .....Good Luck!

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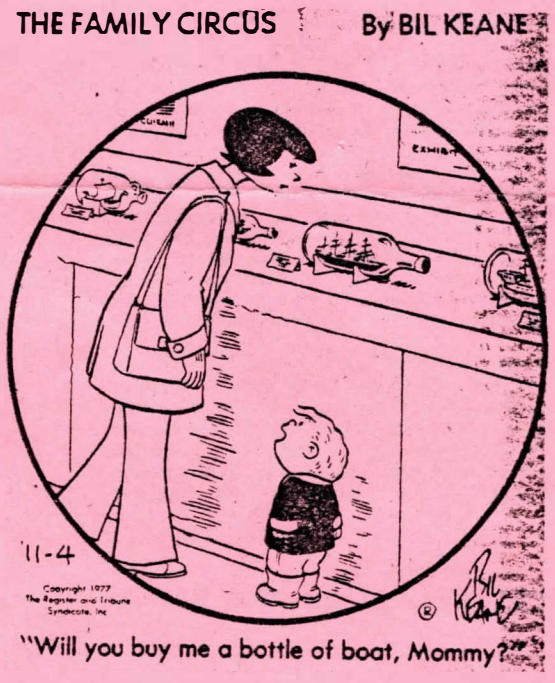


from: "Model Boats"

Thoughts on Lines

J. W. Holness explains the purpose and construction of a "lines drawing", still a mystery to many modellers

THE shape of ships and the reasons for that shape are fascinating studies that have intrigued men for centuries. The object of this article is to explain how that shape is represented, i.e. the Lines Plan, to say a little about the reasons and to describe the drawing of a Lines Plan. It is hoped to do this in enough detail for the average ship-modeller, though a book is required to explore the subject in any depth.

A simple Lines Plan for a motor fishing vessel (M.F.V) type is shown in Fig. 1. It will be noticed that is consists of three views of the boat. This is because measurements from three fixed planes are needed to define a point on the surface of a three dimensional solid. The three views are known as Profile, Halfbreadth and Body Plans. The profile shows the appearance of the boat from the side and also the shapes obtained by slicing the hull lengthways and parallel to the centreline plane. These lines are known as buttocks but, correctly speaking, they are buttocks in the afterbody and bowlines in the forebody. They appear as the straight lines B_1, B_2, B_3 on the Halfbreadth and Body Plans. Similarly, the shapes obtained by slicing the hull lengthways and parallel to the datum water line are shown on the Halfbreadth Plan together with the outline of the deck or sheer as viewed from above. These lines are known as level lines above the datum waterline and waterlines below it. Only one side of the hull is shown as boats are in general symmetrical about the centreline, except for a few odd types.

By slicing the hull vertically across at right angles to the centreline plane, the shapes shown on the Body Plan are obtained: these are called Sections. It is conventional to show the forward sections, or forebody of the hull on the right and the after part or afterbody on the left, and also to draw the bow to the right on the Profile and Halfbreadth plans.

It may help in following the above if it is noted that the buttocks, waterlines and sections all appear as curved lines in one view and straight lines in the other two. In practice more lines are needed to define the hull shape completely and usually several diagonals are used as well. These are positioned on the body plan to cover areas that are not closely defined by the other curves, e.g. D_1 on the turn of the bilge and D_2 which runs through the area known as the 'tuck'. An explanation of how they are drawn will best describe them. Straight lines are drawn across the body plan as shown, then the distances from the intersection with the centreline to the intersection with each section are picked off and marked on the relevant section on the opposite side of the centre line to the Halfbreadth Plan. A line through these posts should be fair, if not the section should be adjusted until it is. The buttocks and waterlines may have to be adjusted as well. It is very important that a Lines Plan should be fair, i.e. all lines should be smooth curves and intersections should agree on the different views, e.g. the point 'a'. This fairing process is largely what takes the time in drawing up a set of Lines. Failure to do this part of the job carefully can lead to much expense in full size work.

Other lines shown in Fig. 1 are the curve of areas, rabbet line, deck at side and line of deck at centre. The curve of areas is formed by measuring the underwater area of each section and setting this off from the centreline on the Halfbreadth Plan as a linear dimension. That is, if two sections have areas of 4 and 5 square inches, one sets off 4 and 5 inches or 2 and 2½ inches, if this is more convenient. Again the line should be a fair curve: in fact, for the modeller, its only purpose is a further check on the fairness of the hull, though it may be used to find the longitudinal centre of buoyancy.

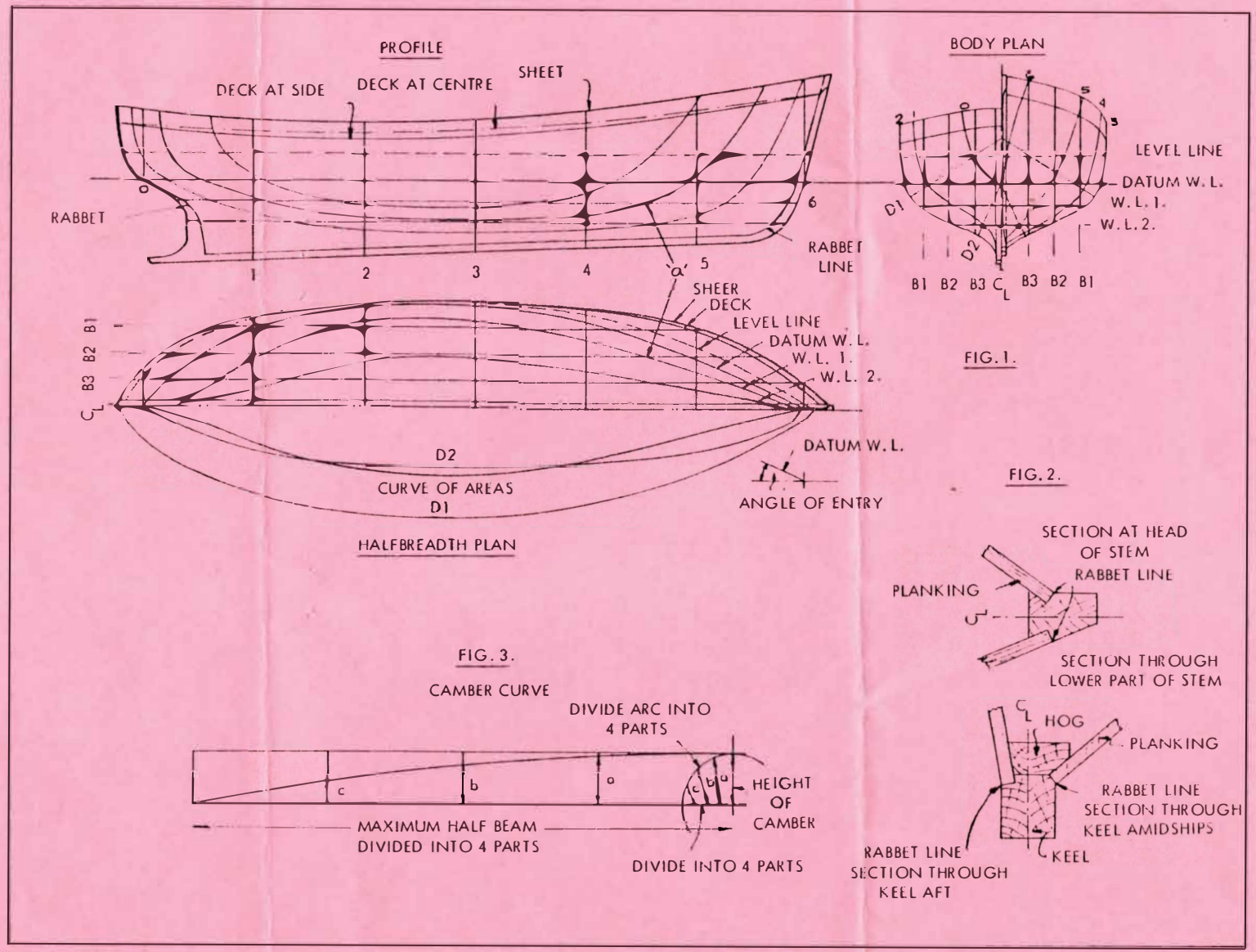
The rabbet line shows the intersection of the planking and keel or stem, etc., in a wooden hull. On the M.F.V. it shows as a definite angle on the keel only, as the stern and stern post are faired off to conform with the curve of the planking, except at the head of the stem. This is shown in Fig. 2. The position at the rabbet depends on the thickness of planking and keel and stem, etc.

The deck at centreline is obtained from the camber curve, Fig. 3. This is usually drawn as shown, the height of camber being 1/32 to 1/24 of the maximum beam. The halfbreadths of the deck are lifted off at each section, and the drop in camber measured. This drop is then marked on the profile above the line of deck at side.

The line through these spots may show a dip near the bow. If the model has bulwarks this will not show, but it can be eliminated by increasing the sheer or the camber from the start of the dip to the bow. It usually occurs on a hull whose beam is carried well forward. A hull of this type needs a marked 'kick up' in the sheer forward, otherwise the sheer appears to droop when viewed fom just off the bow.

The drawing shown in Fig. 1 might be termed a typical Lines Plan. Most old plans show a different method of presentation. They are drawn to the inside of planking and with the waterlines parallel to the keel and the sections at right angles to it, instead of to the datum or load waterline. It was more suitable to use the keel line as a datum, as the load line

Note: Part 2 of this article will appear in the March "Newsletter."


PROFILE
DECK AT SIDE
DECK AT CENTRE
SHEET
RABBET
RABBET LINE
SHEER
DECK
LEVEL LINE
DATUM W.L.
W.L. 1.
W.L. 2.
B1 B2 B3 C L B3 B2 B1
D2
CURVE OF AREAS
D1
DATUM W.L.
ANGLE OF ENTRY
HALFBREADTH PLAN
BODY PLAN
LEVEL LINE
DATUM W.L.
W.L. 1.
W.L. 2.
D1
D2
B1 B2 B3 C L B3 B2 B1
FIG. 1.
FIG. 2.
SECTION AT HEAD OF STEM
RABBET LINE
PLANKING
SECTION THROUGH LOWER PART OF STEM
FIG. 3.
CAMBER CURVE
DIVIDE ARC INTO 4 PARTS
HEIGHT OF CAMBER
MAXIMUM HALF BEAM DIVIDED INTO 4 PARTS
DIVIDE INTO 4 PARTS
HOG
PLANKING
RABBET LINE SECTION THROUGH KEEL AMIDSHIPS
KEEL
RABBET LINE SECTION THROUGH KEEL AFT

of a sailing fisherman or trader was not a fixed line until one comes to the large iron and steel sailing ships of the late 19th century. It is more convenient to draw the sections perpendicular to the datum waterline when the displacement and position of the L.C.B. are required.

It is not necessary to put pencil to paper at all to design a boat and many craft have been built from half models. In this method, a block of wood is shaped to represent one half of the hull to a suitable scale which is adjusted until the builder and prospective owner are both satisfied, then the shapes of the frames are lifted off by measurement and increased to full size. If the half model is made 'bread and butter fashions, it can be taken apart on completion and the shapes of the waterlines taken off. These can then be drawn on the Mould Loft floor and the shapes of the frames derived from them. Alternatively, the half model can be sawn across transversely, thus giving the frame shape direct.

Another method is to draw the lines full size on the Mould Loft floor. This needs considerable skill as it is not possible to see the design as a whole. Many clinker built boats used to be built without any drawings or moulds at all or perhaps one midship mould. This method is only really practical with clinker planking as the planks are fastened to their neighbours through their length, and consequently the boat will hold its shape without frames or moulds. The builder must know the shape required for each plank as the boat's shape comes from the length and curve of the individual planks.

These practical methods are satisfactory in wooden boat building and where the builder is familiar with the required type, and where a fairly large proportion of the vessel's displacement is inside ballast so that trim and draught can be altered easily. For modern sailing yachts with outside ballast these methods leave too much to chance and as modern power vessels seldom carry ballast, the displacement must be worked out carefully to equal the estimated weight of hull and equipment. Also the centre of buoyancy must be in the same fore and aft position as the centre of gravity, otherwise the vessel will not float level. The whole process of design of even quite small craft has now become the province of the Naval Architect rather than the Shipwright, but fortunately there is still room for art.

The main factors affecting hull shape are the purpose for which the vessel is intended, the proposed speed, displacement, transverse stability and seaworthiness. There may also be special requirements such as shallow draught. Any design must be based on a compromise of these factors biased to the quality of performance most desired. That is, the designer may sacrifice speed to obtain stability and displacement, or sacrifice seaworthiness and stability to obtain speed. The over-riding consideration must always be fitness for purpose.

Of the above factors, speed has the most influence assuming a fixed displacement. Naval Architects use the terms $V/\sqrt{L}$ which is speed in knots divided by by the square root of the waterline length in feet. for comparing different vessels. If this term is the same, the wave patterns created by two hulls are similar whatever the difference in size. Also their wave-making resistance to motion is proportional to their displacements. The reason why this wave question is so important is that the wave system created by a moving vessel travels at the speed of the vessel and the speed of a wave is $1.34\sqrt{L}$ where L is the wave length from crest to crest.

Most modern liners have $V/\sqrt{L}$ of about 0.9 to 1.0, cargo ships about 0.6 to 0.8, motor yachts 1.0 to 1.5, semi-planing and planing types above 1.6 and small working craft and sailing vessels about 1.0 to 1.4. A non-planing hull of moderate to heavy displacement cannot travel economically at a $V/\sqrt{L}$ of much over 1.60. In this condition, the hull has a wave crest at bow, one just abaft the stern and a trough amidships. Adding more power simply makes the hull squat by the stern, unless the buttocks are very flat, and most of the extra energy goes into making the waves higher. In fullsize craft it is not possible to add enough extra horsepower to get the hull to plane unless it is of the correct shape and the machinery has a high power weight ratio. Planing craft are generally of light displacement and very flat aft, which encourages the stern wave to drop back. When a vessel is on a true plane it has a very small wave system and the resistance comes from other factors. It is, of course, quite easy to overpower a model with the lightweight motors now available and send them scudding off at a most unlikely pace, but if a realistic speed is required $V/\sqrt{L}$ must be the same for model and prototype.

As far as fullsize vessels are concerned, the displacement to the load waterline must be equal to the weight of the hull, machinery, equipment, fuel, etc., stores, crew and cargo, if any is carried. The displacement is the weight of a volume of water equal to the underwater volume of the hull. The weight of the vessel must equal the weight of water for it to float at the waterline considered. It follows that a liner needs less displacement than a cargo ship of the same size, allowing for the extra superstructure of the former. Estimating the required displacement for a ship is one of the Naval Architect's principal headaches. If the ship turns out heavier, she will float deeper than intended and probably not attain her contract speed. If lighter, she may be less stable than calculated.

These considerations also apply to the ship model but are not usually a problem unless the prototype has very light displacement or the model is to a very small scale. The relative displacements of ships and models vary as the cube of the scale, e.g., a model 1/100th the length of a ship has a displacement 1/1,000,000 that of the ship. It may be necessary, therefore, to increase the beam and depth of a small scale model and to build the hull in as light a fashion as possible. Depending on the prototype, it may be possible to gain more underwater volume by reducing the rise of floor, the bilge radius or increase the length of parallel middle body.

Neither stability nor seaworthiness is usually a problem for the modeller. The former is affected principally by the amount of beam and freeboard and the height of the centre of gravity. A small increase in beam makes a considerable difference to the stability and, as for freeboard, a model should be able to heel about 25 deg. before the deck edge enters the water. If the centre of gravity is too high, it can be lowered by removing excessive weight in the superstructure or deck and placing ballast as low in the hull as possible.

If a model has sufficient stability and the deck is watertight, seaworthiness, or rather pond-worthiness, should be no problem.