HOW TO BUILD A HOUSEBOAT FOR \$300.

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The proposition of spending a summer afloat is one which appeals to many persons fond of the water; but the cost of a yacht large enough to accommodate comfortably a family for a protracted period is prohibitive to the majority, therefore people swelter ashore in hot and uncomfortable hotels, and snatch such enjoyment from the water as chance and circumstances permit.

during the summer season under equally comfortable conditions. The cost of the boat would vary, according to whether it was built by amateurs and how elaborately it was constructed and fitted up. A moderate price shipbuilder should build this boat complete with toilet and water tanks for five hundred dollars. As the boat is very simple in construction amateurs should be able to build it for about three hundred dollars. At a small additional cost an awning could be rigged over the house-top, thereby providing a fine, large, cool lounging space.

For those interested in building such a boat themselves the following hints on construction may prove useful:

The first step in construction is to prepare the ground and build the sides and bottom of the hull. The ground should be prepared by driving posts and using stringers and blocks so placed that the hull may rest during construction on an absolutely level plane. By doing this a level and plumb line can be used to get the house and its compartments built plumb and true. After the building foundation is prepared, start by

so that they touch on the inside and are open about $\frac{1}{8}$ inch outside. This is to allow the caulking to be driven in and to prevent its being pushed clear through to the inside. In putting the hull together use large galvanized iron boat nails about 4 or $4\frac{1}{2}$ inches long. The corner log, A, should be fastened to the sides with $\frac{1}{4}$ -inch galvanized iron rivets, and the bottom planking should be fastened to both log and sides. Be careful that the planking lies perfectly flat and true before fastening, otherwise leaks will surely develop, which are hard to stop. Paint should be applied and a few threads of cotton laid along the edge of the sides to help make a water-tight job. After the bottom is on three 3 x 4-inch yellow pine stringers, C, should be fitted and nailed from the underside of the bottom. Carry these stringers up to the ends as shown in the plans. This gives us the bare hull, and we can now proceed with the house frame and small decks at each end.

It might be well first to call attention to the two water tanks that are shown in the drawing. If these are to be put in it is well to do it now, otherwise some

SECTIONAL PLAN AND SIDE VIEWS SHOWING CONSTRUCTIONAL DETAILS OF THE HOUSEBOAT.

A solution of the problem of living cheaply and comfortably afloat is found in the houseboat. Such a life offers many charms and advantages. It is generally cooler on the water, and the air is fresher and better, being free from dust and land smells. Bathing is always "on tap," and the entertainment of friends is accompanied with more charm and privacy than in a crowded summer hotel. If the locality becomes tiresome the houseboat can be towed to another harbor for a few dollars, and there is no packing of trunks or tipping of servants when getting out of town.

The plans herewith shown represent a small houseboat capable of accommodating four or five persons comfortably for a very moderate price. It would cost four persons fifty dollars a week at an average-priced summer hotel. This amounts to six hundred dollars for three months, without extras. The boat shown here could be built for less than that. Then at the end of summer it could easily be sold for more than half its value or kept for another year. In any case there would be a very large saving over living ashore

getting out the sides. These are of $1\frac{1}{2}$ inch yellow pine, laid three strakes to a side. As the depth of the hull is 30 inches the sum of the three planks should be $28\frac{1}{2}$ inches to allow for the thickness of the bottom. The sides are held together by temporary strips of wood screwed to them. When thus secured fasten on the lower inside edges a yellow pine corner log 2 x 4 inches as shown in the cross section plan at A. The object of this is to stiffen the edge and afford extra nailing surface for the bottom planks. Now set up the sides in their proper places on the building foundation and be very careful to see that they are perfectly plumb and level, otherwise the whole structure will be crooked. Nail three or four strips across the bottom to hold it in place and then put in the end pieces B of the hull. These are of $1\frac{1}{2}$ -inch yellow pine. Next put on the planks which extend from the end pieces to the bottom. These planks, as well as the bottom ones, are of $1\frac{1}{2}$ yellow pine, and about 12 inches in width. Proceed to put on the bottom by beginning at both ends and working toward the middle. Plane the planks

of the deck beams and deck cannot be laid, and it is more trouble to put them in later. They should be of 1-16-inch galvanized iron and fitted with filling plates to come flush with the outside of the deck. The supply pipes can be run under the cabin flooring before it is put down.

The next members to put up are the stud beams to take the weather boarding of the house. The beams are of 2 x 3-inch spruce. They should be cut into lengths of 6 feet 11 inches. Jog them over the corner log, A, and securely nail them to it. Fasten them to the side of the hull with stout galvanized iron nails, care being taken to get several very good fastenings in the lower side plank. The spacing of these beams will vary on account of the positions of the windows and partitions. The way to do this is to put up, first, all the beams that come at window openings and partitions and then space up equally the intervening beams. The construction plan shows the dimensions and position of the beams. A sill, C, of 2 x 3-inch spruce, is now laid on top of the beams and fastened thereto

securely. Put in the headers and sills for the windows and the studs immediately under them.

Proceed to finish the decks. Run $1\frac{1}{2}$ x 3-inch yellow pine stringers across the end studs $4\frac{1}{4}$ inches below where the top of the deck will come. Use 2 x 3-inch yellow pine deck beams, seven to a deck, including sides, and securely nail to the stringer and end board of the hull. A deck of $1\frac{1}{4}$ -inch white pine may then be laid in about 10-inch widths or less, and after being well painted covered with No. 10 canvas. As the run boards on either side of the hull will serve conveniently as a staging for building, it may be well to put them on. The boards themselves are of $1\frac{1}{4}$ -inch spruce planks fastened to $1\frac{1}{2}$ x 2 yellow pine cleats spaced seven to a side, as shown in the plans. They are supported by $1\frac{3}{4}$ x $2\frac{1}{2}$ yellow pine braces, securely fastened to the hull and jogged into the cleats.

The roof beams should next be put up. These are of 1¼-inch spruce, 6 inches deep at center and 3 inches over sills. This gives a crown of 3 inches, just enough to shed water. The beams are spaced 2 feet on centers except where it may be necessary to vary them slightly so that they may serve as a backing for the partitions.

It is now in order to board up the sides. Use $\frac{3}{8}$ x 6-inch rabbeted boards of the type shown in the section. Start from the bottom and lay out the widths, as shown in the plan, so that they will come right for the finishing bands. Nail each board to every stud with two nails, and countersink and putty the heads. The sides are now ready for the finishing bands and window trim. Commencing at the corners, put on the vertical trim of $\frac{3}{8}$ -inch white pine 6 inches wide, and also the door trim. Then the horizontal band under the windows and the strake at the upper edge of cabin, which should be 8 inches deep, and finally the second band at cabin top and the window trim, both 4 inches wide. All the foregoing should be of $\frac{3}{8}$ -inch white pine. The trim at the window openings should be set back so that a shoulder is created by the studs and sills to form a rabbet for the window. The cross section plan will show this. The windows are hinged from the top and swung outward, as indicated.

Proceed to finish up the cabin roof by planking it over with $\frac{7}{8}$ -inch white pine boards laid in 4-inch widths and having a tongue and groove with a beaded edge underneath for a finish in the cabin. Paint the top well and cover with No. 10 canvas laid in a single piece. It can be obtained in widths as high as 12 feet, and it is much better to use the single piece and get rid of seams which are liable to leak. Draw the

canvas over the edge of the house, and after securely fastening with copper tacks cover them up with a half round molding, as shown in the plan. The doors and windows should be 1¼ inches thick, and these

An ornamental railing fore and aft, as shown, affords safety and convenience. The after side is fitted with a rope, which can be unhooked to allow boarding the craft. This completes the hull, and we can now turn our attention to the interior.

The first step is to lay the cabin flooring after painting the inside of the bottom. The floor may be of $\frac{3}{4}$ -inch yellow pine, laid either in 6-inch widths or in narrower widths, with tongue and groove. The former width is perhaps preferable in this case. Begin at one end and plank athwartship on the stringers and corner logs. Sweep out all shavings and sawdust as you proceed. After the floor is laid and smoothed up, the partitions and cabin fittings are ready to go in.

The interior is arranged to provide sleeping accommodation for a mixed company of four. Entering the house-boat from the after end the first compartment comprises the living room, which is turned into a sleeping room for the men at night. The doorstep has a removable tread, and is used as a locker. On the right a 6½ x 3 foot couch is installed fitted with a spring and mattress. Next to this is a desk with bookshelves above. Upon the opposite side, near the door, is a folding berth, shown standing on end. This is built simply like a hollow box, containing an ordinary spring and mattress. It is lowered down for use and afterward up-ended and held by a couple of hooks. In the opposite corner is a sideboard with glass rack above and drawers beneath to hold table linen. A folding table and two or three easy chairs complete the furniture in this compartment. Of course chairs and couch should be bought, but it would be more satisfactory to make the desk, sideboard and table, and this would not be very difficult if it was done simply of oak, in the mission style, and stained. The next compartment is for the ladies. Here a double bed is shown which may be taken from the house and installed, or built in like a regular bunk with drawers underneath or left open for the reception of trunks. There are two lockers at the foot, one for linen and the other opening into the sitting rooms for the men's clothes. A built-in bureau is shown opposite, and a window seat and clothes closet. The forward compartment contains the toilet with mirror and folding wash-basin on the left and the galley fittings on the right. An alcohol stove is indicated along with a sink and ice-box under the dresser. Stores carried under the forward deck. The partition bin divisions and lockers should be of ¾-inch cut up in 3-inch strips, tongue and groove, with

CROSS SECTION OF THE BOAT AND DETAILS OF THE DOORS AND WINDOWS.

plans will be sufficient to enable any one to get them out. The doors are of the Dutch type, that is, they open in two sections. They are more handy and convenient when thus made.

VIEWS SHOWING THE EXTERIOR AND A PLAN OF THE INTERIOR OF THE HOUSE BOAT.

a V or beaded edge. White paint may be used, but a very nice effect is had by staining the partitions and stud beams dark green and filling in between with green burlap tacked in place and finished around the corners with a neat little molding. The roof and house beams should be either white or a very light olive gray green. Varnish the floor and use rugs or mats. Of course the cabin sides may be ceiled over, but that adds somewhat to the expense and admits of a less artistic effect. A very good-looking finish for the exterior is as follows: After calking the bottom planks with oakum, putty the seams and then give the bottom three coats of red antifouling paint. Carry this up the sides for 10 inches. Paint the rest of the hull black. A very dark red for the weather boarding looks well. Make all the bands, window trims and sash and deck railings white. The decks and cabin top should have four coats of a buff color. All other wood should have three coats.

The boat is moored by securing chains on either side of the hull and leading them to a common chain about 15 feet ahead of the boat. Use three times as much chain as there is depth of water and a 200-pound mushroom anchor, and there need be no fear of going ashore.