

CANNONITIS

Cannonitis is an outboard powered foam boat, made from one half of a child's paddle board. The design for this boat was actually conceived three years ago, but at the time there were no outboards of sufficient displacement available.

Bill Cannon, President of Cannon Electronics, and I were discussing model boating on the phone early last year when I casually mentioned my almost forgotten idea of a paddle board outboard conversion. Bill thought it was a good idea and suggested that I should give it a try. Bill's gentle nudge, and the fact that I am really sold on his fine radios, prompted me to name the boat "Cannonitis!"

Cannonitis is so simple to build, that almost anyone from eight to eighty can assemble a competitive boat. The cost of this boat is a drop in the bucket when compared to a conventional plywood or fiberglass inboard. The generous area of the hull will accept paint jobs from mild to wild, and anything in-between.

Cannonitis is also a dream to handle on the water. It is a very forgiving craft, and even a novice will quickly feel at ease, especially if he starts at half throt-

tle. It will perform "S" Turns and Figure Eights effortlessly, and an obstacle course is a piece of cake for this boat.

If you are only into model airplanes, you might consider introducing members of your family to radio control with this boat. It makes a nice first R/C model construction project. It also makes a fine trainer for rudder and throttle controls, and can teach orientation without the danger of crashing.

Cannonitis was first shown in the Cannon Electronics booth at the WRAM show in White Plains, New York this past February. Judging from the response of those who examined it, I now feel that the outboard class is like a sleeping giant, and the combination of the K & B outboard and Cannonitis might just give that giant a bad case of insomnia!

For the technically minded, this boat offers positive flotation and vibration dampening, due to its foam construction. The hull is an inverted airfoil which keeps it on the water in spite of its light weight. The finished weight of this boat is a shade over three pounds. The center pod is 3/8" lower than the outer two pods and, when at speed, only the rear portion of the center pod touches

the water. There is a ballast hatch on the nose of the boat and it is a simple matter to adjust the balance for the prevailing water surface conditions on any given day.

Modelers have become accustomed to K & B engines being ahead of the times, but they deserve a special award for this engine. The K & B 3.5cc outboard is a remarkable engineering achievement, and a classic in its own time. This engine will surely be prized by future engine collectors. John Brodbeck, President of K & B, has provided the modelling fraternity with what I consider to be one of the most significant advancements in model power since the Ray Arden Glow-plug.

Before plunging into the construction stages, I would like to mention a few objectives you will be trying to meet when your boat is finished. Keeping these in mind, it will be easier for you to understand why you are performing certain operations.

The ideal attitude for this boat when running at speed, will require the deck to be parallel to the water surface. The thrust line of the propellor should also be parallel to the deck and water surface.

These parallels will assure maximum forward thrust. To obtain these parallels, the transom must be squared to the deck. There is a ballast compartment in the nose of the boat to allow trim changes to help you achieve the parallels, but the transom being squared to the deck will be a primary consideration while building your boat.

Try to get a smooth joint between the plywood transom and the foam hull. This joint being smooth will assure you maximum speed.

The radio hatch should be carefully fitted and sealed to prevent water damage to your radio equipment. I usually leave a small lip for the plywood hatch to rest on and provide a good water-tight epoxy seal.

The transom-to-hull joint can be substantially strengthened by using dowels. Drill three holes in the transom and insert the dowels with epoxy. This is optional and should be done after the engine and fuel tank have been positioned.

Your steering servo will take a beating when starting the engine with an electric starter, if you forget to block the engine. The starter will spin the flywheel in a clockwise motion, and it will jerk the engine to the left. It happened to me, and thanks to the Cannon servo construction, I didn't lose any servo gear teeth,

but I wouldn't want to make a habit of it.

Construction

The first item you will have to obtain is a paddle board. These boards are manufactured by the General Foam Plastic Corporation, 3321 East Princess Anne Rd., Norfolk, Virginia 23502. General Foam calls this particular board the "Surf-Rider" Model G-1221. These boards can be found in the Spring and Summer in several chain stores, such as K-Mart, or Penneys.

To begin construction it will be necessary to cut the board in half. This will provide you with two hulls. Measure your board from tip to tip and, using a felt tip pen, mark the center. Draw a line at the mark across the width of the board. Try to make this line as straight as possible, and it will save you a lot of sanding later.

Cut the board in half. I find that a hand-held hacksaw blade works fine, or a hot wire. You can easily check to see how straight your cut was by laying one hull on the other. If the rear of the hulls match, the cut was true. If the two hulls do not match, no sweat. The next operation will get you back in order.

Measure across the rear of the hull and mark the center. Eyeball from your center transom mark to the forward tip of the hull. This line will be your main point of reference for all future meas-

urements, so mark it with your felt pen.

To true the transom, it will be necessary to build a sanding board. Butt two pieces of medium sandpaper together on a flat surface. I use spray-type contact cement on a piece of plywood, but you can also use thumb tacks. Using a square or draftsman's triangle, check the angle between the reference line and the rear of the hull. If the angle is off, sand the hull from side to side until square.

After the rear of the hull has been squared from side to side, check the angle of the rear, vertically, to the deck. Sand back and forth until square.

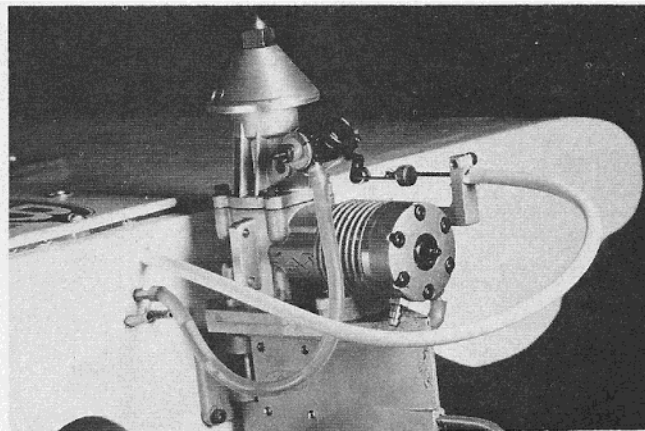
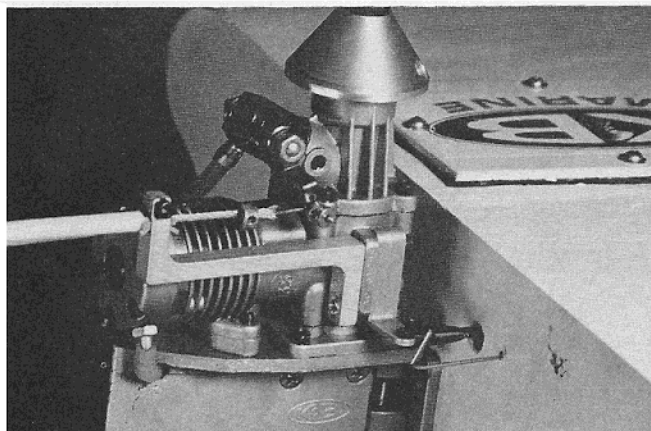
Now make your transom. Trace around the end of the hull on a piece of 3/16" plywood. Cut out your transom. I use an electric jigsaw, with a coping saw blade.

For maximum bond of the transom to the foam hull, it helps if you rough up the mating surfaces. You can use an electric drill, a grinder, file, or your teeth, but the roughness will provide many facets for the epoxy to cling to. Smooth surfaces may let go under stress.

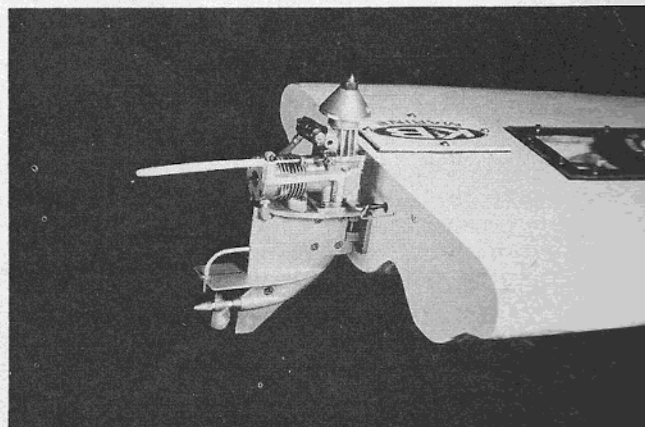
Epoxy the transom to the hull. Use regular epoxy for this step. It may take longer to set up, but it seems to provide a better bond than 5-minute epoxy. Don't try to rush this step, as the transom joint

If you've been intrigued by the 3.5cc K & B outboard engine, the Cannonitis is the project for you. This boat, cut from a foam paddle board, can be built in a weekend, serves as an excellent trainer, yet can virtually out-perform anything in the Outboard Class in speed and maneuverability.

By Dan Vincent

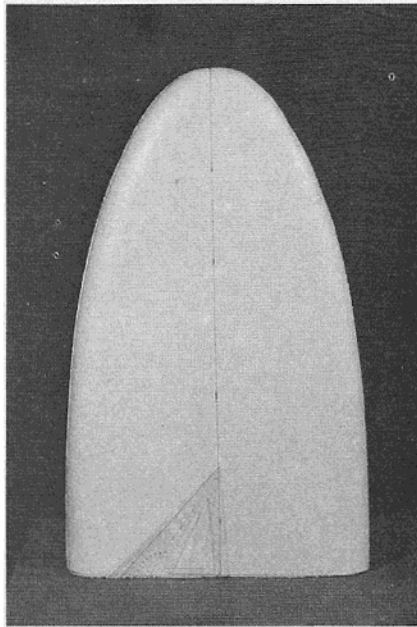


ABOVE: The K & B 3.5cc outboard marine engine mounted to the plywood transom of the Cannonitis. Factory mounted "spinner" makes starting a breeze. **ABOVE, RIGHT:** Another view of the engine mount showing throttle linkage and fuel lines. **RIGHT:** Backing the camera up a bit, you can see the overall engine mounting arrangement is simplicity itself.

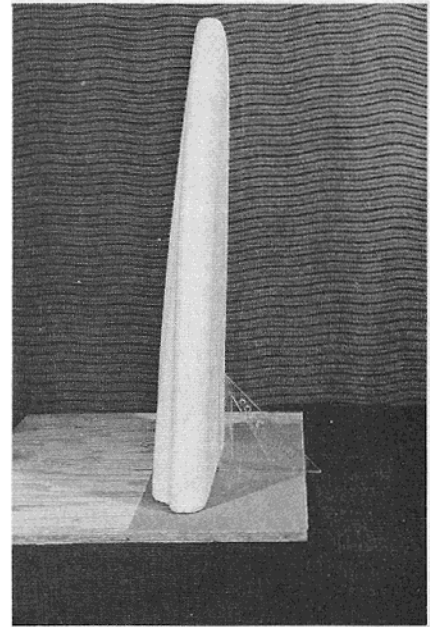




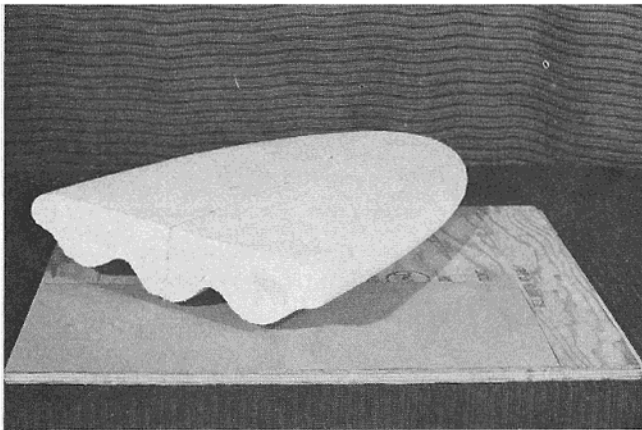
Surf Rider label.



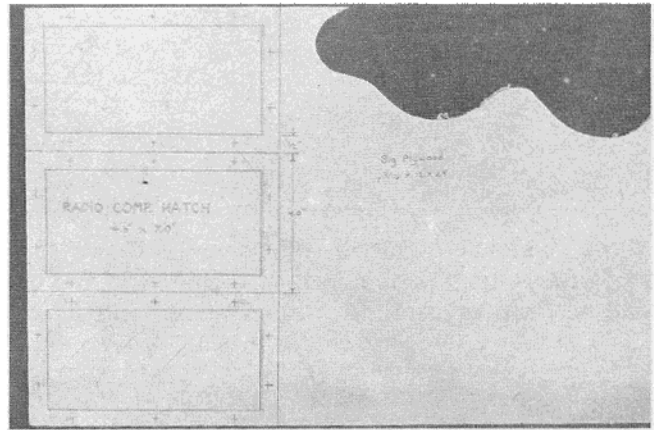
Boat on end w/triangle shows how to square transom side to side.



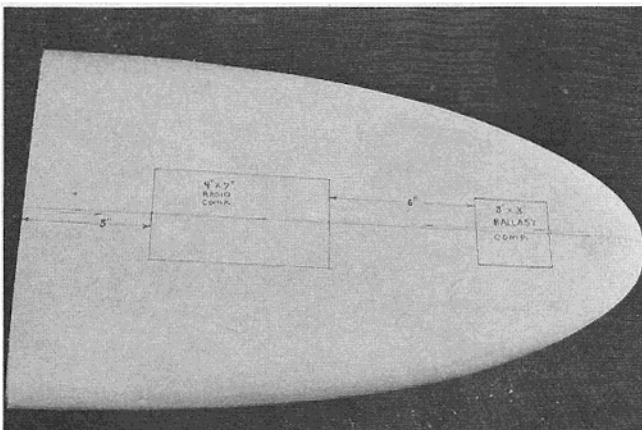
Boat on end with triangle to show how to square transom vertically.



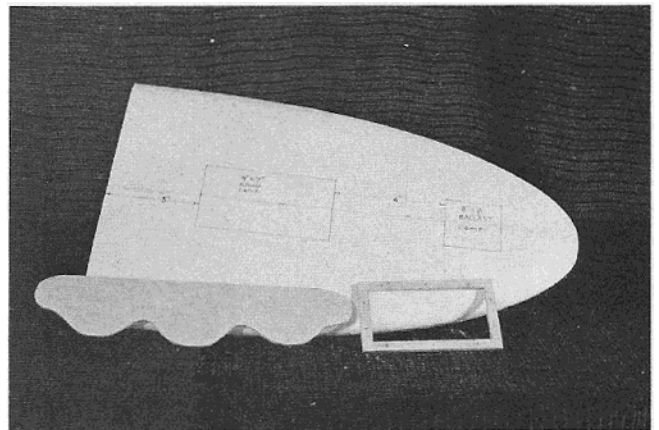
Sanding board with rough hull.



Radio compartment hatch laid out on 3/16 ply.



Top view showing dimensions with felt-tip pen.



Top view with radio hatch and transom cut out but unmounted.

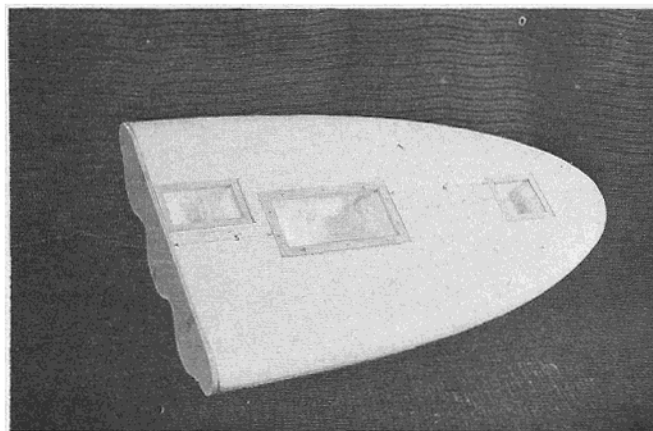
receives the most stress. Masking tape will hold the transom in place while the epoxy is curing.

Measure the deck surface cut-outs and mark them with your felt tip pen. If you leave a lip for the hatch frame to rest on, you will be assured of a good water

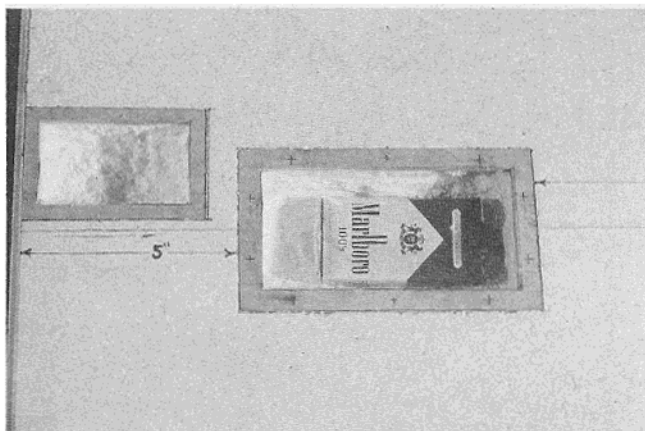
tight seal when your hatch frames are epoxied to the hull. Use a razor knife to cut the edges of the foam to be removed. Once the edge has been cut, the foam can be dug out of the compartments. A pair of duckbill pliers will quickly remove the unnecessary foam. Be careful not to

dig too deep. A straight pin pushed through from the underside will give you a quick reference.

Epoxy your hatch frames in place. You can use 5-minute epoxy here, if you want to keep moving. Consider at this point whether you want your hatch cov-



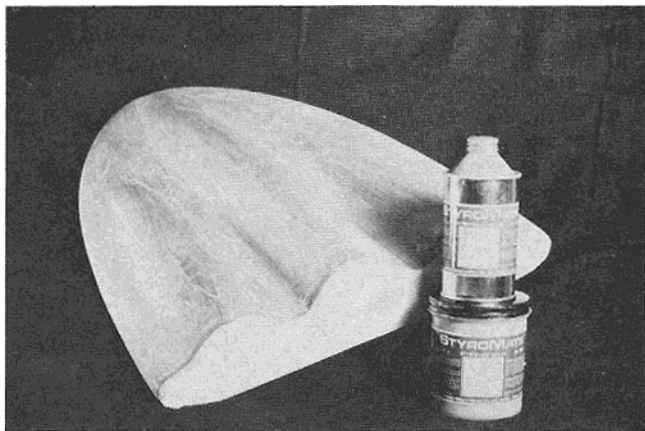
Top view with ballast, radio and fuel tank hatches in place.



Close-up of radio and fuel tank hatches with cig. pack for size.



View of radio compartment hatch with some sort of weird insignia.



The entire hull cut from the end of a foam paddle board and prepped with StyroMate.

ers to be surface mounted or flush with the deck. I prefer surface mounted hatches, as there are no crevices for water to seep into, but my wife, Dolores, plans to use flush hatch covers on her pink version of this boat which she has named "Daisy Mae". Now I have to get her some daisy decals.

If you cut your hatch covers and drill the mounting holes, you can use the hatch covers as a drilling guide for the hatch frame holes. The covers can be made from 1/8" plywood, but I prefer to use plexiglass for the radio hatch. A clear plastic radio cover allows easy visual checks of the radio equipment. Obtain some rubber gasket material from a hardware or auto parts store. I have, on occasion, used motorcycle inner tubes for gasket material.

Now it's time to sand the hull. I usually start with Dap vinyl spackle to fill any large dents, and use 100, 200, and 400 grade sandpaper, in that order, to sand the hull. After you have sanded the hull until you are satisfied with the overall smoothness, you can paint it with one of the foam type paints available, or you can try for an even better finish.

My first two boats were disasters in the finish department. I had the good fortune to meet Ed Rogala of Midwest Products, and in discussing the problems I had encountered while trying to

get a smooth finish on foam, Ed suggested I try Midwest Products' new Styromate process. I followed the directions on the container, and this stuff really works. I plan to use Styromate on any future foam construction projects. It's really good!

If you decide to use the Styromate process, check the smoothness of the hull to see if you are satisfied, before painting. If the hull is satisfactory, go ahead and paint your boat. I have been using "Varathane" brand paint on my boats.

After the paint has dried, mount your K & B outboard engine. Lay a straight edge on the bottom of the center hull pod, and on the bottom of the engine cavitation plate. Mark your holes and drill holes for 4-40 blind nuts. You can remove the foam from the inside of the transom, by using the fuel tank compartment for an easy access point. Mount your engine to pull the blind nuts up tight.

Mount a Sullivan, or equivalent, 4 oz. fuel tank in the tank compartment. If you have a clunk tank, do not use the clunk feature. Bend the tube which will be used to feed the engine, so that it will be picking up fuel from the bottom rear portion of the tank, in relation to the direction of the boat's forward motion.

Mount your servos in the radio com-

partment. I have been using 3/8" square maple engine bearer stock, epoxied directly to the foam hull, but you can reinforce if you are skeptical. Make sure you have clearance for the servo output arms.

Connect your steering and throttle linkages. I find that a bicycle cable works fine for a throttle linkage. The bicycle cable can handle a very tight radius.

Mount a piece of 1/8" plywood on the servo rails, to provide a firm radio switch mount. Use one of the commercially available remote switch linkages, it will save you a lot of headaches.

If you also use your radio for model airplanes, and do not wish to trim your antenna for use with a music wire whip type, you can get good results by using a NyRod. Push the antenna wire through the center of the NyRod and secure the tip with a small piece of fuel line. Make a loose coil from the excess antenna lead, and store it in the radio compartment.

Install 4-40 blind nuts in the hatch frames, and pull up tight. If you have checked out your servo operation, you can mount your hatch covers. Your boat should be ready to run.

Balance your boat for initial tests at 7" to 7 1/2" forward of the transom. You can add or subtract weight in the ballast compartment until you are satisfied with its performance. □