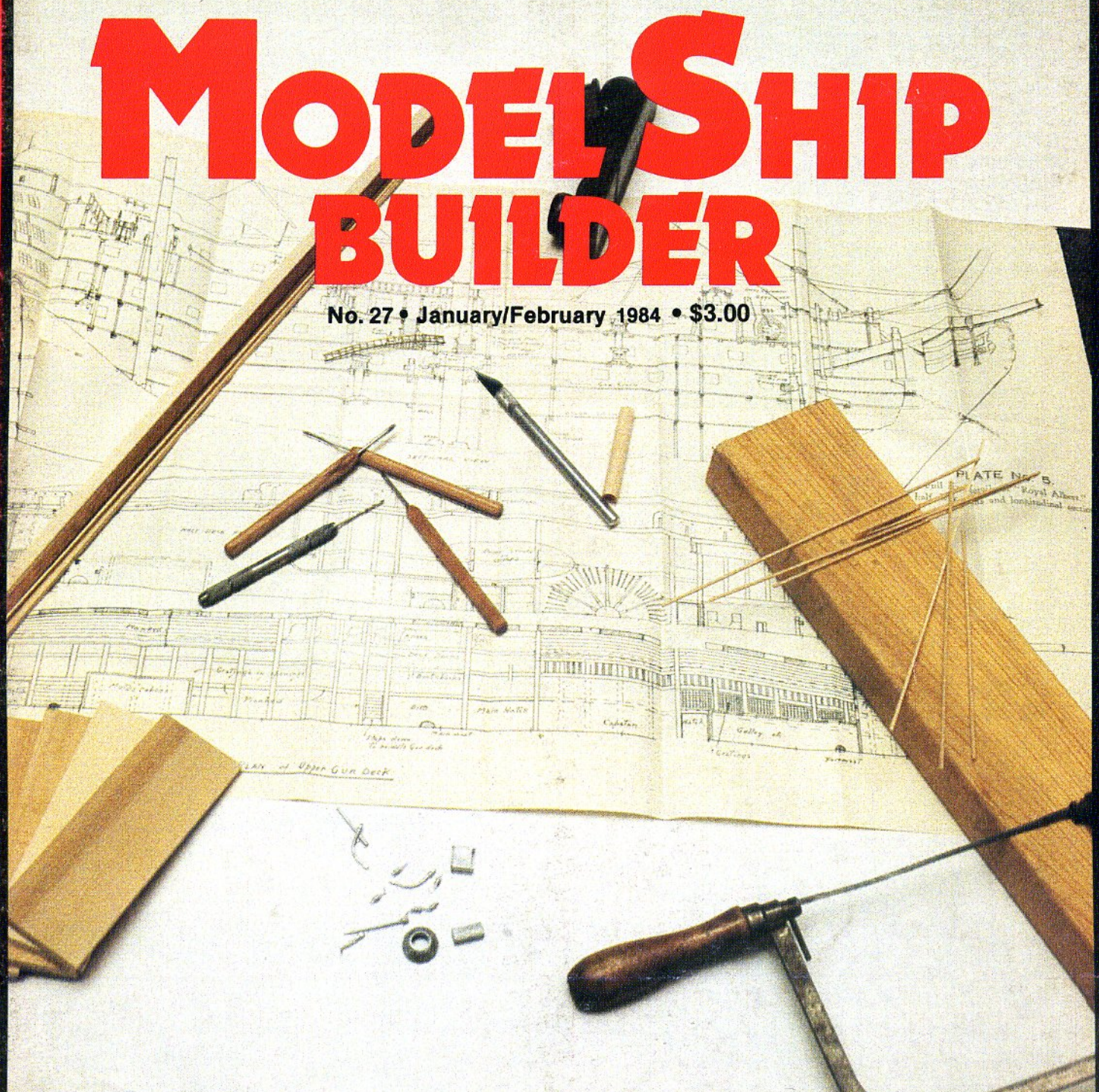


World's Largest Model Ships and Boats Magazine

MODEL SHIP BUILDER

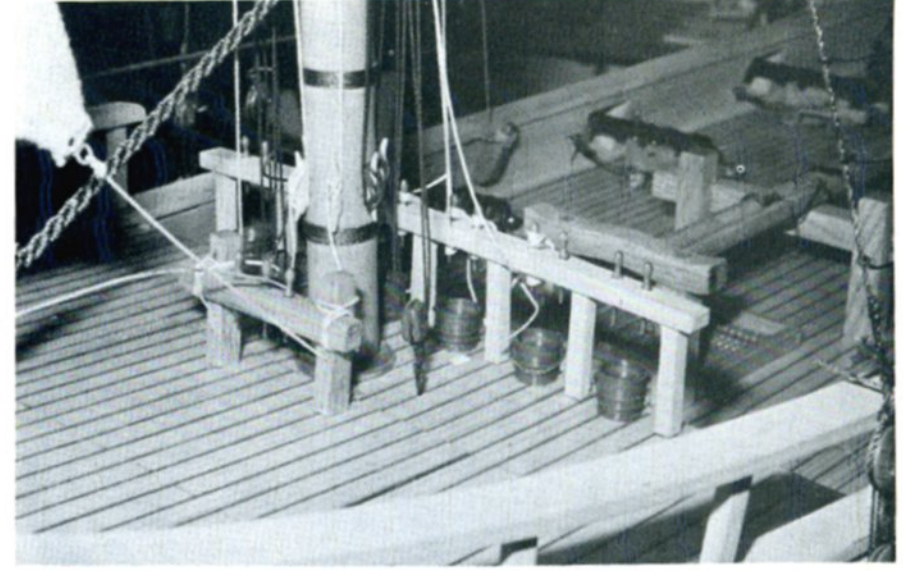


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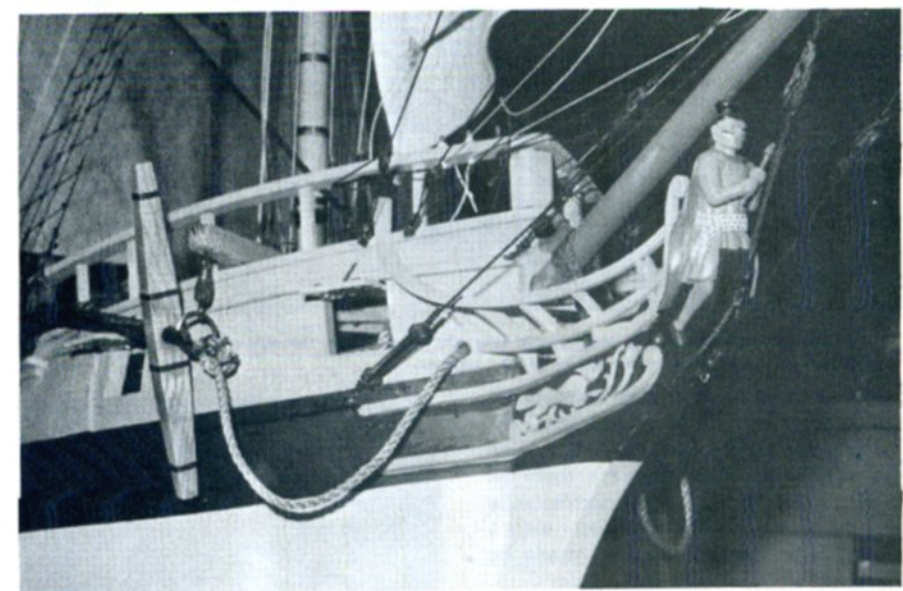
INSIDE: Finishing The *RATTLESNAKE*
Building A Third Arm Vacuum



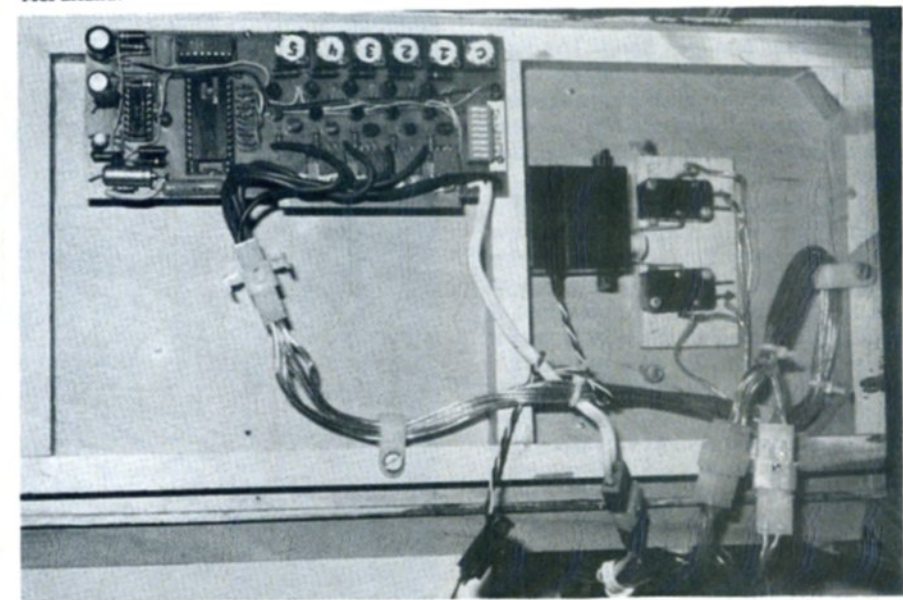
ALBERT LHEUREUX poses with his operational model of the RATTLESNAKE. He finishes up his story on construction in this issue.



FOC'CLE details with foremast.



FORWARD CARVINGS and figurehead carvings. The figurehead was completed by Douglas McFarland.



ELECTRONIC UNIT firing mechanism is under the main hatch cover with servo for port and starboard side. Note that one to five pots adjust glow on plugs for reliable firing.

Part Three

Finishing Up An Operational R/C Rattlesnake

by Albert Lheureux

I made several attempts to brace the main yard. I tried bracing the main yard from the rear of the quarter deck as shown on the drawing of the ship. I couldn't get a good tight bracing as I do now by bracing from the mizzen mast on the center line. The fore and mizzen yards

are tied to the main yard for bracing together, (another compromise that is needed).
When I was satisfied that my yards were turning correctly, I had my wife sew me two jibs. With the fore, main and gaff sail I made my first test on water

The ship required around 90-pounds of ballast, to balance her out properly. I took her out with mixed feelings. The worst problem I had to face was to set the sheet properly. Again, I could not do it the way the real ship would have done it. I ended up running a

line around the hull in a close circuit and around two of the spools on the sail winch. To this line I then tied the sheet. This had to be done so that the line could be kept tight all the time and would not tangle.
Only when she sailed correctly with



BLOCKS AND PULLEYS with elastic take the slack when the sail winch is operated. The tape player for sound effects can be seen at the bottom.

the lower mast, did I proceed to install the remaining masts sections and sails. All the sails are tied to each other and I use one set of two lines to brace them all together. The gaff sail is set permanently and I operate the jibs separately with a typical radio control sail unit (made by Dumas).

I use a seven channel radio control for the ship. I use a separate channel for the rudder, sail control, jib control, tape recorder and gun firing. The sixth and seventh channel is still open for future controls. I'm considering a separate gaff sail control. I must add that the same winch controls both the yard bracing and sheet.

I had decided not to use any limit contact switches on the sail winch. I use 1/4-inch diameter 2 1/2-inch long O-ring belts on double pulleys. (O-rings can be purchased in almost any combination of sizes.) The friction of the belts limits the travel mechanism. By trial and error, I found the right combination of tensions for bracing lines and limit of travel. When the yards are tight against the rigging, the pulleys simply slip and won't allow it to go any further. It is quite foolproof and gives the tight bracing that is necessary if the ship is to tack properly up-wind.

The RATTLESNAKE tacks almost as good as a schooner, which is better than the actual ship ever did.

However, getting her to sail correctly

was not easy. I had to make some painful compromises and had several failures.

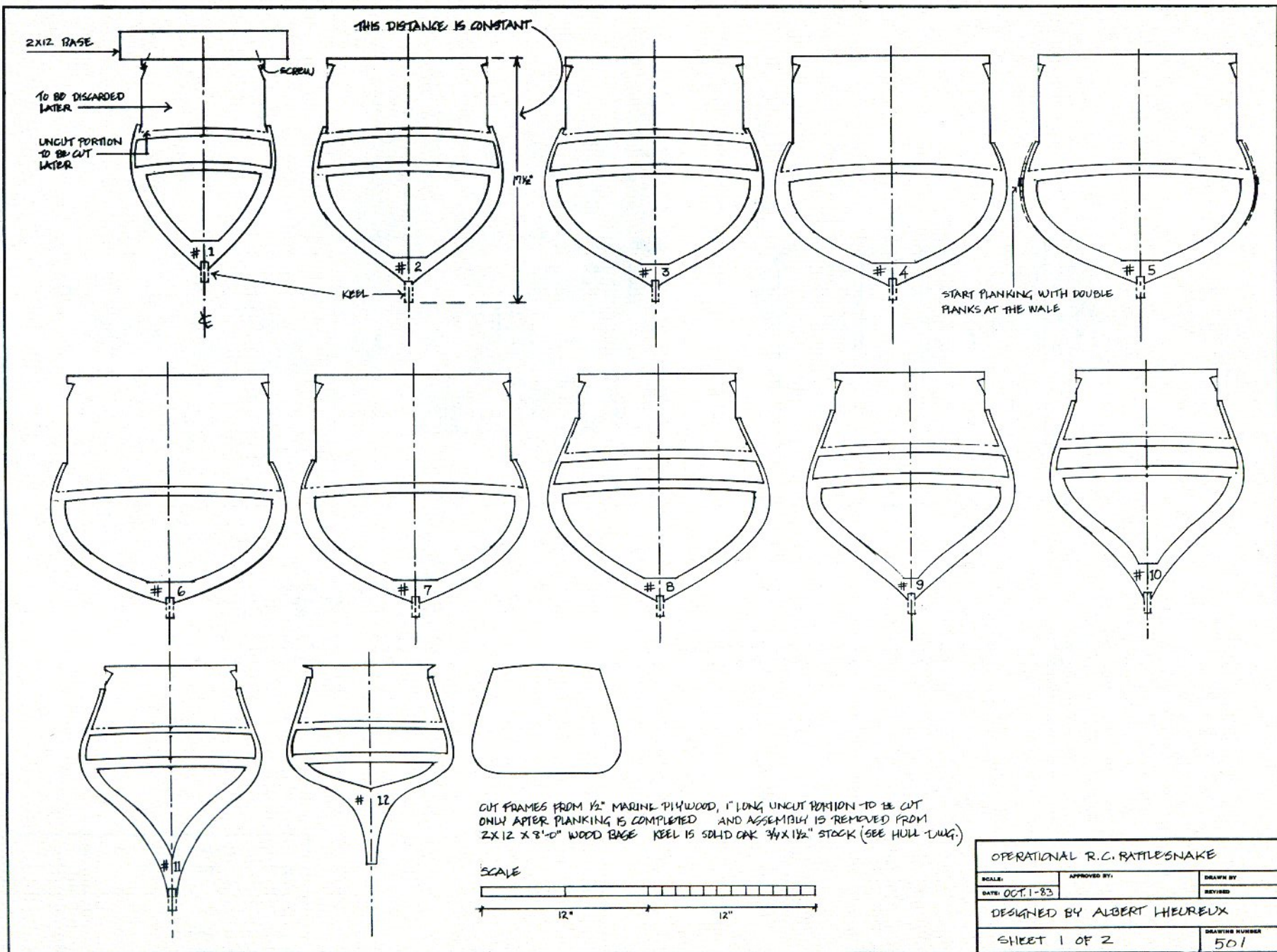
In earlier trials, after each stage of completion, I tested the sails until I had all the sails on the ship. The first time I sailed with all the sails, it was a very light wind on the pond. Despite the light wind, it came about properly, the sails braced right and I could tack satisfactorily without much drifting. The ship looked very stable with its 90-pound ballast on the bottom of the hull. When sailing, I prefer coming about instead of wearing because in a relatively small pond, it takes less room and is more efficient.

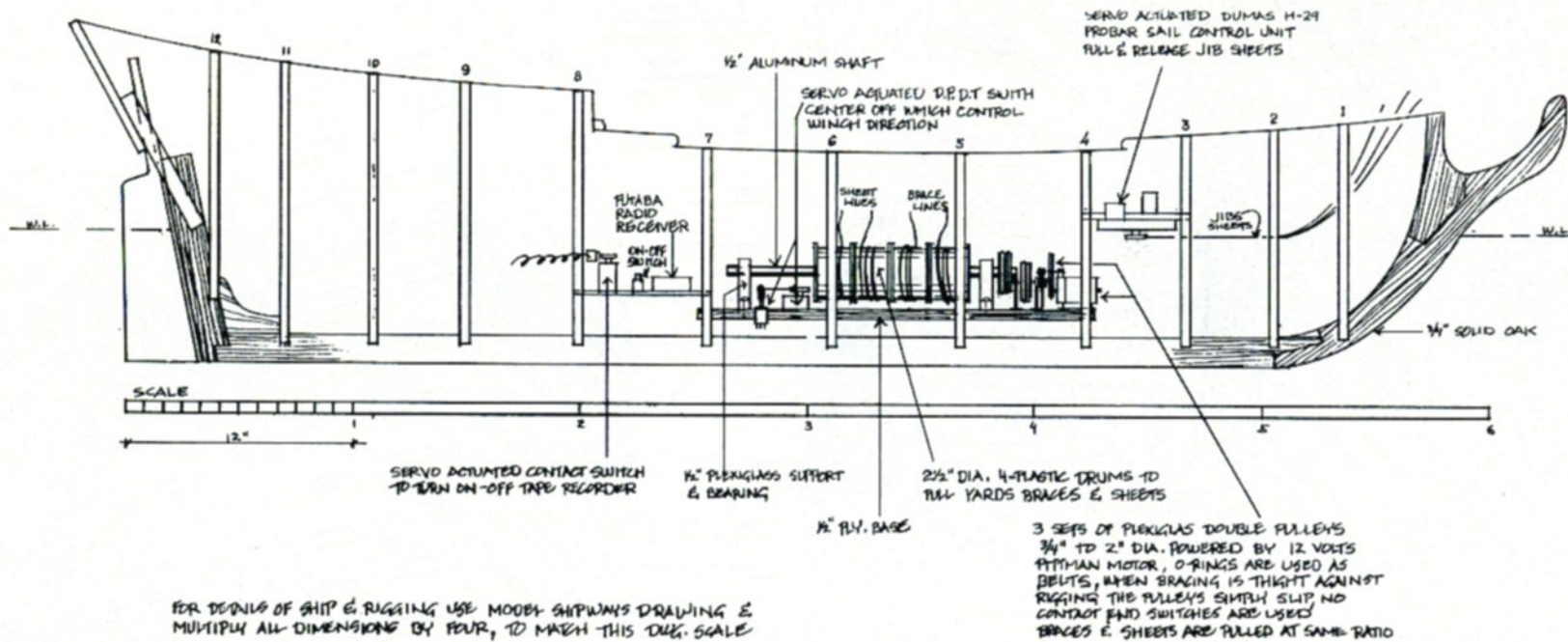
My early success made me over-confident and ill prepared for the next sailing. My next test was in a strong gusty wind. The ship was out of control and I started furling top sails and main sails. With only the gaff sails and jibs left, it was still too unstable with the six foot mast to take the wind. At best, I could sail to 90 degrees to the wind. It became quite clear that a major reassessment of my sailing arrangement was in order if I was to have a practical sailing model that I could use in most conditions.

In order to sail correctly, I had to compromise and install a removable keel under the hull. I used brass wing nuts and bolts to attach the removable keel to the 1/4-inch solid oak keel. This increased my lateral resistance. I was able to fill it with 50 of the 90-pounds required for ballast. I lowered the center of gravity enough to allow the ship to take the pressure on the



AN ALUMINUM custom built carriage was made to move and launch the ship without strenuous effort.

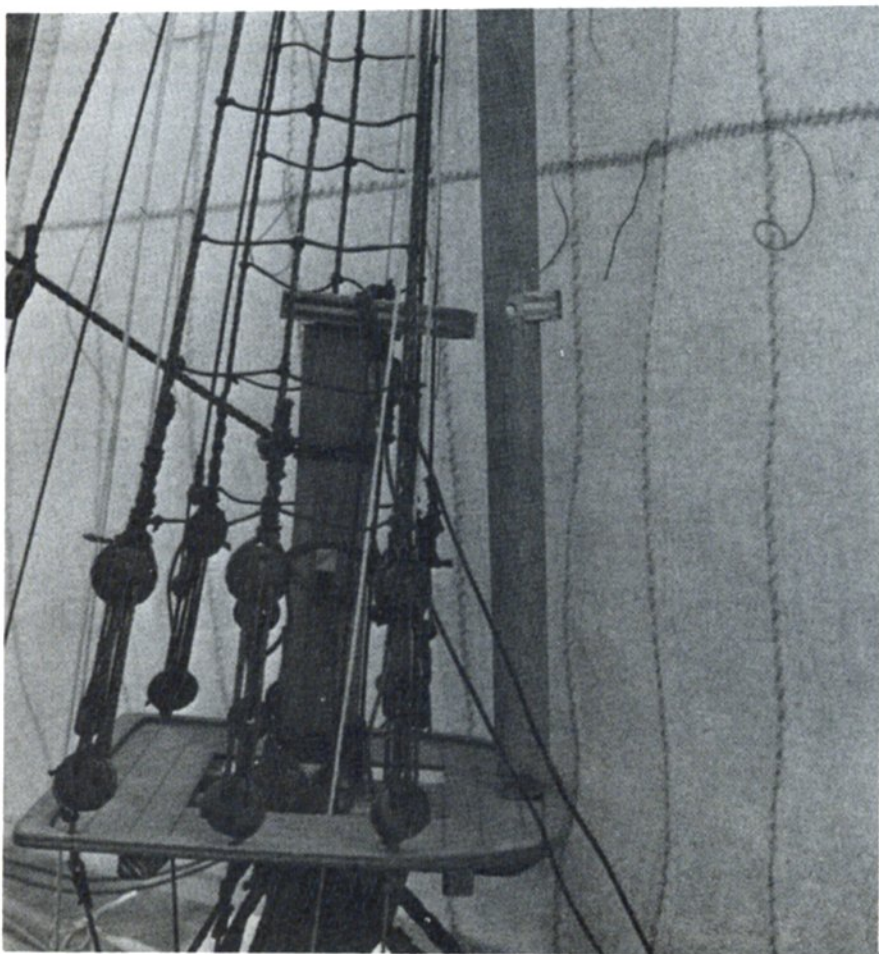




OPERATIONAL RC BATTLENAKE		
SCALE:	APPROVED BY:	DRAWN BY:
DATE: OCT-1-83		REVISED:
DESIGNED BY ALBERT LHEUREUX		
SHEET 2 OF 2		DRAWING NUMBER 501



CLOSE UP OF keel and rudder extension.



THIS PHOTOGRAPH shows how the mast comes apart at the foremast top.

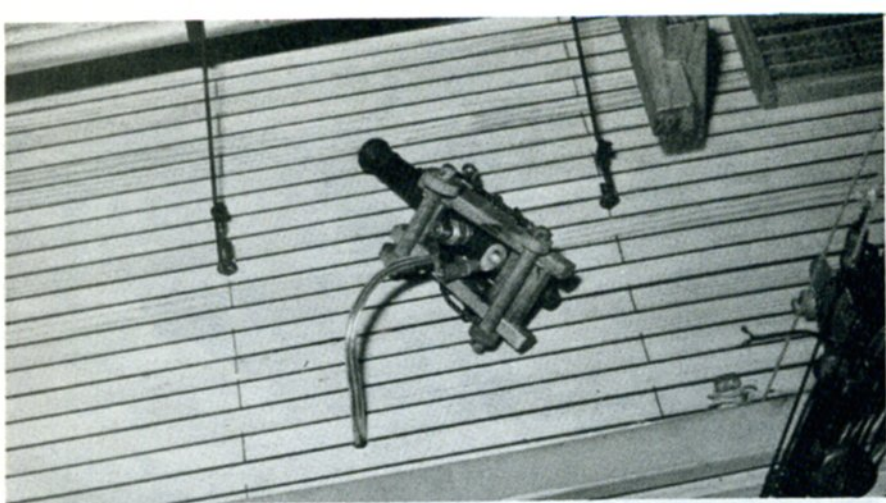
tall masts and retain its stability. This removable keel, of course, took away my dream of having a true scale hull. However, now she sails correctly and the keel is invisible when in the water. A removable extension to the rudder was also necessary to balance the system.

When the sailing technique was taken care of, I turned my attention to the guns. I used my lathe to turn a plexiglass model of the gun barrel. It was 3½-inches long and based on contemporary gun drawings of six-pounders. I gave this model to John Woodard of San Diego and he molded and cast ten custom solid brass guns. I drilled a ¼-inch hole in each barrel to accommodate a model plane engine glow plug. I built the gun carriages of solid oak, and if the glow plug is located properly, it is almost invisible.

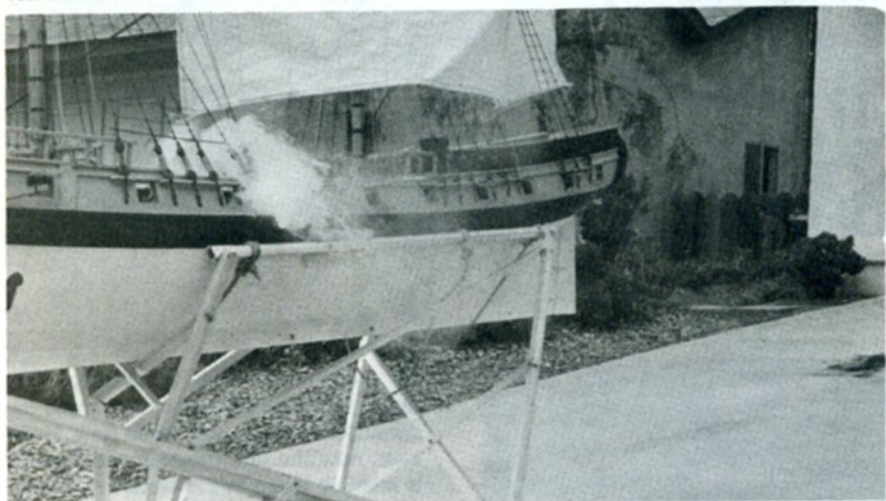
I fire the cannons through an electronic control designed and built by Son Benoit, (an independent electronic technician). The electronic control function is delivered to each plug through an adjustable pot. and a 1.5 to 2-volt charge ignites the old type black powder.

It is necessary to adjust individually each glow plug. I sequence fire from one to five guns at intervals of ten seconds automatically, I don't control the guns individually. I do control the port or starboard side firing sequence with a servo and two contact switches. I have only 10 guns for ease of operation and no guns below the quarter deck and fosc'l.

For sound effect, I use a portable tape recorder with an extension speaker



UNDERSIDE OF GUN showing glow plug and ground wire. The guns are muzzle loaded as the real ones were.



THE NUMBER TWO port side gun is shown here firing. It was loaded with black powder and a plug of tightly rolled paper.



A final photo of the RATTLESNAKE afloat in the water.

under the quarter deck. The tape player is activated by radio.

This completes my description of the construction and operation of the RATTLESNAKE. I have omitted most finish, carving and mast construction details because they follow the general practice

similar to static construction.

My best reward is finally having my youth dream come true. An 18th century ship, with sailors singing, firing their old fashioned guns and sailing again with all its romance. It is a visual pleasure to the delight of a young at heart. ☺