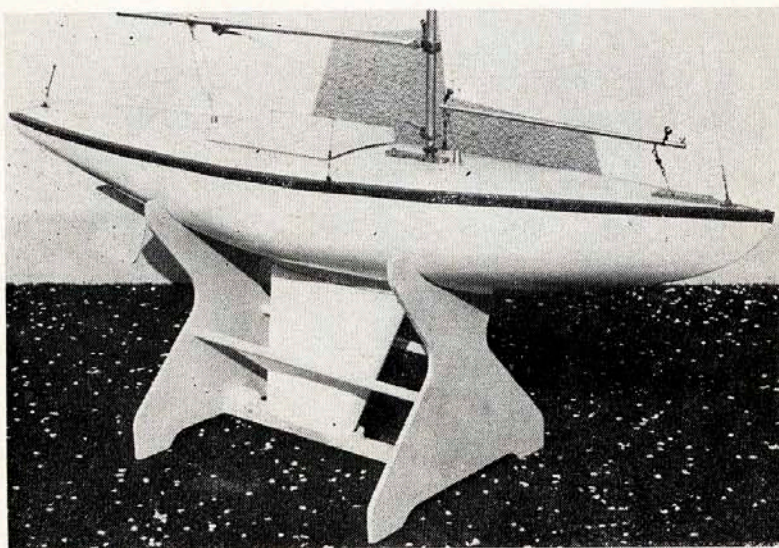


MODEL BOATS



STAR-C

An independent report
on building and sailing
our 42 in. R/C
one-design yacht
by experienced skipper

BOB JEFFRIES

Regular readers of this journal and its companion *Radio Control Models and Electronics* will know my views regarding the future of R/C yachting, and my campaign for the adoption of a smaller class, more suitable for ease of building, transport and cost than the heavy 'Q' class. Recently I have had a lot of fun sailing a somewhat elderly 'M' boat adapted to radio control. From that experience, I have designed a new boat to the 'M' rules, but adapted to give the best performance under radio control.

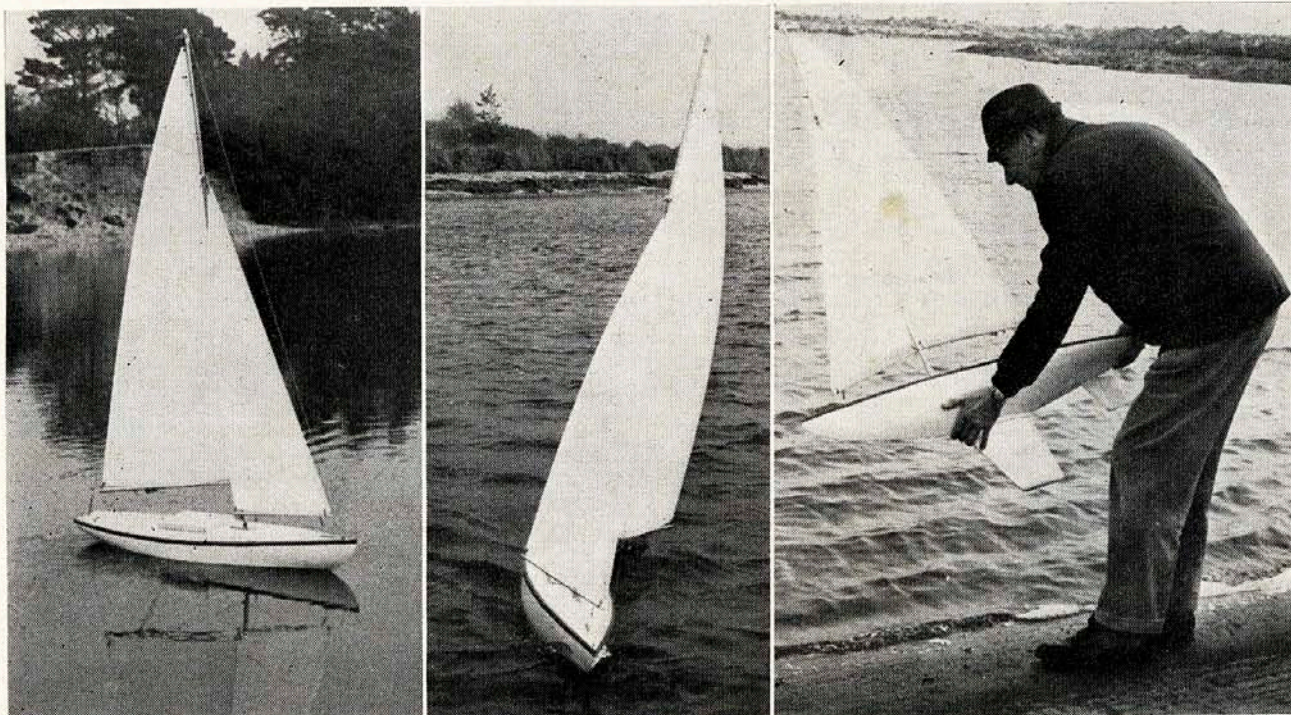
Out of the blue comes the December issue of *Model Boats* and the announcement of the little *Star C*. I felt the size (42 in. overall) was a bit on the small size, but worth building and testing, in the hope that the size would catch on and become the new smaller class I have so long desired.

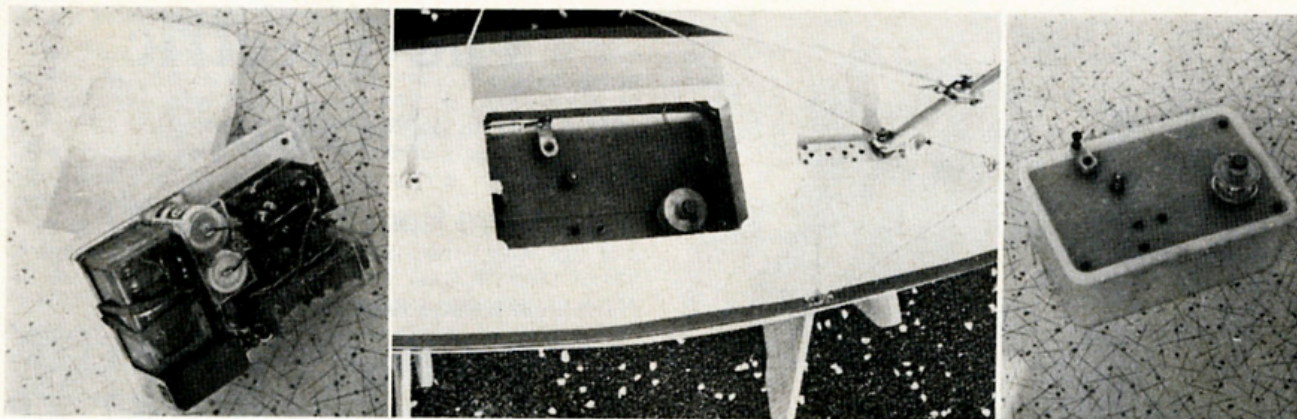
An immediate approach to your Editor produced one of the first hulls after the prototype. All work on my new 'M' boat was stopped, so that work could start on this,

immediately, and it could be built and tested with all speed.

The hull and the two halves of the fin are in glass-reinforced plastic, and were in white, with an excellent finish that would not require painting or any further effort. The idea of building a keel that did not require casting was a good idea, and is worthy of commendation.

The digital equipment in my present 'M' boat weighs, complete with hatch and perspex box, around 1½ lb., so I decided to use the plastic sandwich box as recommended, as this would reduce the weight slightly. I allowed for 1½ lb. of gear and therefore made the fin keel weigh 6 lb. The jointing of the two halves of the fin, and the attachment to the bottom of the hull, were made with epoxy resin. The drawings stated the space in the fin should be filled with polystyrene. I was working ahead of the articles on the construction, and poured in the two chemicals that make polystyrene foam. I found later the idea was to fill these spaces with chopped-up ceiling tiles.





Pictures opposite show Bob's finished model on test. Note the 'goose-winging' centre bottom; this can be assured by using a light spring or rubber band to bias the jib, but seems to happen automatically anyway on this yacht - the original model does it, too. Above, views of the electronics, set well below deck as seen in the centre photo. One advantage of a glass hull is relatively easy accessibility, with no internal structure to obstruct reaching inside.

I think my idea, if you can obtain the chemicals, is better.

The rudder was made to specification. Your Editor calls me 'a big rudder proponent' in this he is right. I am firmly of the opinion that a large rudder moved a small amount does not slow a boat anything like as much as a small rudder moved a larger amount, assuming the turning circle is the same in both cases. More on this subject later.

The general construction calls for no comment. To keep the overall weight down, I used obechi for the deck beams and inwales, and made the deck from 0.8 mm. waterproof ply. I watched the weights of all components carefully, as it was my idea to keep the weight down to the bottom limit of the specification. In this I was successful, and actually I shall have add to weight as I am all of two ounces below the 11½ lb.

As mentioned earlier, I fitted the radio equipment in the plastic box recommended, but fitted it below a hatch, as low as possible to keep the centre of gravity down. This made it necessary to fit the drive to the rudder and the rigging to the sail winch below deck level.

The various fittings were all home made, were quite conventional and call for no comment. The sails were obtained from Nylet Ltd. of Fordingbridge. This firm are local to me, and have made sails for my earlier boats for some years. They are in white siliconised Terelyne and are very well cut and finished.

The radio equipment is again home made, and is based on the successful digital equipment described in *Radio Control Models and Electronics* some two years ago. I modified the transmitter to include tuned circuits in place of the untuned R.F. chokes, and in so doing increased the power output considerably. The rudder is operated by a Remcon Quantum servo mechanics using Horizon amplifier. The sail winch is home made, and operated again by a Horizon amplifier operating relays to switch the separate battery power to the winch motor. Both rudder and sails are operated proportionally.

I sympathise with our Editor on his reports on the first trials of the prototype. I also found the weather wet, too windy, not enough wind, no time, and had to wait several weeks until a suitable occasion when weather and available time coincided. The first trials were made in somewhat windy conditions around force 4/5, really too windy to carry out serious trimming adjustments. My first reaction was the mast was too far back, as she would keep coming up into wind, and I found difficulty in gybing (turning away from the wind). All of which were

cured on subsequent trials when the mast was moved forward.

Subsequent trials were made in much more suitable weather. I found she would beat to windward really well, and would hold her course for sometimes as much as 25 yards without having to give any rudder adjustment. With the jib and mainsail about 10 degrees from centre line, she would beat to windward on either tack without difficulty. Downwind, with the sails let right out, she was quite easy to control and showed no tendency to wander. The rudder was adequate in all winds except very light airs when the boat was 'ghosting' (hardly moving at all). Then I wished the rudder was bigger.

At the Boat Show at Earls Court recently I had the pleasure of sailing one of the R/C 'M' class yachts by Flotilla Models Ltd. in the lake, using artificial wind from a large industrial-type fan. These yachts are fitted with spade-type rudders and I was so impressed with their performance and ease of control, I decided to use this type of rudder on the 'M' boat I referred to earlier. I am contemplating changing the rudder on this little yacht also. The spade rudder is only suitable for use when the control is proportional. The bang-bang type of control, which gives full rudder or centre only, is too fierce to get smooth control with this type of rudder.

Undoubtedly the best type of radio to use is where the control is proportional for both rudder and sail setting. I have tried sailing without using the sail adjustment, and only using full rudder or centre to simulate the use of single-channel equipment. Sailing cross wind on a figure of eight course, I found it quite simple, and would give a lot of fun to anyone with the simplest equipment. Races could be held with other yachts similarly equipped, but it will be understood that full control of rudder and sails is vastly preferable.

From the few times I have sailed this little yacht (I am calling mine 'Electra VII', being the seventh R/C yacht I have built!) I have decided it was well worth building and will give a lot of pleasure in sailing. I see that at the time of writing, over thirty are being built. I should be pleased to offer anyone in the Bournemouth/Southampton area an opportunity of seeing mine, and perhaps seeing her sail. I would welcome to hear from anyone building in this area, so that we could get together and have some friendly racing. Perhaps if numbers are sufficient we may start a club locally. Either drop me a line c/o our Editor or telephone me anytime at Highcliffe 4438 and have a chat.