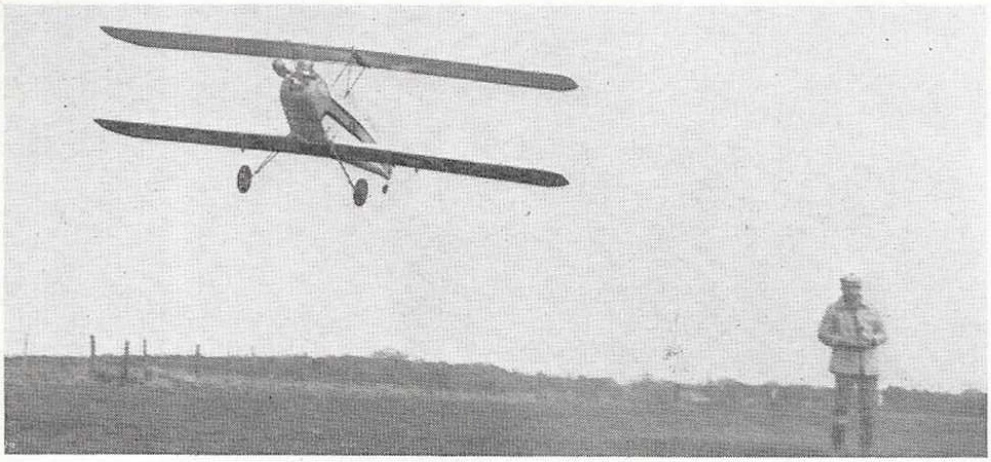
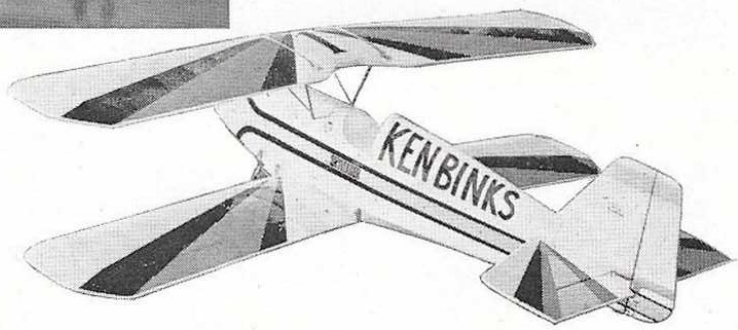


Our slope soaring columnist caught out! Aeromaster seen left, away to a good start on test flight. Below: a nice piece of advertising on finished model. Aeromaster is extremely aerobatic as our author's text reveals. Read on!

By
Ken Binks

R.C.M.&E. Kit Review No. 61

Aamco AEROMASTER



THE Aeromaster story started for me some years ago at one of the first Rochester City Airport competitions. Entered in the free style aerobatic event, my model was shot down by interference. Derek Woodley came to my aid for the third round with the offer of the loan of his Aamco Aeromaster biplane.

Biplanes have always held a fascination with me but I was a little dubious about their aerobatic performances compared to a normal monoplane. Yet in the Aeromaster, I now found a model as responsive as any aerobatic model I had flown before and it was obviously because Derek had it set up correctly. Thus fired, I borrowed his plan and constructed my own, which gave two years good service and was used to win various aerobatic competitions during this time, in particular the free-style type of event.

From the foregoing, you'll gather that Aamco's Aeromaster kit, manufactured in U.S.A. is nothing new. However, having been missing from the British model market for some time, Henry J. Nicholls & Son Ltd. are once again importing this popular kit.

When my first Aeromaster was getting very oil soaked and repaired, I decided that a replacement would be part of my winter building programme for 73/74, and it came as a pleasant surprise and delight when our Editor asked if I would be interested in building an Aeromaster review kit. There could be only one answer.

Construction

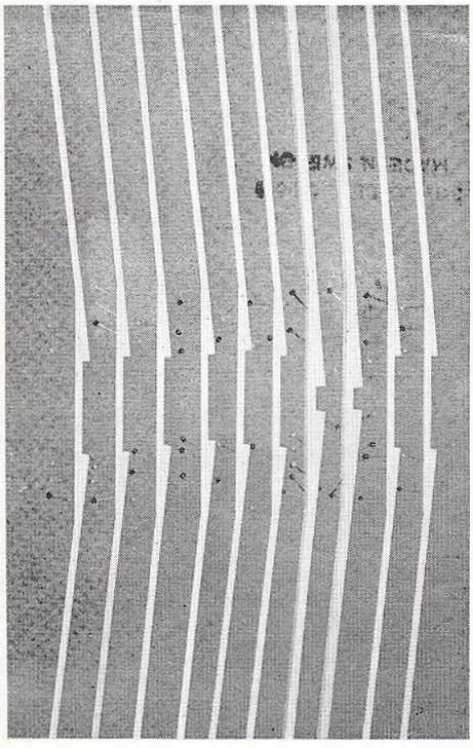
Fuselage

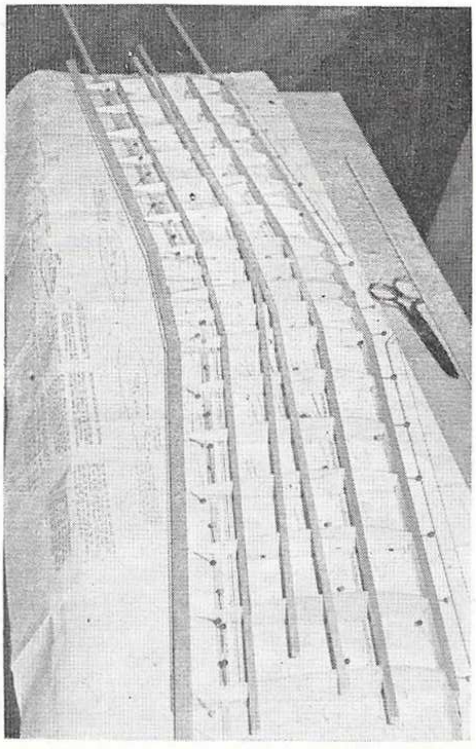
So here in this kit was just an extra three to four weeks building and within a week I was on the building board, starting the construction with the fuselage. This is really superbly cut out and the basic fuselage was completed without even touching a modelling knife. Only when I came to the stringers etc. did I recourse to that very basic tool for the first time!

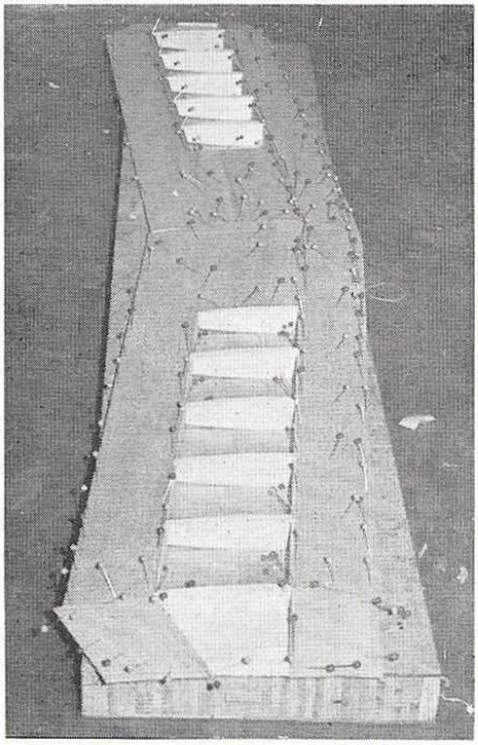
The quality of engineering in this kit also shows in the hardware pack which consists of no less than 11 major wire parts, all ready shaped. To anybody contemplating building a biplane of any description, the main drawback is usually the wire work associated with the cabane struts which require accuracy to ensure correct wing alignment etc. In the Aeromaster kit, all this exacting work is done for you.

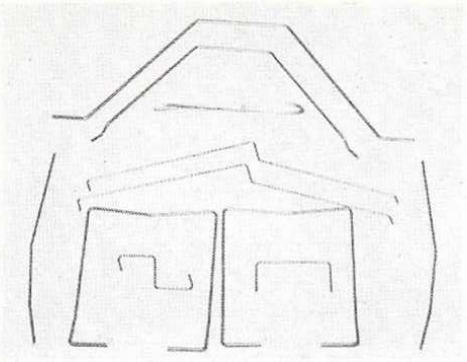
Wings

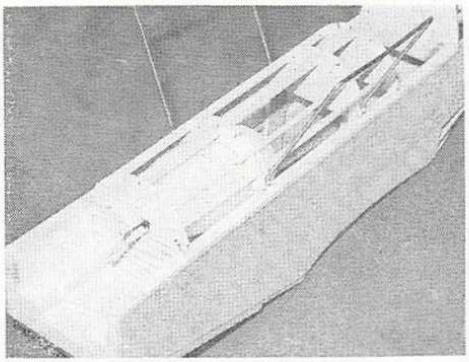
The most important building stage is always the wings, plural with a biplane and with the Aeromaster, the wings can be built in three different configurations. Of these three, the one I have found most successful for the performance one expects of the Aeromaster has always been the Aeromaster Too, in which both wings are sweep

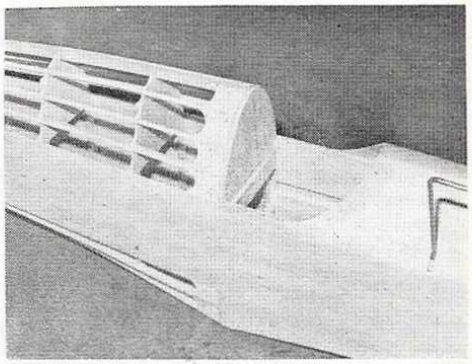


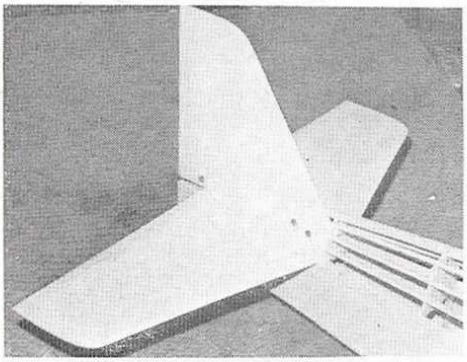




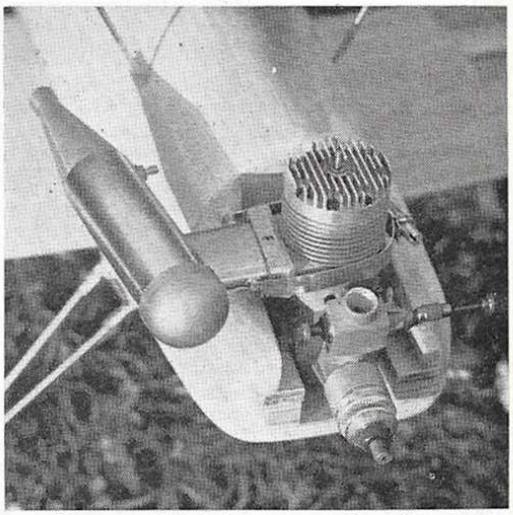




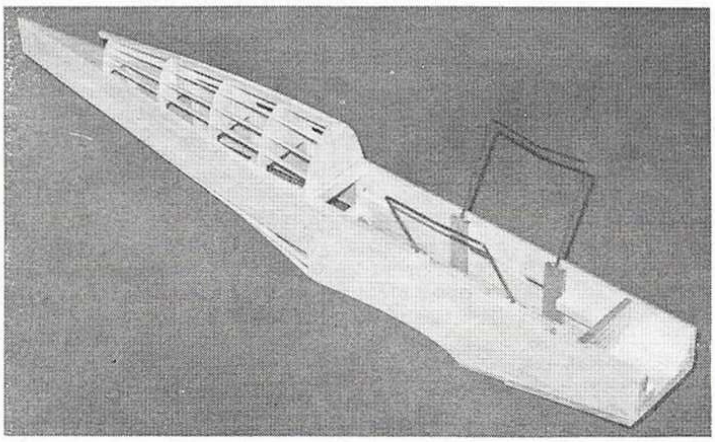




Top left: the hard part done! Complicated wire shapes of cabane and undercarriage struts are all done for you! Above: detail of fuselage forward section showing structure at nose and tank bay. Above right: Construction close-up of the cockpit and stringered rear fuselage. Left: the tail cone, again showing the stringered rear fuselage top deck.



Above: Moki 10 c.c. motor (available through Harry Brooks) installed and with muffler. Engine compartment is very open to aid motor servicing. Left: the complete fuselage structure.



back, and the maximum span is 52½ in. This gives almost an extra sq. ft. of wing area for the smaller (lower) wing panels, and this is a great wing loading saver. This model has two basic requirements for best performance. One is light weight (i.e. light wing loading) and the other is a nice powerful motor. The latter will ensure a reasonably wide speed range in spite of the heavy drag of the biplane layout. The wings were duly constructed on a flat building board. Because the wing is swept back, it must be supported exactly on the correct part of the curvature of the ribs. If it is not, wash-in or wash-out will be built into each wing panel instead of perfectly flat as required. The correct positions are shown on the plan by various little black rectangles which indicate where ¼ in. square packing should be placed.

Once the wings have been built, these can be placed on the fuselage and accurate alignment of wings to fuselage carried out. This requires measuring the distance between the tips relative to each other and ensuring that the bottom wing is square with the side of the fuselage. Then, by accurately measuring the tailplane height above a flat building board while resting the lower wing on the board, the tailplane is aligned with the wings, followed finally by alignment of the fin to finish off.

The only modification made to this kit was the inclusion of triangular shaped balsa between the fin and tailplane joint. On my first Aeromaster I found this was a weak point in flip-over landings.

Finishing

The entire model was covered with standard weight nylon, the wings being covered in two pieces, i.e. top and bottom. Because the fuselage features very difficult angular changes rather than compound curves which nylon can negotiate, I covered this component in five pieces. That is, the top turtle deck, the lower turtle deck, the cowl in between the cabane struts, both fuselage sides and the small portion from the undercarriage to nose. The tailplane, fin and control surfaces, were also nyloned, while the rudder, elevators and ailerons received light weight tissue covering. The entire airframe was given about five or six coats of 50/50 dope-thinners, after which colour trim was added using car cellulose. After application of transfers, the whole model was finally given two coats of *RipMax Tufcoat* for fuelproofing.

Three stages of wing construction. At far left, ten wing spars prepared, centre – the basic wing structure of ribs and spars and at left, the sheeted structure.

Then came the re-installation of the radio equipment plus the motor which, in this case, is the Hungarian *Moki 61* (available through Harry Brooks – Ed). This I found to be a powerful and comparatively cheap powerplant.

Flying

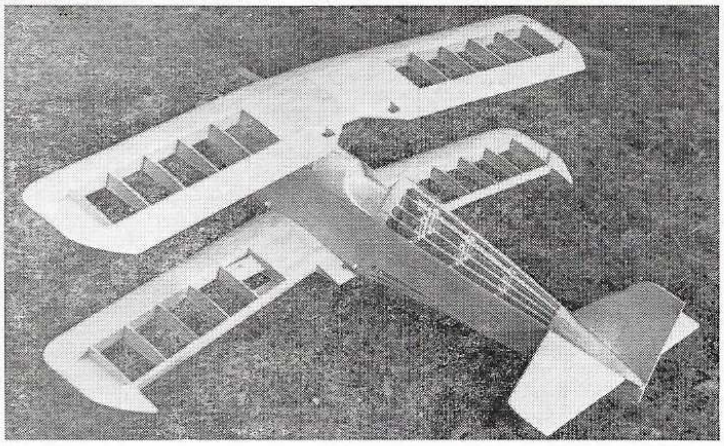
The Aeromaster is the only biplane I have flown that is fully capable of all the aerobatic manoeuvres of its full-size counterparts, and it is purely up to the ingenuity and inventiveness of the pilot in realising the full potential of this biplane. There are a great number of aerobatic manoeuvres listed on the plan and many of these are taken from full-size schedules used in America for full-size free style aerobatics.

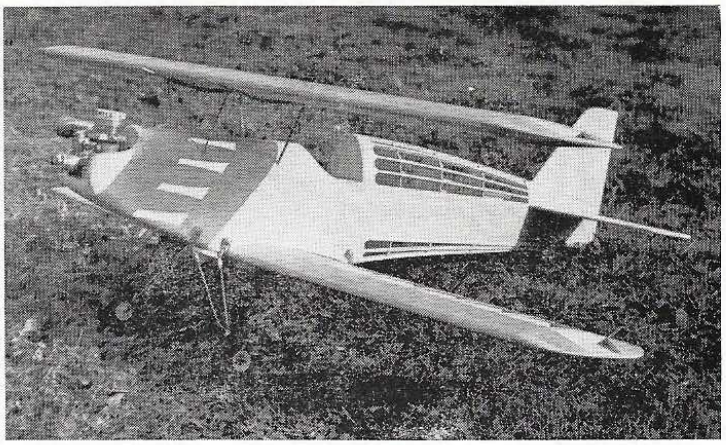
So let's get down to flying the model. The centre of gravity is as noted on the wing plan for the Aeromaster Too, that is, ⅛ in. in front of the rear cabane strut and the control movements on my model, in each case measured at the trailing edge are as follows:

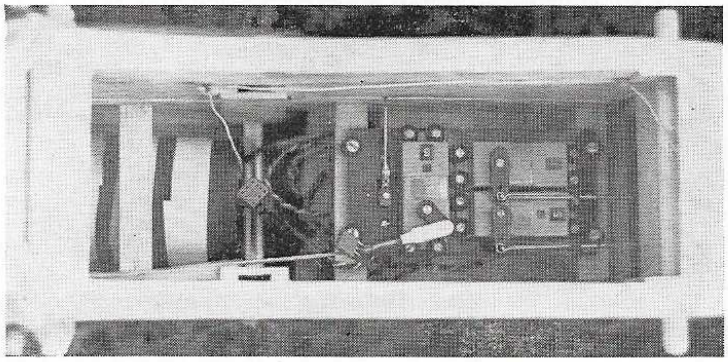
rudder 1 in. each way; elevator 1 in. up and down; ailerons ⅝ in. up and down.

These are the movements which I have found to be required to accomplish all the manoeuvres in a free style type competition.

The particularly difficult one is the flick roll from knife-edge position, which can either be one flick roll or 1½ flick. The problem here is that if the rudder movement is excessive, the flick will not stop crisply because the fuselage remains stalled. In this condition, the fuselage, which is doing most of the lifting in the knife-edge position, appears to be stalled by the excessive rudder movement, and I've found that by reducing the rudder throw, it is possible to initiate these flick type manoeuvres from knife-edge position







Above and top right: two views of the finished, basic structure, minus only the control surfaces. Kit goes together very well. Right: the radio installation showing the three Kraft KPS-12 servos of the Skyleader SLX radio system used for the review test. Finished weight – 6 lb., though 7½ lb. is acceptable.

fairly accurately.

The aforementioned control surface set-up makes the following aerobatics fully possible.

With simple ones, such as *Octagonal Loops*, the large amount of elevator movement enables crisp transitions at the eight points of the loop and by shutting down the throttle in the last part of the manoeuvre, constant speed can be maintained.

A more sophisticated variation is a *Square Loop* with a half roll in each leg. Start off with a positive pull up, then a half roll with a negative direction change, a half roll across the top, with a positive turn, a half roll on the downward leg followed by a quarter outside loop out of the manoeuvre, exiting in a half roll.

Another manoeuvre that is perfectly possible with practice is a *Rolling Loop*, that is a loop with a roll completed in the one loop. This manoeuvre does take quite a bit of practice because you have to co-ordinate elevator with a constant aileron deflection and at the same time use alternately left and right rudder to provide a turning moment at the 9 o'clock and 3 o'clock positions. As a guide to this, the model should reach the top of the loop the right way up, while at the 9 o'clock and 3 o'clock positions, the planform is projected towards you.

Other more complicated manoeuvres, as I've mentioned before, are knife-edge flick manoeuvres, for which you should first practice flick manoeuvres from level flight, getting the model to stop and start after one and 1½ revolutions. Then practise knife-edge flight and you will find that the Aeromaster, with its large fuselage side area is quite good at maintaining level flight in a knife-edge position.

For the *Knife-Edge Flick*, the model is flown in a knife-edge position with full rudder held on, for instance, left rudder. Full left ailerons and elevator are introduced while holding the rudder to then initiate a flick roll. After a predetermined time, ailerons and elevator are released, timed, hopefully, to return the model to the knife-edge position which is maintained by the left rudder deflection. This is just a matter of practising with your model to achieve the stop at the correct time. If the model consistently continues the flick roll past the point of control surface release and it is indecisive in stopping, this usually can be traced to excessive rudder movement.

A sophistication of this flick manoeuvre is the 1½ flick which, after initiating the flick roll from knife-edge position is held slightly longer so that the model recovers opposite wing down, with opposite rudder quickly applied. This then, hopefully, brings the model to rest in the reverse knife-edge position.

This sort of manoeuvre may seem frighteningly complicated, but it is the type of manoeuvre in which the biplane excels. The simpler manoeuvres such as four point rolls, rolling circles etc. are, of course, fully within the Aeromaster's capabilities.

To sum up, the Aeromaster is a superb piece of kitting engineering, but it lacks the goodies that we are accustomed to these days, such as wheels, tanks etc. However, the crispness of the die-cutting and the grooved doublers etc. certainly outweigh this. The manufacturer is Aamco from U.S.A., the importer in this country is H. J. Nicholls (308 Holloway Rd., London, N.7) and the price is £22.95 which I think is very reasonable. Radio used for the test was *Skyleader*.