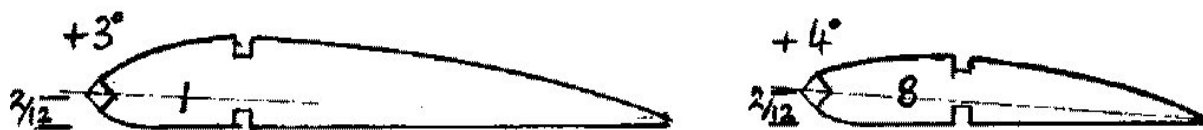


Don't fall for the falling trailing -edge

Says ALAN WIGGS

An article published in the SAM 35 (England) Year Book No. 13 which provides food for thought for all of us, Yanks included!!



The Model Aerodrome, Birmingham, produced two models with swept-back wing leading edges — the 24in. White Wings and Miss Blue Bird (32in.) I built the White Wings in 1939 and was encouraged by success with this model. I was then given the kit of the Blue Bird. I cannot recall any flights, the model being broken up. But the original 10in. prop and the blue wheels were saved.

At the start of SAM 35 I found the plan of White Wings which I built and had some good flights. Not so with the Miss Blue Bird!

The original Blue Bird was claimed to have made a flight of 5-1/2min. O.O.S. on June 25, 1937. The Model Aerodrome catalogue also said that "hundreds" of open competitions had been won with time ranging from 2min. to 3min. They also stated that a number of letters of appreciation had been received from all over the country. These included the Irish official record for lightweight models of 3min. 13sec. In Yearbook No 4, page 86, you can read more about Miss Blue Bird written by Stan Ford and how he made his first thermal flight.

Recently I took another look at the Blue Bird plan and found the diagonal of the 1/8in.-sq. leading edge remained a constant 2/12th of an inch above the flat rib under-surface. [Now there's a true vintage aeromodeller, working in twelfths!Ed.] The geometrical effect of this on a wing tapering from 3-1/2in. to 2-1/2in. is to increase the angle of a line drawn from the trailing edge through the centre of the leading edge as you progress towards the tip. In this case, the true angle of incidence increases from 3deg. at the centre section to 4deg. at the tip. [See sketch, top.] This meant that the tips had built-in wash-in, and sure enough, whenever the model turned down-wind it would tip-stall and spin in. I watersprayed both wings and re-set them with 3/16in. under each trailing-edge tip. This set the undersurface at -5deg and gave -1 deg of wash-out. With this modification, Miss Blue Bird performs reasonably well. In 1940 a Blue Bird Mk II was produced. And the plan showed that the wing should be built with -2deg. wash-out.

So be warned: falling trailing-edge ribs for a tailplane where the L.E. is flat on the building board are safe. But narrow-chord swept wings may require wash-out to prevent tip-stalling.

