

# Waffle 2

**Fancy an unorthodox indoor model? In Canada, Mike Thomas tried a tailless...**

**W**hen our indoor chairman Bill Henderson (another Ex.Pat. Brit) announced that one of our 98/99 indoor postal event classes would be for formula A-6 tailless, I was interested. After more thought I realised that coming in next year was the 50th anniversary of my British record-holding indoor tailless model plan in the 1950 *Aeromodeller*. As a youth, I had all kinds of fun with this model, which had been (by sheer luck) super stable flight. This model had no name originally, But "Rushy" our old friend, mentor and editor, had thought of the name "Waffle" and encouraged me to use it. So, here was the chance to not only participate in our postal contest, but also to indulge in a bit of nostalgia and re-live those Halcyon days of the 1950s! The A-6 rules are designed primarily to encourage beginners, with all materials available from the local Hobby shop.

## A-6 RULES

1. Rubber power only.
2. Total area 45 sq.in. maximum.
3. Prop dia. 6" maximum.
4. Blades must be flat, not sanded to section, and untwisted.
5. Motor stick length 6" maximum.
6. No tapered or rounded wood.
7. No curves in outline.
8. Wire parts 1/32".
9. Wing surface outlines 1/16"sq. min..
10. Ribs 1/32" sheet min.
11. Tissue covering only.
12. No exotic materials such as Boron, Kevlar, etc.

On the Waffle 2, the motor stick is a light piece of 3/32" x 3/16" with Aluminium tube bearings and 3/32" x 1/8" stand-off bound with

fine thread and smeared with Balsa cement. My cement was thinned with acetone - 70% cement, 30% acetone. All joints were glued using a pointed thin dowel. The rear hook is bent from 1/32" wire; the pointed end is pushed into the rear of the motor stick, and a fillet of cyano glue applied all over.

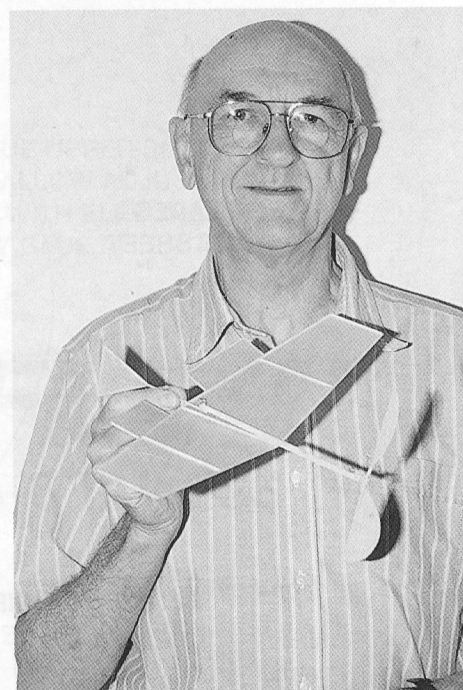
The wing is built flat, after which both tips are propped up 1 1/4" each and the centre well-glued. When dry, the main wing is covered on the bottom surface, using lightweight Jap tissue. Covering the under surface makes the wing section equivalent to being reflexed - a good system for a tailless model. The elevons are covered on the upper surface to provide lifting section effort. For the tissue covering, I recommend the use of a UHU or equivalent glue stick which does not wet the tissue. It is also easy to lift the tissue from the outline and re-position with another smear of the glue stick to correct minor errors in the tissue application. It is better to iron the tissue flat prior to the use and then apply it as slack as possible to prevent wing warping, because the tissue can tighten up when flying in very dry conditions and warp the wing. No water shrinking nor doping is done, for the same reason. Position and glue the wing on to the fuselage assembly to provide the balance point as shown on the plans. Stalling or diving tendency is corrected by cracking the elevon joints; moving them up to prevent diving, or down to prevent stalling, and then re-glue.

The original Waffle, back in 1949, had the elevons raised at the rear by about 1/4". This latest model flies best with the elevons dead horizontal. I don't understand how the model has the kind of automatic stability it displays - one would think that when bumping off a beam or hanging light, it would dive down or stall - in actual fact, it just does flick and continues flying

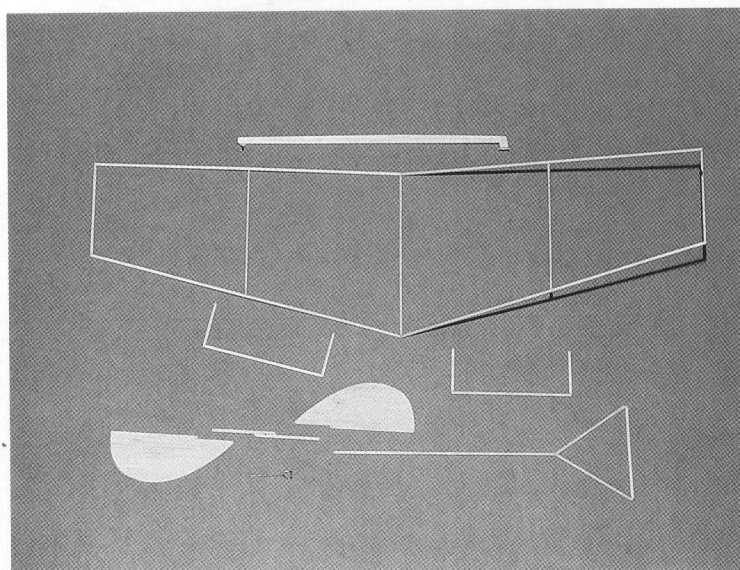
with very little loss of height.

My best time in a 19 feet high gym is over 3 minutes. The real handicap to even better performance is the flat, no twist prop, which is in keeping with the A-6 rules. I feel that the times would more than double if a helical type pitch prop were substituted.

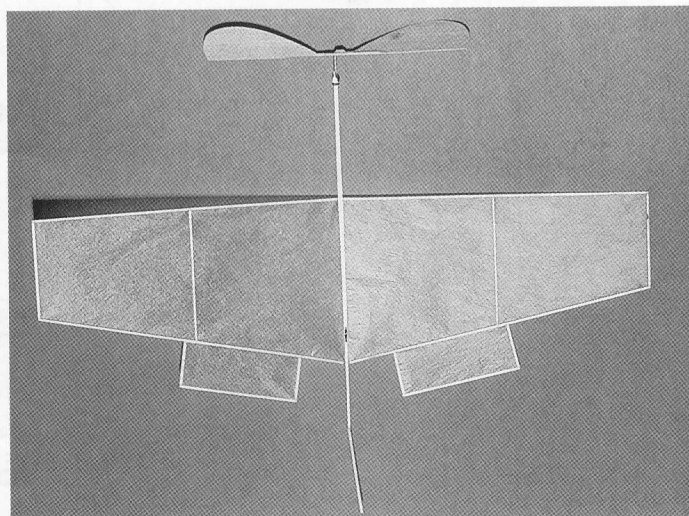
Try A-6 tailless flying - and join in the fun! **AM**



**50 years on from Waffle 1, Mike poses with his '99 version.**



**Very basic structure - no curves, except on the flat, paddle-bladed prop.**



**Covered in slack, but wrinkle-free Jap tissue (lower surface wing, top surface elevons), Waffle 2 is ready to go. Mike found that just 1/4" rudder offset, 2° of side-thrust and elevons set at neutral gave a super-stable flight performance.**

WING IS BUILT FLAT

GLUE WELL AFTER  
RAISING TIPS

PACK UP EACH  
TIP 1 1/4"

LIGHT TISSUE  
COVER BOTTOM  
SURFACE

ELEVON

COVER TOP  
SURFACE ONLY

TACK GLUE UPPER SURFACE ONLY,  
TO ALLOW ADJUSTMENT  
START WITH ELEVONS UP 1/32"  
FULLY GLUE AFTER TESTING

PROP BLADES  
1/32" LIGHT SHEET

GLUE USING TEMPLATE

PROP SPAR 1/16" HARD

GLASS BEAD

ALUM. TUBE 1/32" I.D.

1/32" WIRE

BEND OVER WIRE  
CYANO GLUE

TAN RUBBER .055 x 1/4"  
APPROX. 2200 TURNS

1/32" WIRE  
GLUE WITH CYANO

CG

3/32" x 1/8"

BIND WITH FINE THREAD  
AND GLUE WELL

5/8"

COVER LEFT SIDE ONLY

1° OR 2° RIGHT

RUDDER OFFSET  
APPROX. 1/4" FOR  
RIGHT TURN

1/16" TEMPLATE  
TO SET BLADE  
ANGLE

PROP BLADE

35°

# WAFFLE II

## FORMULA A-6 TALESS

DESIGNED BY  
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ALL UNSPECIFIED STRUCTURE 1/16" SQ. LIGHT