The HUNG-Aereon Embryo Endurance Model

By Dave Stott

The inspiration for this design came from two sources. One was a wingless free flight gas powered model which appeared in April of 1954 in Air Trails magazine, or one of its descendants. Roy Clough, Jr., a noted modeler of those times, was the designer. It began as a blimp configuration, evolving into what Roy dubbed "Anti-Grav Martian Space Ship" shown in the insert. The hull was 10 inches in diameter with a 33 inch length. Power was a Wasp .049 engine. It weighed 6 oz. and carried no lifting gas of any sort.

The second inspiration came from a three-hulled helium assisted aircraft built by the Aereon Corp. of New jersey. The hulls were joined by short wings and stabilizers. The center hull contained the pilot and a small engine driving a quite large geared down pusher prop at the back end. It probably had vertical surfaces, but I cannot remember. It looked much like three dirigibles flying in close formation. It was a proof of concept ship for a larger heavy lift cargo aircraft. The company was dogged by misfortune and finally folded.

Two cardinal rules in aircraft design is to keep as tight a fuselage cross sectional area as possible, and try to keep the area of the fuselage which falls behind the prop disc area as small as possible (Blanked out).

Because the Embryo Endurance rules seem to restrict a wide latitude in design, a strong desire grew to spoof some of those rules and design an Embryo with a fuselage so voluminous that many of the required theoretical 1 ¼ X 1 ½ X 3 inch fuselage boxes would rattle around inside of it. Thus, the HUNG-Aereon was born.

It was decided to make the hull 7 inches in diameter. The length was simply determined by cutting a 3 foot long 1/16 sq. balsa strip in half and bending it to a streamline shape. This determined the hull length to be about 15 inches.

Rather than blow slipstream onto the bow of the hull causing great drag with a tractor design, a prop, the same diameter as the hull, was placed at the rear. This caused the hull to completely blank out the prop disc, the other no-no. Yet, it worked well, as the air entering the prop from the front tended to keep the flow over the hull attached, thus lessening drag considerably.

The canard arrangement allowed a very long hook to peg distance for the rubber. The 18 degree sweep of the wings produced effective dihedral.. The rear stabilizer was mounted low in cleaner air flow and supported the main landing gear with the wheels recessed in the twin fins. The end plates on the wing roots are supposed to isolate the airflow over the wing from that of the hull. Maybe they do, and maybe not. They may be too small to be effective.

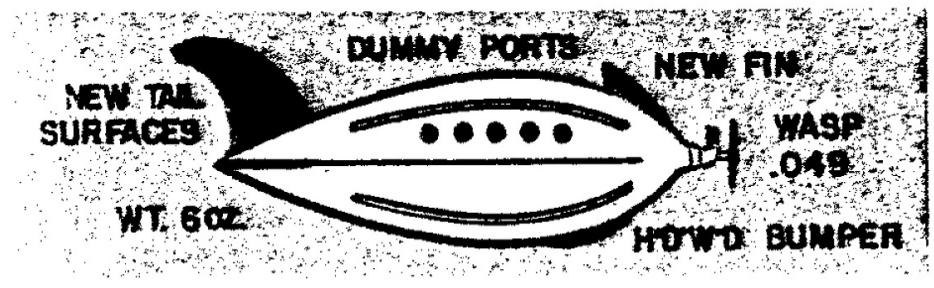
The model was built in 1973, and flew across the Connecticut river and out of sight in 1976. Unfortunately, the only data existing to use in drawing the plan was sketches, two photos, and the fond memory of it. The plan, as presented, includes some small mods to make it easier to flight trim.

The seven inch prop was carved balsa. It had rather narrow blades, as did the full scale three hulled Aereon. A block ½ X ¾ is a good guess at what it might have been A plastic North Pacific 7 incher would probably do as well. They do not weigh much more than a finished carved balsa one. Power would range from a loop of 1/16 and another of 3/32 combined, to two loops of 3/32. You must experiment here, as the rubber back then was different than that of today. The Hung-Aereon does not need to fly fast.

In the days when the Hung-Aereon darkened the skies, motor length was the hook to peg distance plus a couple of inches of slack. These motors were simply back-wound to shorten their spent length.

One time, when a new motor was installed, it was neglected to be back-wound. The motor was wound and the ship launched. The flight was as usual. But, when the motor unwound, all the slack slid down to the bottom of the hull causing an aft shift of the CG. The Hung-Aereon slowed to a stop in mid air, and without any change in attitude, proceeded to slowly descend vertically! It took almost as long to reach mother earth in this manner as it took in gliding down! The landing was gentle and nothing was broken.

If any of you adventurous Skysters tire of the sky full of typical Embryo models that are as boxy and angular as anything Adolph Rohrbach designed, now is a good time to head for the workbench. For top performance take this bulbous baby to a political rally the night before a contest and get it filled with plenty of hot air! And don't keep it inside the hangar. Park her on the tarmac in the warmth of old sol. Maybe you'd better tie 'er down 'til you're ready for take off, just to be sure!



ROY CLOUGH'S WINGLESS MARTIAN SPACE SHIP

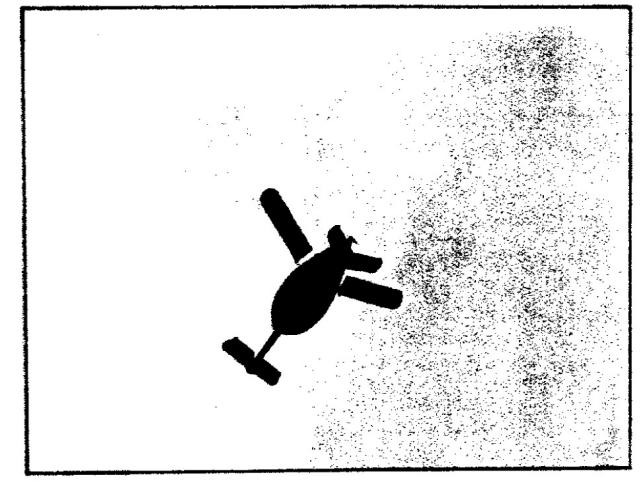
THE HUNG-AEREON

EMBRYO ENDURANCE

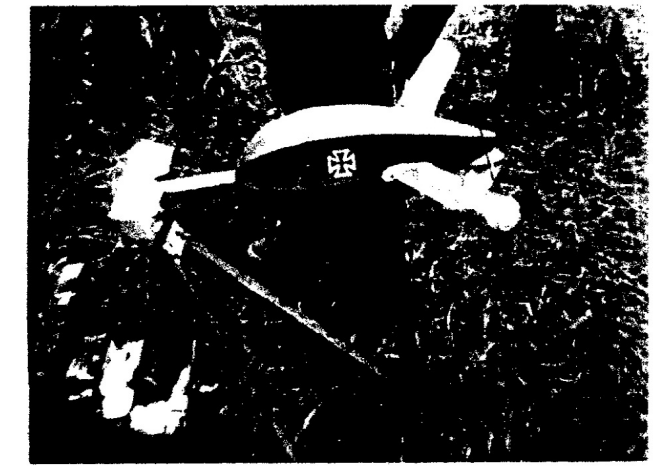
RIDE THERMALS BY DISPLACEMENT!

By Dave Stott

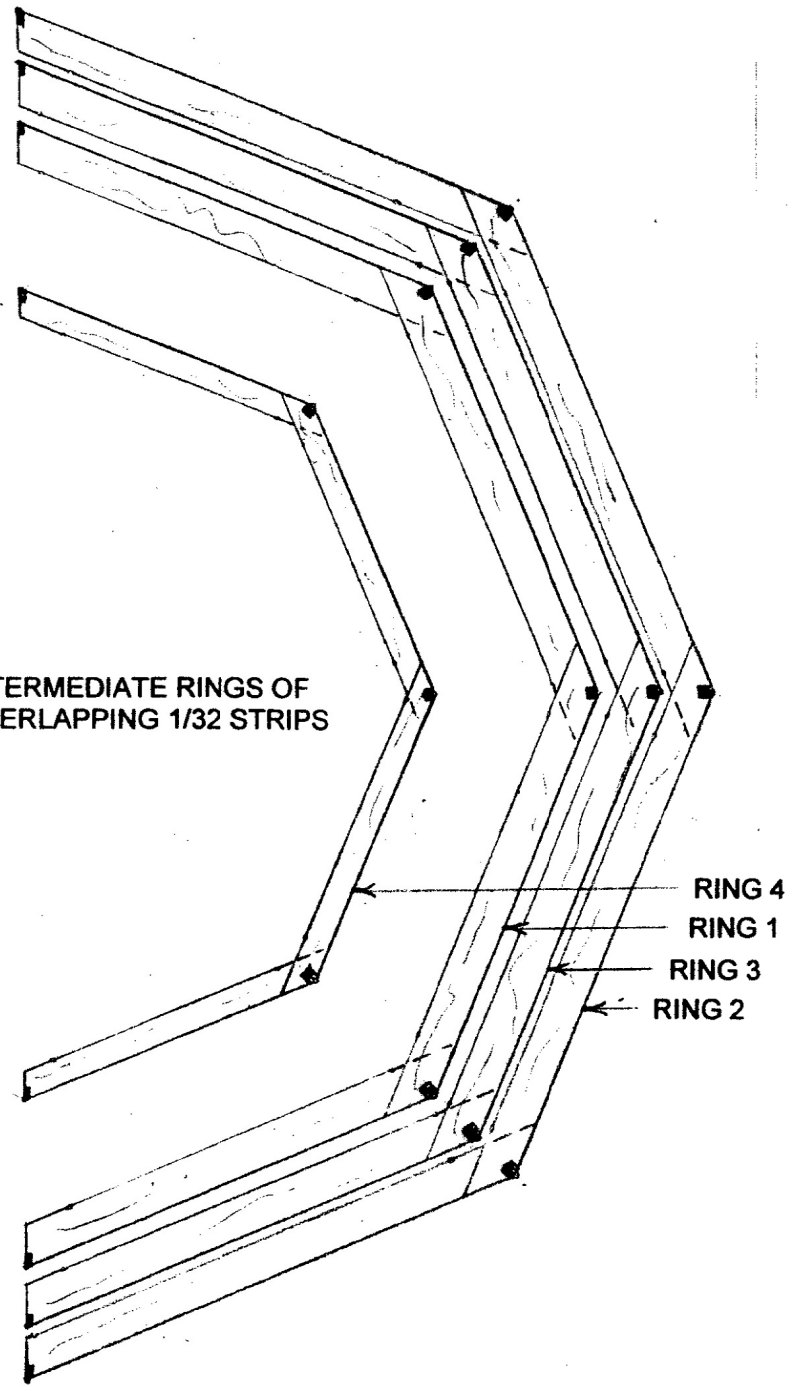
DEDICATED TO "NEVER READY EDDIE" NOVAK
CHARTER MEMBER, FLYING ACES CLUB.

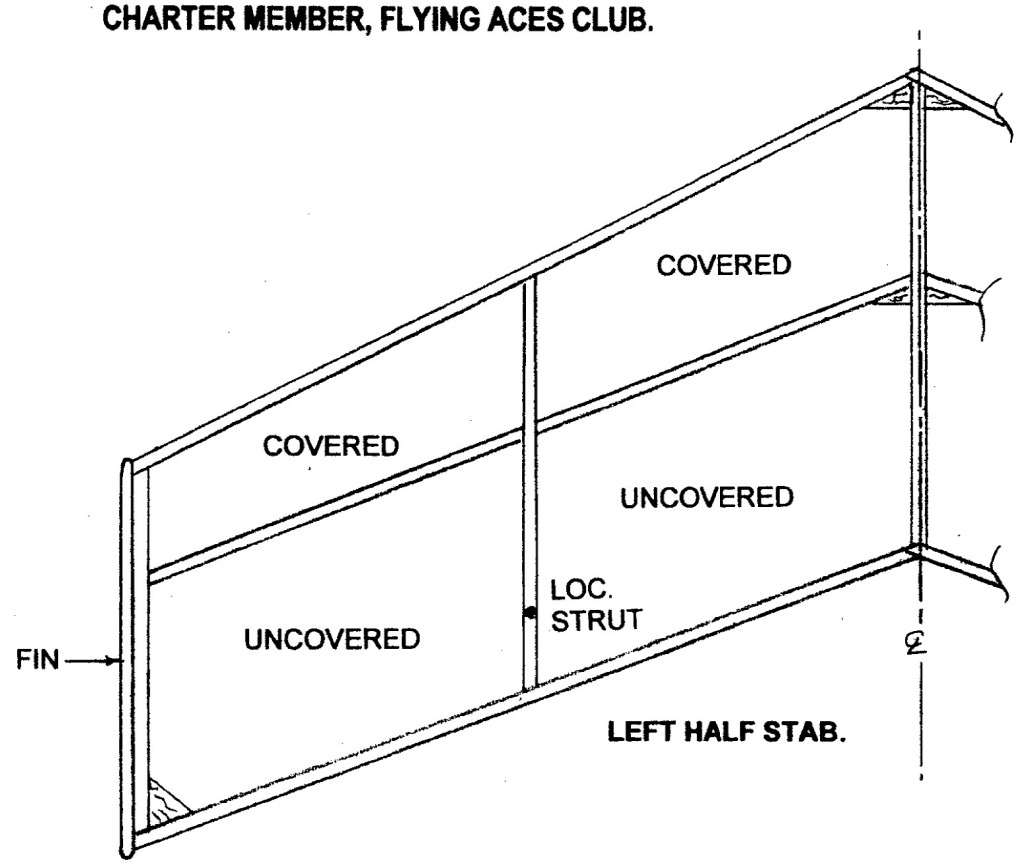


PROTOTYPE IN FLIGHT, 1975

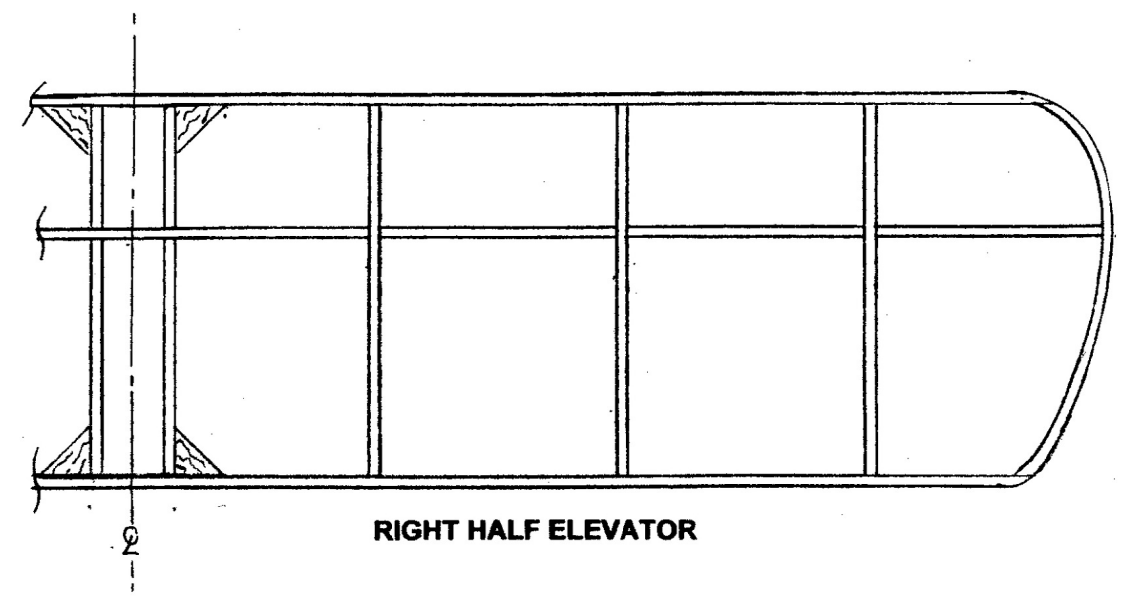


PROTOTYPE IN THE WINDING RIG

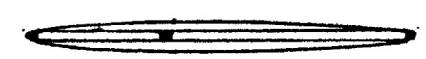




LEFT HALF STAB.

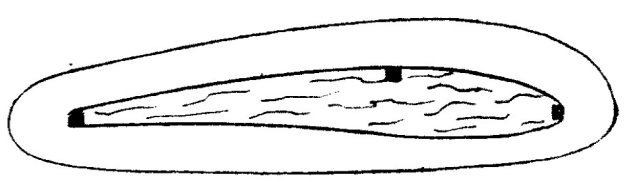


RIGHT HALF ELEVATOR

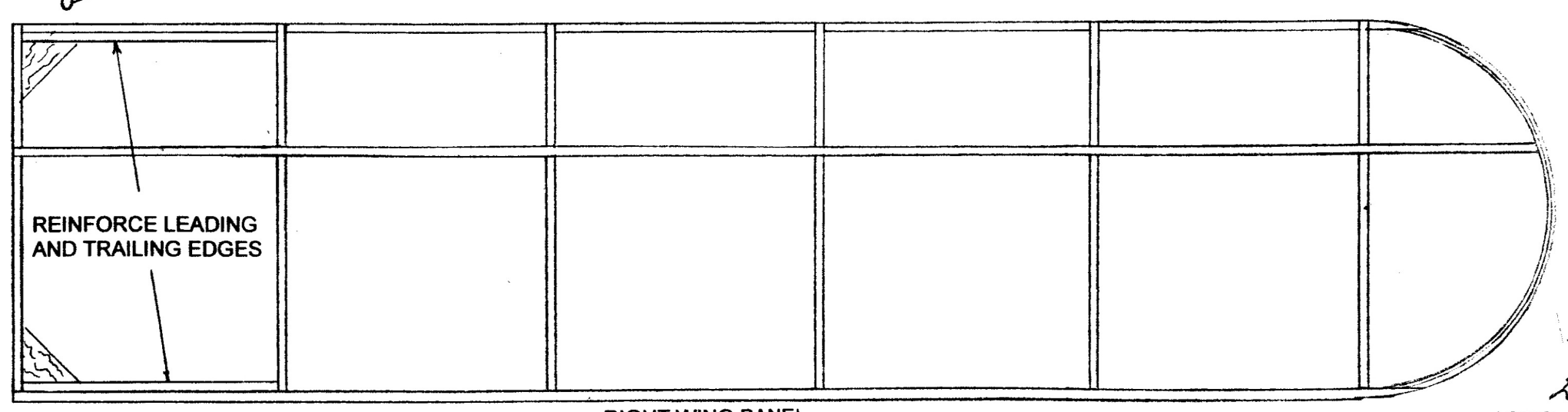


ELEV. SECT.

LAMINATED TIPS (TYP)



TRUE VIEW OF WING RIB
AND THIN CARD END PLATE



RIGHT WING PANEL

DAS
1973 - 2010

SUGGESTED COLORS
HULL: TWO BELLY PANELS WHITE,
THE REST BLACK.
FLIGHT SURFACES" TOP BLACK,
BOTTOM WHITE

STERN RINGS

BOW RINGS

GRAIN DIRECTION
FOR TISSUE
COVERING

USE 7 INCH PROP
SEE TEXT

RING 4

RING 3

RING 2

RING 1

DOWN THRUST
AS NEEDED

MTR.
TUBE

POSITION OF WING

OCTAGONAL HULL

BAMBOO
STRUT

CENTER
PYLON

STRINGERS OF TWO 1/32 x 1/16
PRE=FORMED LAMINATED BALSA
STRIPS. 8 REQUIRED.

TWIN
FINS

POS.
STAB.

REINFORCED
STRINGER

.025 WIRE SKID

END
PLATE

CONTROL CAR
OF 1/4 " BALSA

LOYALTY
PENNANT

3/4 INCH BALSA WHEELS
USE PIN FOR AXLE

POS.
ELEVATOR

.025 WIRE WING MOUNTS
GLUE AND LASH

1/32 SHT. SADDLE

PEG FOR STAB HOLD-
DOWN ELASTIC

ELEVATOR
PYLON
1/8 SHT.

END VIEW

APPROX. 18 DEGREES OF
SWEEP BACK. EQUAL TO
4 ½ DEGREES DIHEDRAL.

OPTIONAL WHEEL PANT

1/32 SHT. MOTOR TUBE IS 7 1/8 INCHES LONG

END
CAP

MOTOR TUBE

1/32 SHT.
SLEEVE

MTR. PEG

DAS
1973 – 2010

HUNG-AEREON SHEET 1 OF 2