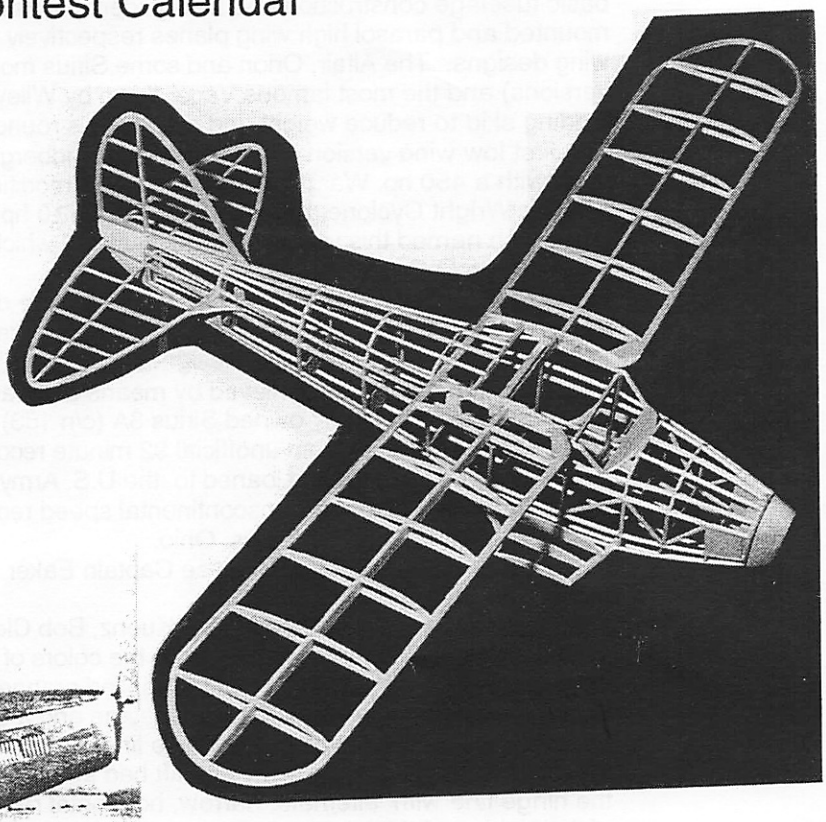
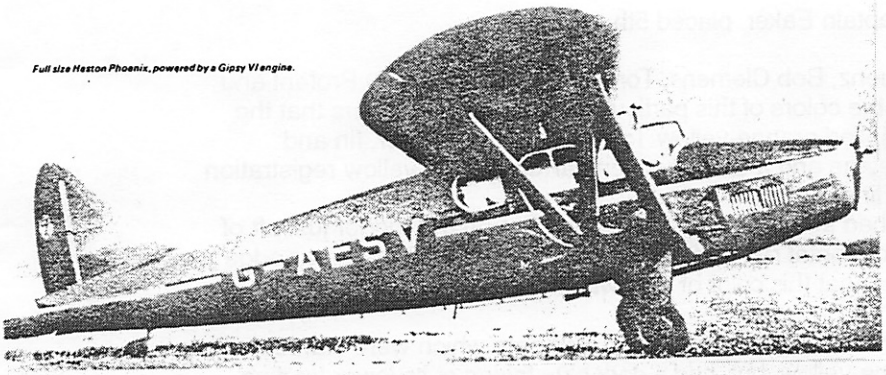
CROSSWINDS

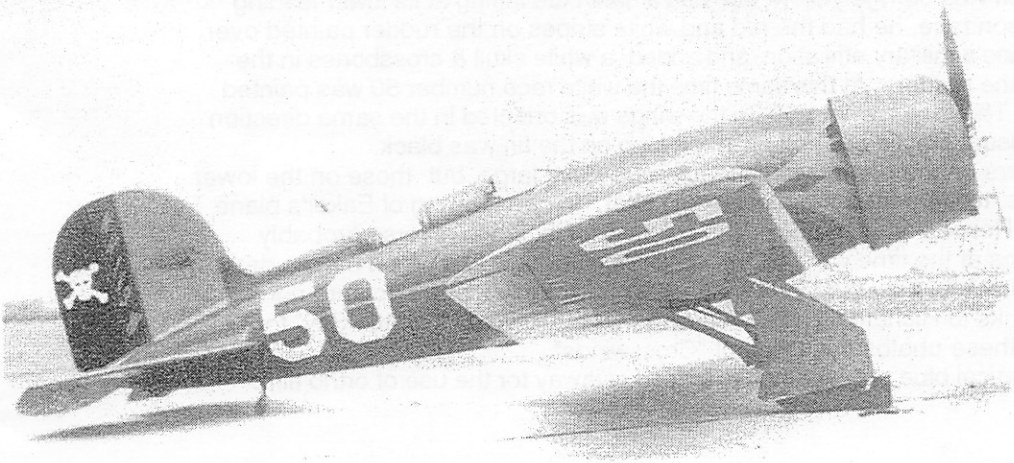
#106
Lockheed "Altair"
Heston "Phoenix"
2003 Contest Calendar



CROSSWINDS
RUSS BROWN
4909 N. SEDGEWICK
LYNDHURSt, OHIO 44124



Full size Heston Phoenix, powered by a Gipsy VI engine.



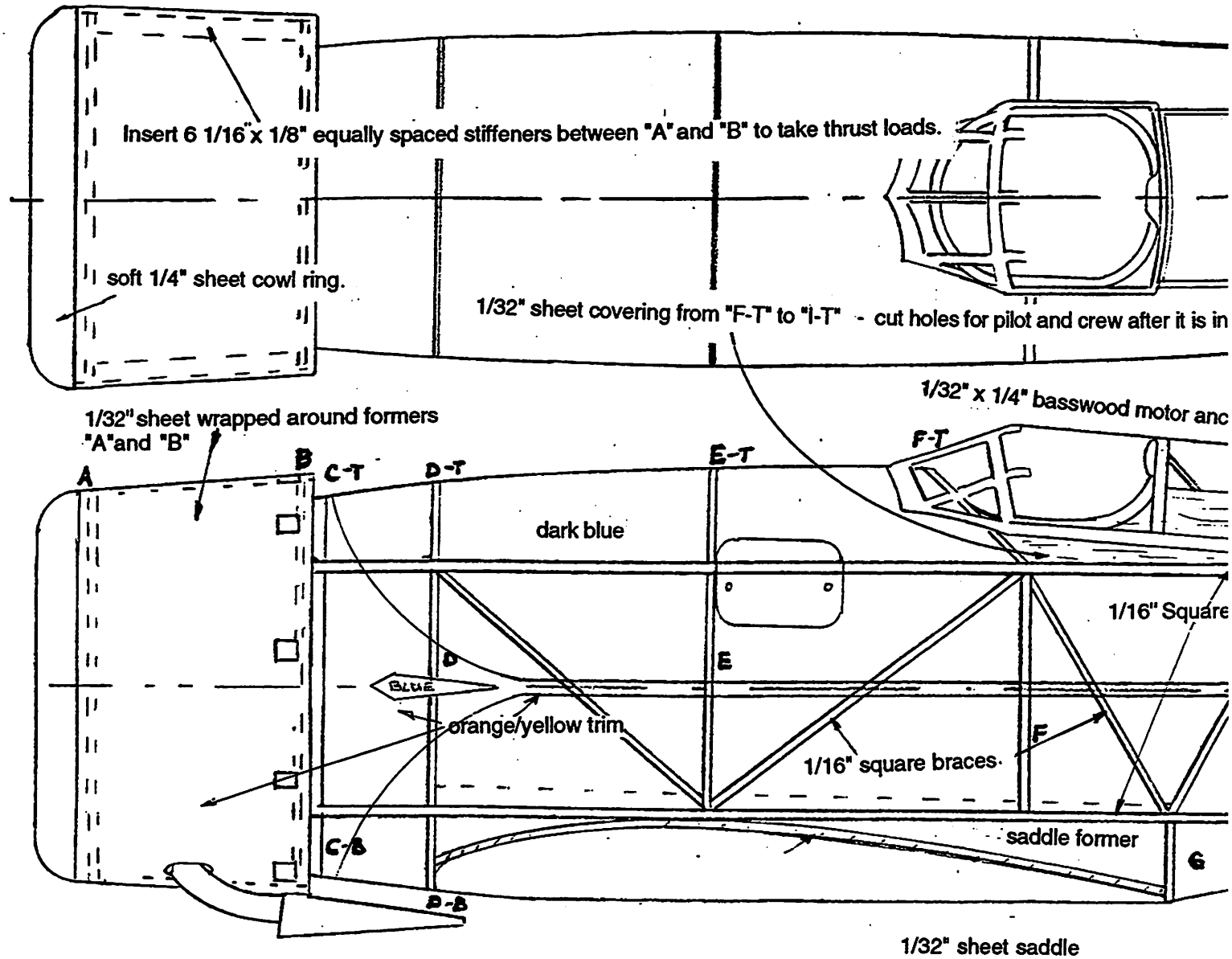
A Brief History of the Lockheed "Altair"

The first laminated wooden fuselage was probably used in the 1912 Deperdussin racer, and the German Albatross fighters also had laminated wooden fuselages, but the lmethod used for these two required much labor and time. In 1927 Loughead and Northrop devised a much more efficient process for the very successful Lockheed "Vega" in which a female concrete mold and an inflatable rubber bag were used to form and bond the spruce veneer and glue layers for the fuselage.

The great success of the "Vega" led to a number of variations using the same tooling and wing design - namely the "Orion", The "Air Express", the "Sirius" and the "Altair", all of which used the basic fuselage construction and nearly identical wings. The "Vega" and "Air Express" were cabin mounted and parasol high wing planes respectively while the Sirius, Altair and Orion were low wing designs. The Altair, Orion and some Sirius models had retractable landing gear (land plane versions) and the most famous Vega, flown by Wiley Post, had a jettisonable take-off gear and a landing skid to reduce weight and drag for his round-the-world and high altitude flights.
The first low wing version of the Vega was Lindbergh's Sirius c/n 140, built in 1929 which was fitted with a 450 hp. Wasp engine. This much modified Sirius was later fitted with Edo floats and a 575 hp. Wright Cyclone, then in 1933 with a 710 hp. Cyclone and a controllable pitch propeller. Lindbergh named this version "Tingmissartoq" which is now at the Smithsonian Museum in Washington D.C.
While negotiating with Lockheed on the purchase of his Sirius, Lindbergh asked Lockheed to design an alternate wing, housing a retractable undercarriage, so James Gerschler, Richard Palmer and Richard Von Hake designed the first fully enclosed retracting system to meet this request. Retraction was achieved by means of a hand crank, operating cables and pulleys. This was mated to a company owned Sirius 8A (c/n 153) and designated X119W, then re-named "Altair" 8D. After setting an unofficial 92 minute record between Oakland and Burbank it was re-engined with a Wasp B and loaned to the U.S. Army who entrusted it to Captain Ira Eaker. In this Altair, Eaker attempted a transcontinental speed record but had supercharger problems and was forced to land at Port Columbus, Ohio.
In the 1931 Thompson Trophy Race Captain Eaker placed 5th.

I had a great deal of help from Ralph Kuenz, Bob Clemens, Tom Nallen Sr. and Rudy Profant and the Akron Public Library in determining the colors of this particular plane, and it appears that the correct colors are: Lockheed factory applied orange-yellow for the wings, stabilizer, fin and decorative striping on the dark blue fuselage and a dark blue vertical stripe with yellow registration numbers on the fin just aft of the hinge line.
From 1931 to 1940, U.S. Army aircraft had an insignia blue vertical stripe on the rudder just aft of the hinge line with alternate, narrow, horizontal red and white stripes extending to the rear edge of the rudder. I think it is safe to assume that this color of blue was used on Eaker's"Altair" wherever blue was specified.
Eaker retained the blue rudder stripe and the yellow registration numbers which were slanted, running vertically in it. The fin was orange-yellow, but had a dark blue fairing at its lower leading edge. For the 1931 Thompson race, he had the red and white stripes on the rudder painted over with black to conceal the plane's military affiliation, and added a white skull & crossbones in the middle of the black area on the rudder. At this same time the white race number 50 was painted on the fuselage and wings. The race number 50 on the wings was oriented in the same direction as the registration, not the usual practice. The Lockheed logo on the fin was black.
The blue registration numbers on the upper wing surface were quite large, but those on the lower surface were reduced in size to clear the retracted landing gear. In one drawing of Eaker's plane (NR119W) on page 189 in "Revolution in the Sky", the colors are labeled in reverse probably because the reference photos at the time were taken with orthochromatic film which makes dark blue appear to be a lighter shade of gray than yellow! An easy mistake to make if you are not familiar with ortho film. Thanks to Richard Sanders Allen, author of "Revolution in the Sky" for granting permission to use these photos this issue of "Crosswinds".
The shade of gray for the vertical blue rudder stripe is a dead giveaway for the use of ortho film!

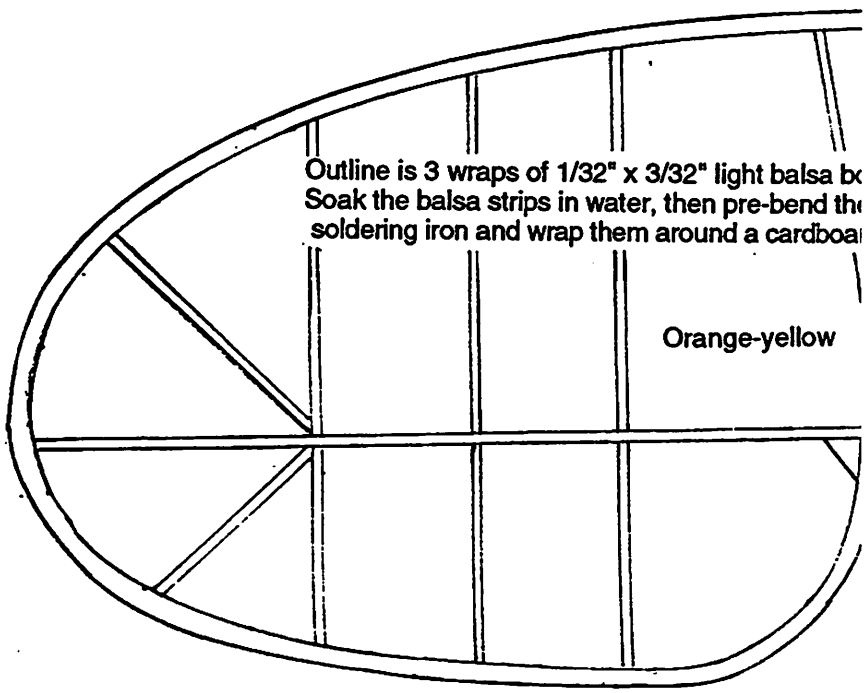
CONTINUED ON PAGE 4



Use paper or contour fitted foam for wing root fairings (see text)

1/32" sheet saddle 4-7/8" long x 2' wide sanded to fuselage contour .

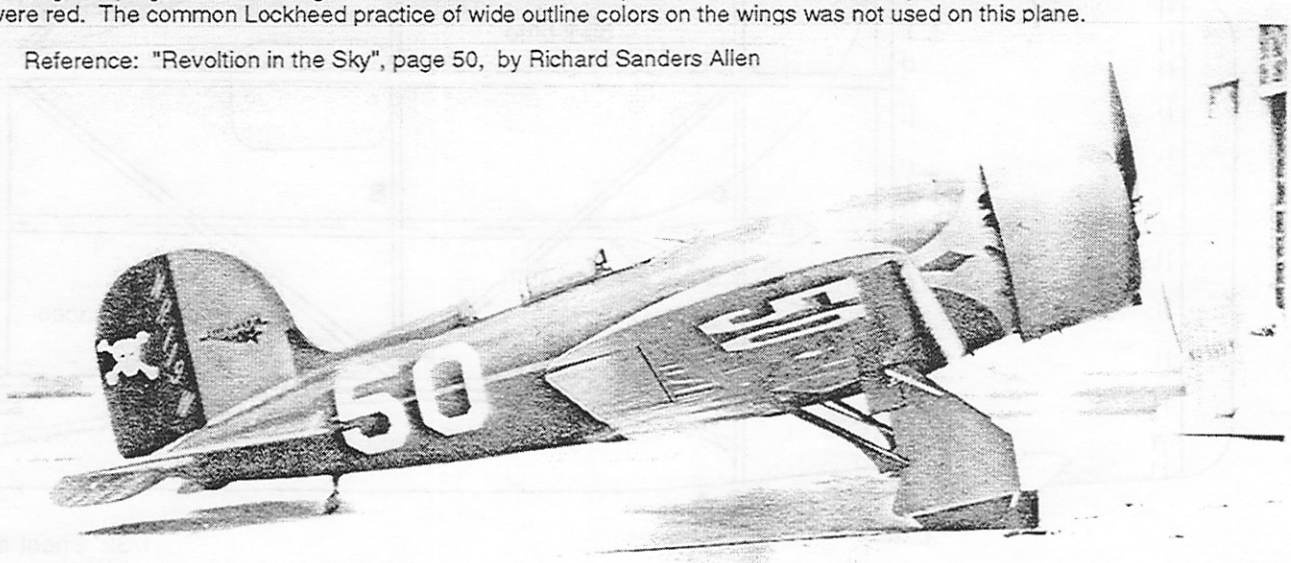
Make "A" from two layers of hard 1/16" sheet or one layer of 1/16" plywood
"B" is two layers of hard 1/16 balsa





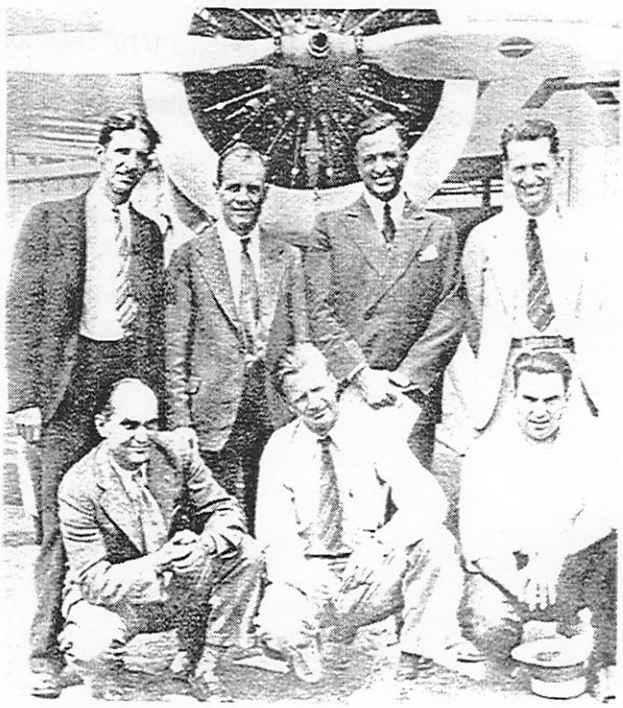
This photo of the Army's "Altair" was also taken with Orthochromatic film. Note how the vertical rudder stripe, which was definitely dark blue, is the same shade of gray as the fuselage. The rudder registration (NR119W) confirms that this is the same plane as flown by Eaker in the 1931 Thompson race. Dark gray on the landing gear covers confirms that they were yellow as were the wings, fin, stabilizer, fuselage striping and rudder registration number. Extreme top and bottom horizontal stripes on the rudder were red. The common Lockheed practice of wide outline colors on the wings was not used on this plane.

Reference: "Revoltion in the Sky", page 50, by Richard Sanders Allen

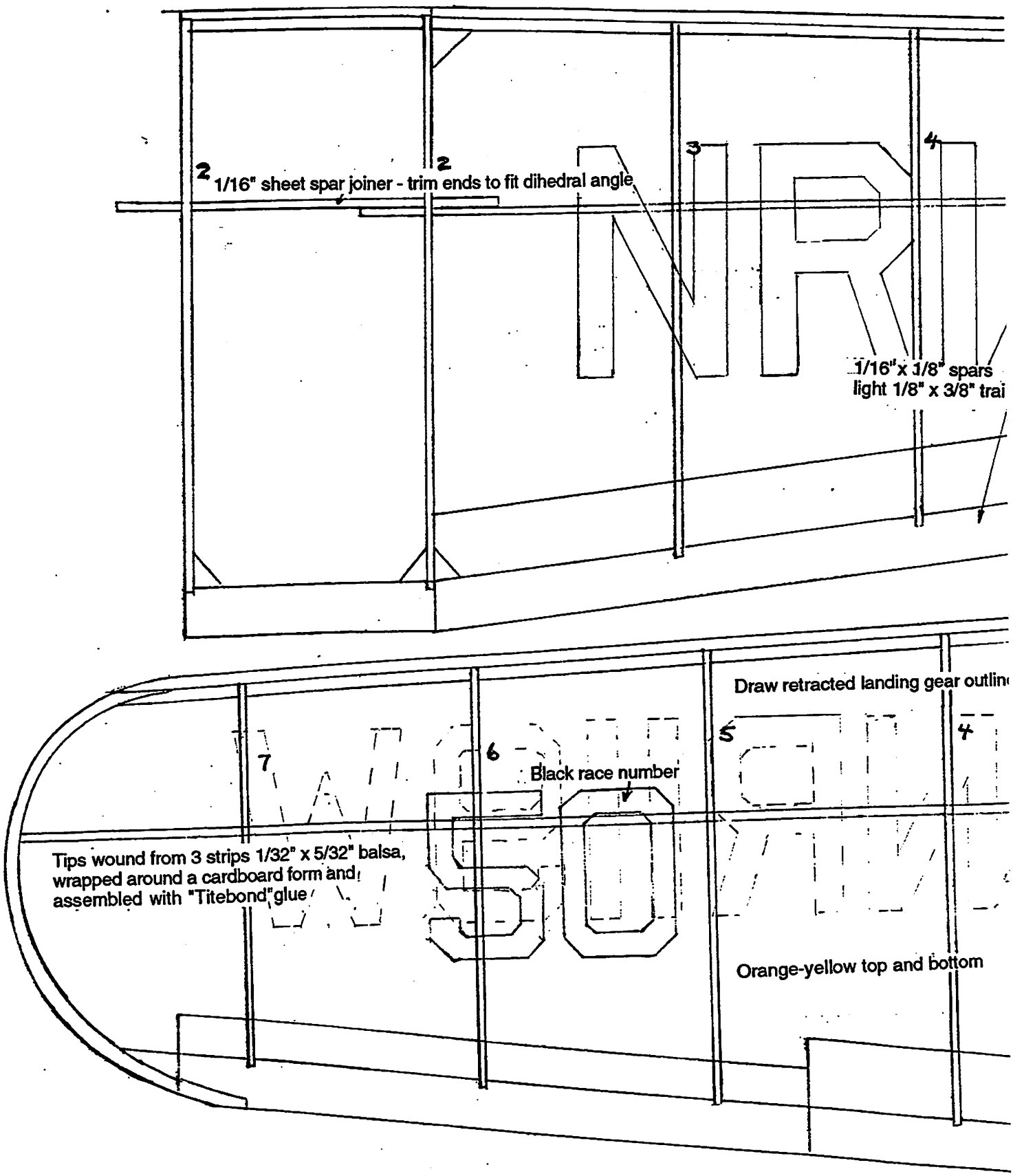


Captain Eaker's racing Altair sported piratical insignia. This photo must have been taken on panchromatic film since yellow areas appear lighter than the blue areas. Givaway is the dark blue vertical rudder stripe and the lighter registration within it.

Reference: Revolution ith ethe Sky" page 149, by Richard Sanders Allen



First Bendix Race brought out (standing left to right) Lou Reichers Jimmy Doolittle, Jim Hall, Beeler Blivens, behind (left to right) Ira Eaker, Walter Hunter and Harold Johnson


2
2
1/16" sheet spar joiner - trim ends to fit dihedral angle
3
4
1/16" x 1/8" spars
light 1/8" x 3/8" trai
Draw retracted landing gear outlin
7
6
5
4
Black race number
Tips wound from 3 strips 1/32" x 5/32" balsa,
wrapped around a cardboard form and
assembled with "Titebond" glue
Orange-yellow top and bottom

THE HESTON 'PHOENIX'

Sometime in the year 2001 Gordon Roberts presented me with a reduced size plan of a Heston "Phoenix" model, from the May 1983 Aeromodeller magazine, which was drawn by Eric Fearnley when he was only 16 years old, in 1938. This beautifully shaped, high wing light plane appealed to me, so I drew up a plan for a 22" span version with greatly modified structure, built it right away but didn't get around to flying it till May of 2002, at our first Lorain meet for the year. The very first flight with 200 turns was nearly perfect, and on the next test flight with about 800 turns she flew out of sight before an official flight could be declared!

Well, somehow my 22" plan was lost or destroyed, but Lundy Goesling pestered me for nearly a year to build another "Phoenix", so I finally gave in and re-designed a smaller version with a 16-1/2" span to fit these pages.
The "Phoenix" was quite unique in that it had a retractable U.C. which folded into a stub wing flush to the bottom of the fuselage. The Heston Aircraft Company built six of these planes. G-ADAD was light green with silver wings, G-AESV was yellow and silver. The others were G-AEHJ, G-AEMT and G-AEYX and one other had a foreign registration. There was no mention of the color scheme for the last four of these so I decided to cheat a little and build one with white flying surfaces and a blue fuselage and call it G-AEHJ. Since I do not like half-former construction because of its weakness and need for wide formers across the grain, I decided to use a simple box structure using the longerons for four of the stringers. The Fearnley plan showed fine fuselage half-former sections so it was fairly easy to lay out the box to fit with these sections. The only un-clear detail was the blending of the stub wing fillets to the fuselage . When I attached the built up stub wing, the rear fillets were not even close to the stringers, so I had to improvise at this point. Should I put a straight-across trailing edge on the stub wing to join it to the fuselage, or should there be a continuation of the fillet?? Well, I decided to go with the latter since it seemed to make more sense. (It is possible that the lower edge of former #7 should have been square just like #5 and #6. This too would have solved the dilemma, but was not what Mr. Fearnley specified).

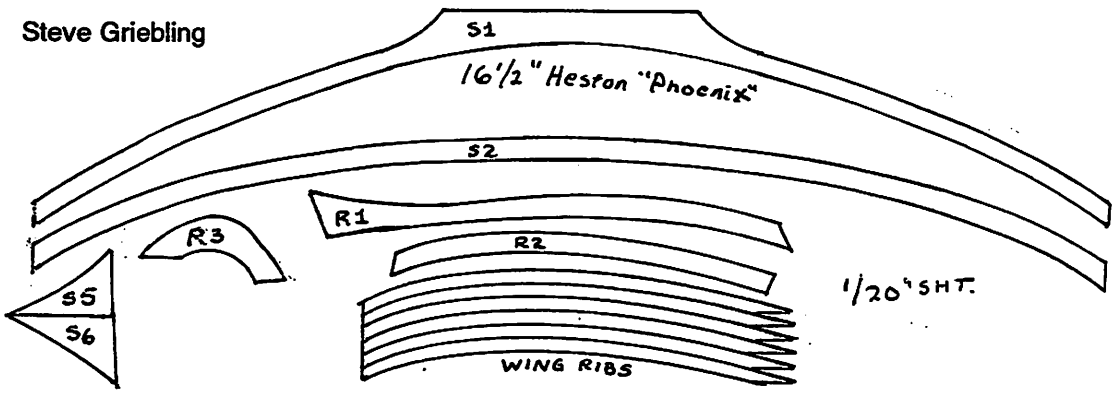
The rest of the structure is conventional, although some might prefer to use bent wood outlines instead of those shown for the empennage parts.

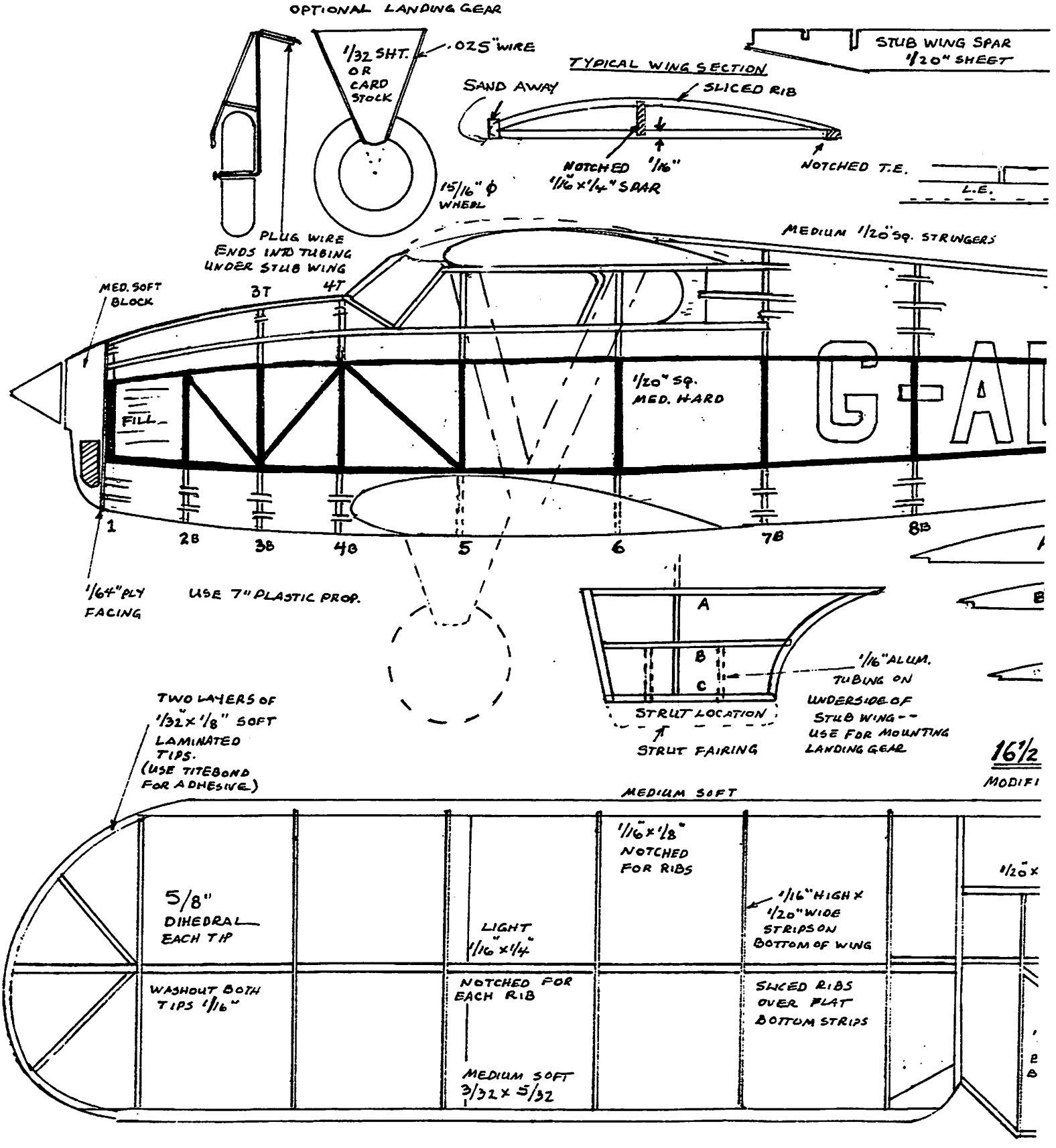
I strongly recommend that the first step in building any model is to sort out your wood supply by stiffness. It is well worth the trouble to build a simple device to do this. I mark each strip with a code so I can tell easily how stiff it is and then use the low stiffness pieces for tail feathers and the stiffer pieces for longerons and spars etc. It is most important that all longerons are of similar stiffness to get a truly aligned fuselage. Even if you build models from a kit with a rather limited lumber supply, it is worth the trouble to sort out the strips by stiffness and often it is advisable to substitute lighter sheet wood for that supplied in the kit. This, of course, makes laser cut models less desirable since you are locked in to whatever the manufacturer supplies!

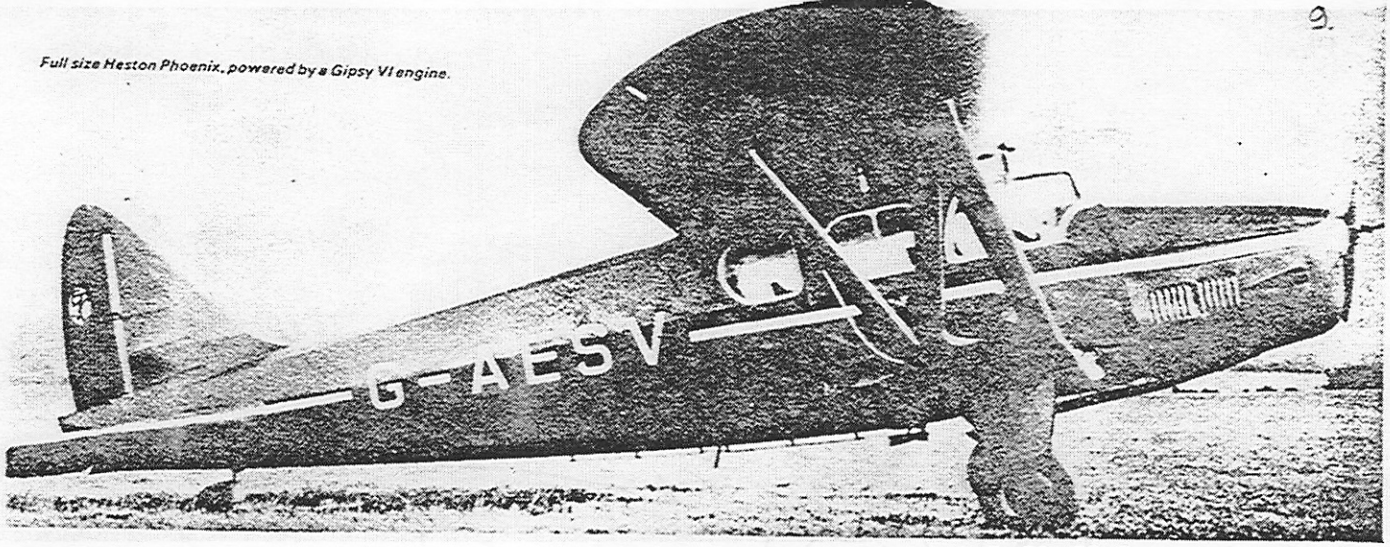
If you sort wood, you can even use lighter pieces for uprights and cross pieces toward the rear of the fuselage as they become progressively shorter. The stiffest pieces of all should be the long uprights at the largest fuselage cross section, because they are often longer than even unsupported sections of the longerons and are easily broken in handling!

The "Phoenix" I lost used a low pitched grey-silver plastic prop and four strands of braided 3/16" Tan II rubber.

Steve Griebling




OPTIONAL LANDING GEAR
1/32 SHT. OR CARD STOCK
.025" WIRE
15/16" ϕ WHEEL
PLUG WIRE ENDS INTO TUBING UNDER STUB WING
TYPICAL WING SECTION
SAND AWAY
SLICED RIB
NOTCHED 1/16" 1/16"x1/4" SPAR
NOTCHED T.E.
STUB WING SPAR 1/20" SHEET
L.E.
MEDIUM 1/20" SQ. STRINGERS
MED. SOFT BLOCK
3T
4T
FILL
1/20" SQ. MED. HARD
1
2B
3B
4B
5
6
7B
8B
1/64" PLY FACING
USE 7" PLASTIC PROP.
A
B
C
1/16" ALUM. TUBING ON UNDERSIDE OF STUB WING -- USE FOR MOUNTING LANDING GEAR
STRUT LOCATION
STRUT FAIRING
TWO LAYERS OF 1/32"x1/8" SOFT LAMINATED TIPS. (USE TITEBOND FOR ADHESIVE)
MEDIUM SOFT
5/8" DIHEDRAL EACH TIP
WASHOUT BOTH TIPS 1/16"
LIGHT 1/16"x1/4"
NOTCHED FOR EACH RIB
MEDIUM SOFT 3/32 x 5/32
1/16"x1/8" NOTCHED FOR RIBS
1/16" HIGH x 1/20" WIDE STRIPS ON BOTTOM OF WING
SLICED RIBS OVER FLAT BOTTOM STRIPS
1/20" x
16 1/2
MODIFI



Full size Heston Phoenix, powered by a Gipsy VI engine.

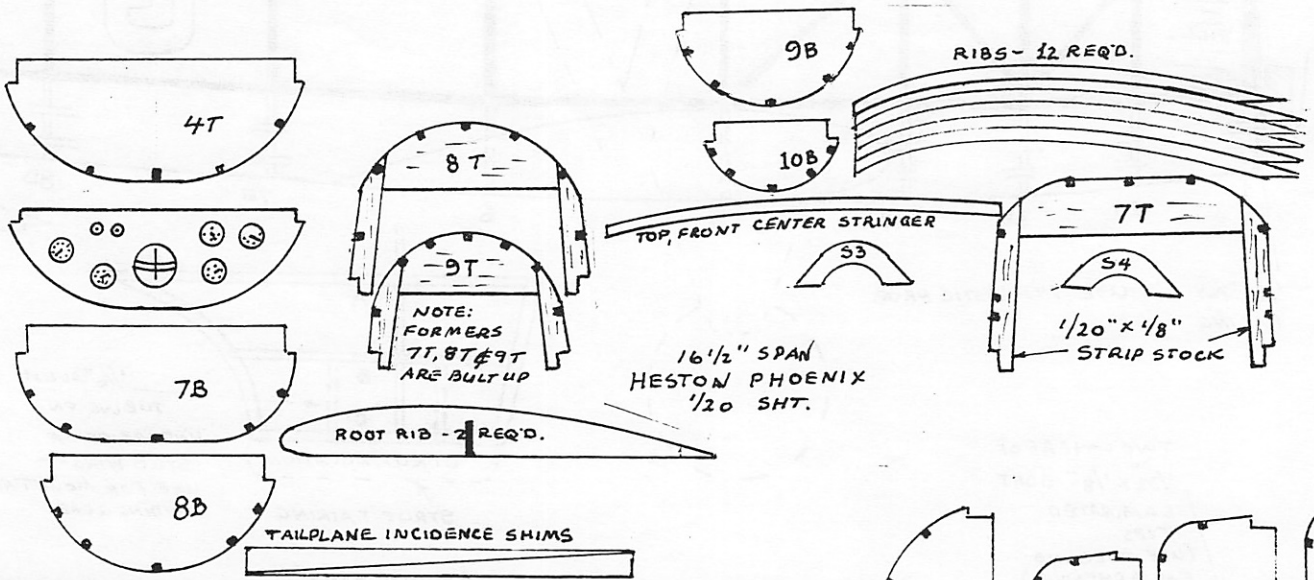
Heston Phoenix

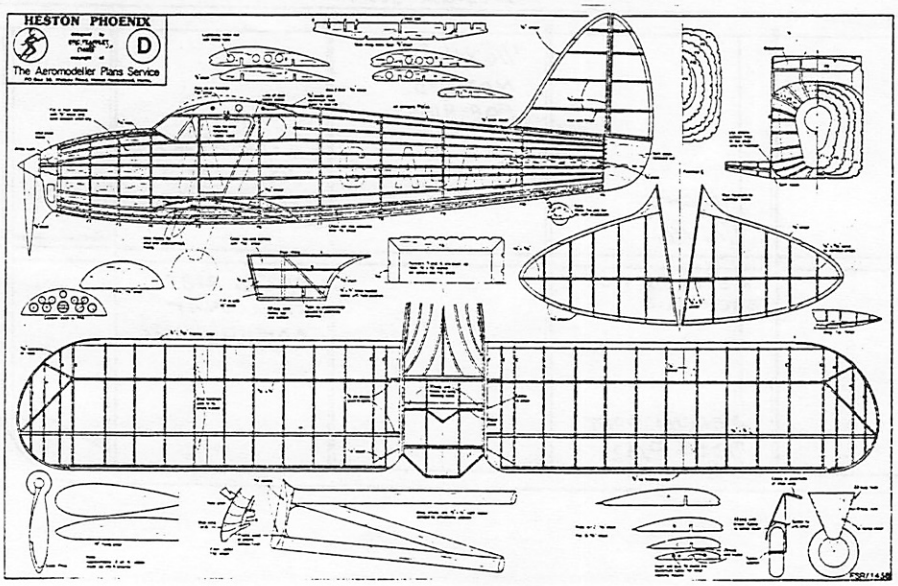
VINTAGE SCALE

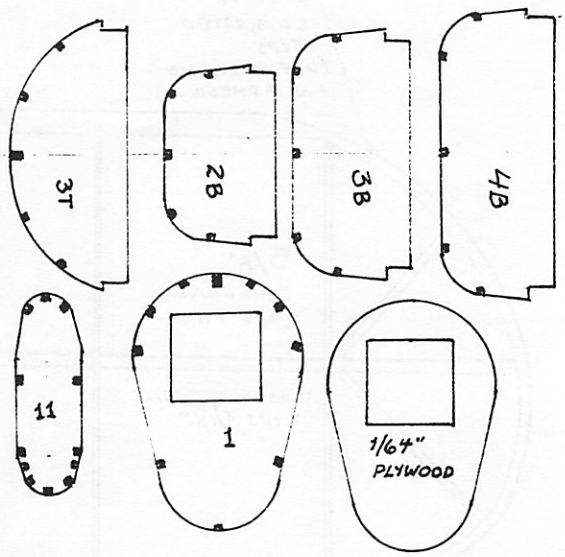
Designed by Eric Fearnley (1938)

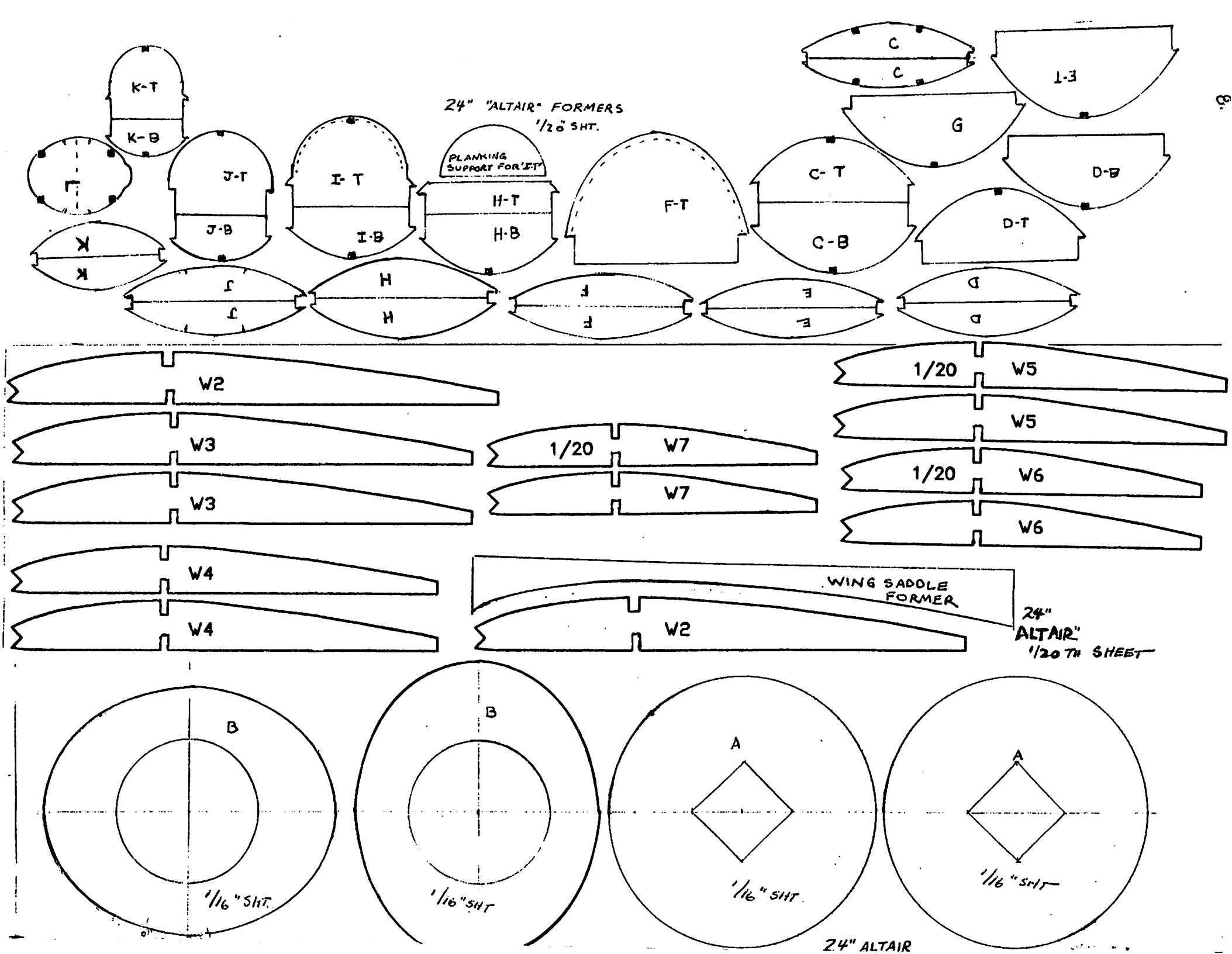
This slightly revised version by Don Knight was made from full size plans published in the July 1938 issue of Aeromodeller

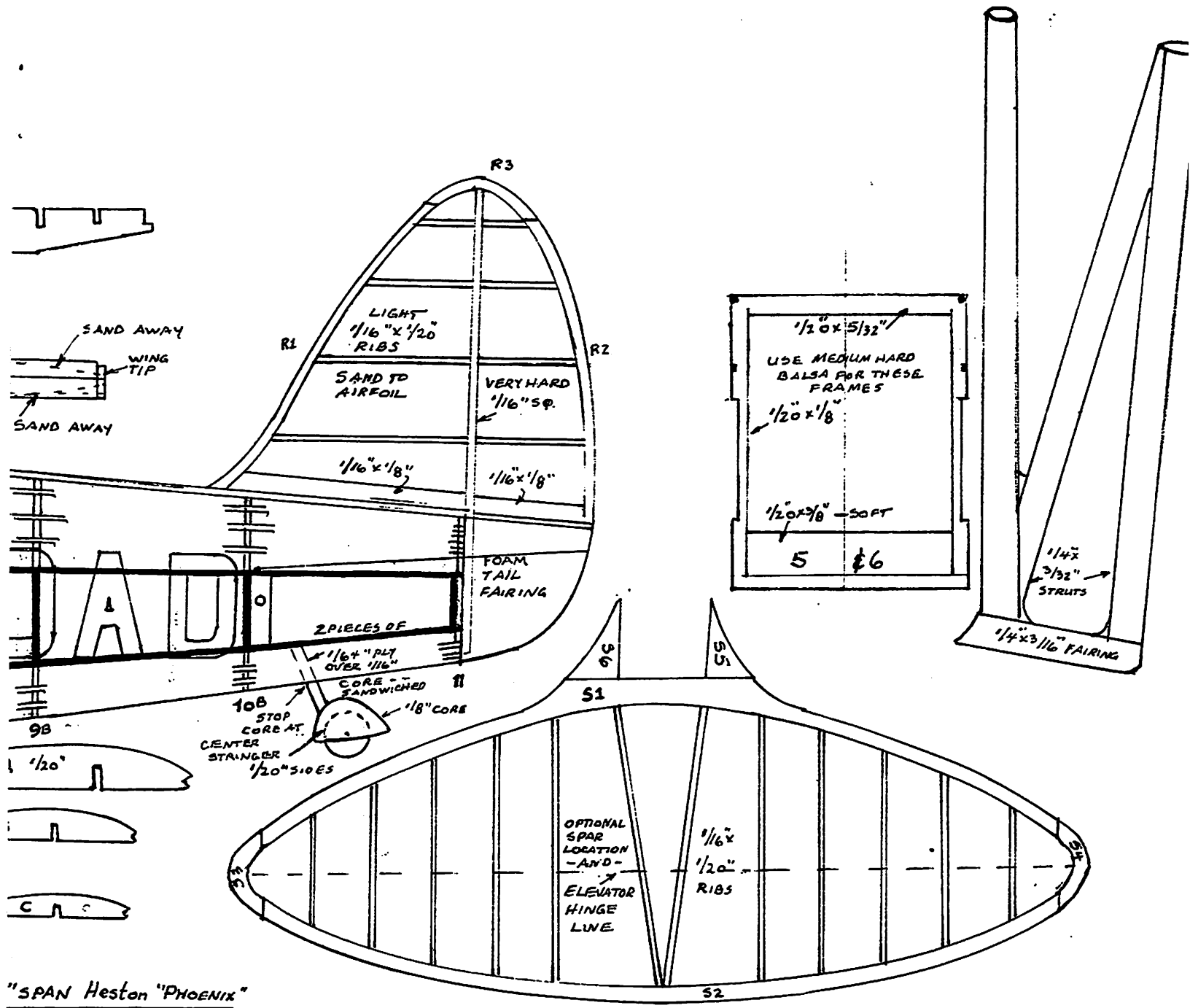
WHEN SOMEONE passed on to me the plan of the Heston Phoenix, I just knew I had to build it. Published in the June 1938 Aeromodeller, it was a design by Eric Fearnley. The Heston Aircraft Company produced about six of these quite advanced light 'planes with retracting undercarriage and monocoque fuselage. G-ADAD was light green with silver wings. G-AESV was yellow and silver. The others were G-AEHJ; G-AEMT and G-AEYX. One other had a foreign registration.





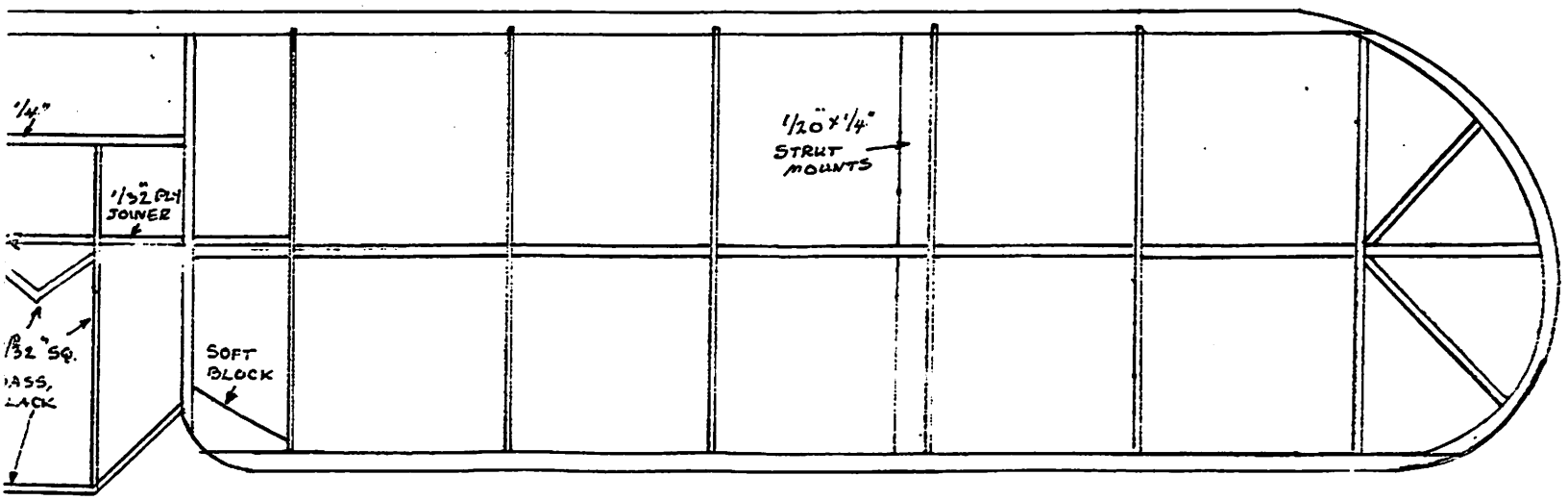



24" "ALTAIR" FORMERS
1/20 SHT.
K-T
K-B
J-T
J-B
I-T
I-B
PLANKING SUPPORT FOR "I-T"
H-T
H-B
F-T
C-T
C-B
D-T
D-B
G
E-T
C
C
K
K
J
J
H
H
F
F
E
E
D
D
W2
W3
W3
W4
W4
1/20
W7
W7
1/20
W5
W5
1/20
W6
W6
WING SADDLE FORMER
W2
24" "ALTAIR" 1/20TH SHEET
B
1/16" SHT.
B
1/16" SHT
A
1/16" SHT
A
1/16" SHT
24" ALTAIR



"SPAN Heston "PHOENIX"

ED AND REDUCED FROM AN "AEROMODELER" PLAN BY S.T. GRIEBLING -- APRIL, 2003



THE "ALTAIR" MODEL

Those of us who have flown the Lacey M-10 models in competition know the advantages of wide wings on small model planes!
Anxious to fly something besides the Cessna CR-3 in the Thompson Race events, I was attracted to the Lockheed "Altair" because of its rather low aspect ratio wing and retractable landing gear.

Tom Nallen produced a beautiful, professional drawing of a 24" span Lockheed "Orion" as flown by Paul Mantz in the 1938 Bendix Race, and I confess that I used this plan for the wing and stabilizer outlines for the "Altair" since those parts appear to have been identical on the two aircraft. I did change the construction of these parts slightly to use bent-wood, laminated outlines, eliminated the rear spar and increased the lower wing spar from 1/16" sq. to 1/16" x 1/8". I also changed the wing center section so it is flat.

The fuselage and rudder outlines were taken from William A. Wylam's plan that appeared in "Air Age" magazine and were confirmed in Mendenhall's book on racing planes. Please note that Eaker's plane had a faired tailwheel in the race plane photo rather than the skid.

The fuselage construction for my model is a little unusual, because I decided to use a box structure, where the longerons serve as four of the stringers. (I dislike half-former construction because the grain of the formers makes them weak.) In this plan, semi circular, vertical formers are used as uprights between the longeron/stringers instead of the usual 1/16" sq. pieces. This reduces the weight that results from gluing semi-curricular formers to traditional 1/16" sq. uprights. Of course this means that you have to have separate drawings for the right and left side frames of the fuselage (See the plan). Because these semi circular uprights are rather wide and stiff, it is possible to make them of either 1/32" or 1/20" balsa sheet and save even more weight! The horizontal semi circular formers on the top and bottom of the fuselage are extended well into the side frame formers to ensure squareness and also to reinforce the corners of the uprights where they are narrowest and weakest. (Please see photo of framework).

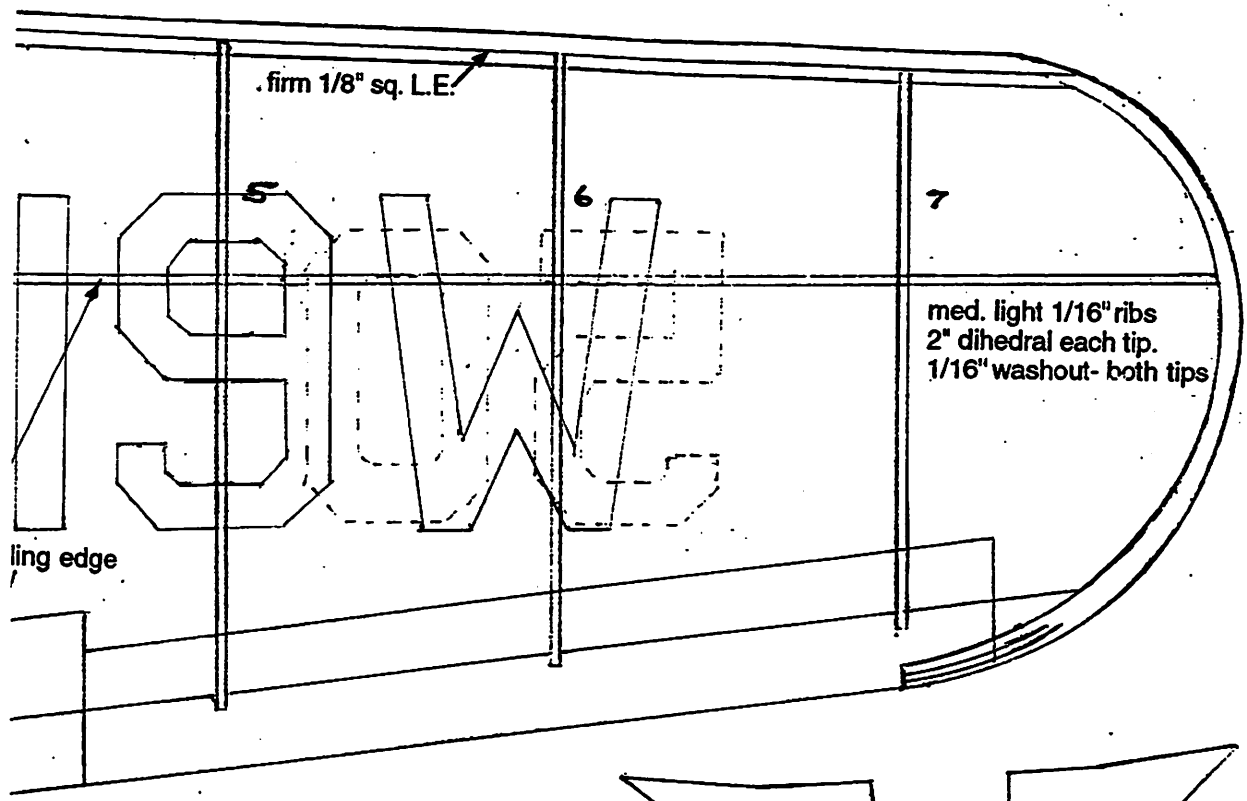
The wing saddle is simply a sheet of 1/32" balsa with its grain running crosswise. (Butt glue two pieces of 3" wide x 2" long 1/32" sheet together to come up with the 4-7/8" long saddle piece.) It is curved to fit the wing and the centrally located saddle former. This gives the saddle enough stiffness so it easily resists the shrinkage force of the tissue. When positioning the saddle and its former, be sure that the trailing edge of the wing will be even with the fuselage stringers at former H-B. The outer edges of this saddle contact the longeron/stringers ensuring that it will be perfectly aligned. Once in place, this sheet is sanded to conform to the oval fuselage contour. Note that the fuslage profile extends right through the cockpit area inside the canopy. This is because the laminated Vega structure was continuous with oval holes cut for the pilot and crew. On your model, make this part from 1/32" sheet pre-formed around a 1/2" diameter dowel and cut the holes after it is installed. Dummy headrests inside the canopy are a nice touch.

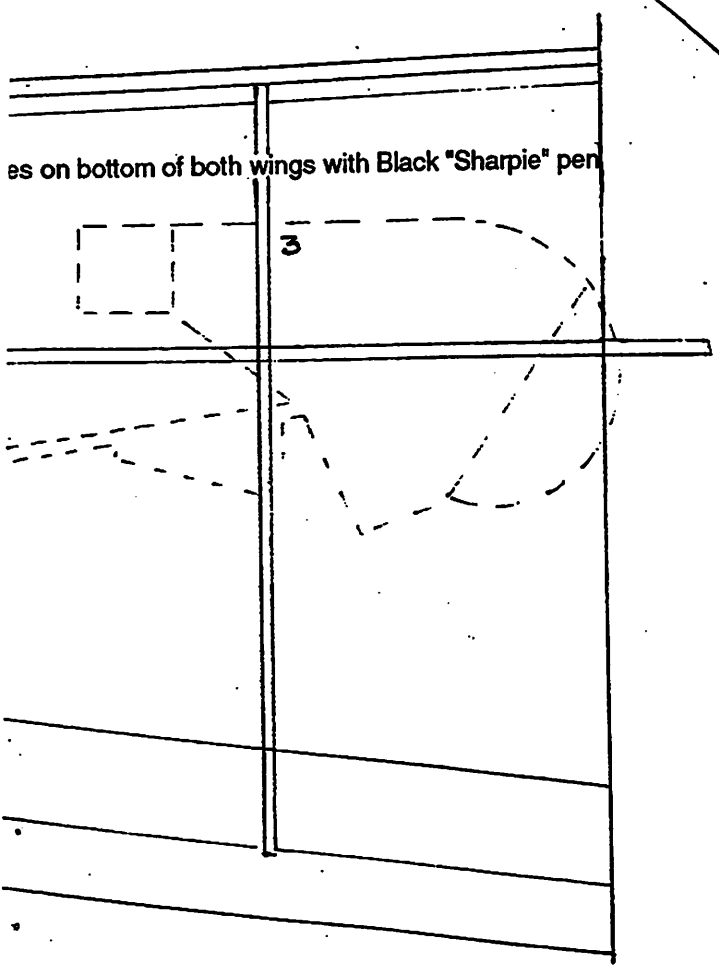
After cementing the covered wing to the covered fuselage, install the two 1/16" sheet wing fillets gluing them to the two lower side stringers and wing trailing edges then cover them with your yellow tissue. I used yellow tissue chalked with dull orange"Nu-Pastel"for the orange/yellow color, and found that yellow trim strip was just the right shade for the fuselage striping. and that lemon yellow Tamiya Color acrylic paint with a drop orf red added is just right for the cowling.

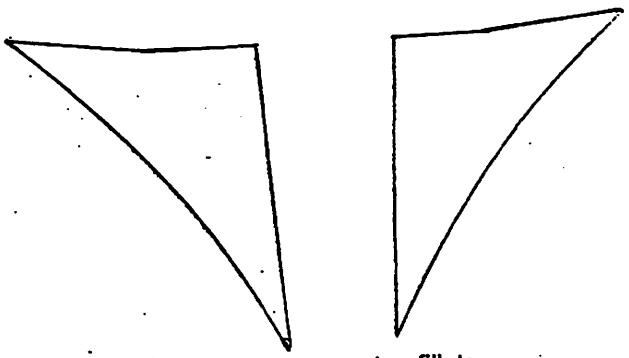
I left a rather wide slot for the stabilizer to allow for incidence adjustment and find that blue foam shims work well for making these adjustments because they are very light and somewhat compressible, allowing for a good tight fit. Once the model is trimmed these can be replaced with long, tapered balsa shims and painted dark blue if you wish.
I strongly recommend a hinged rudder on a model of this size and it is worth the trouble to locate some really dead soft aluminum for the hinges. I use aluminum scrap from an old clothes drier vent flue which is only .020" thick. Once the model is trimmed, glue the rudder setting with a drop of model cement at the top and bottom.

The wing fairings are a bit of a challenge. I used blue foam carefully shaped it to fit between the covered fuselage sides and the wings. Cut the foam to shape with a very sharp knife (I like the

CONTINUED ON PAGE 15







1/16" sheet trailing edge fillets.
assemble to plane after covering,
then cover them with yellow-orange tissue

In November 1931 c/n153 (NR119W) was fitted with a Pratt & Whitney R-1340-17 engine and was purchased by the war department and designated Y1C-25 with military serial 32-393. It was damaged beyond repair after seven months use and a total of 153 flying hours.

Sirius c/n 143, built in 1932, had a hydraulically activated retracting system and became an Altair 8A (NC13W). It was powered with a Wasp and was sold to Louise Ashby but was primarily flown by her husband Clarence Chamberlain until sold to Charles H. Babb in 1940.

Sirius c/n 145 was converted to an Altair 8D and was sold to James Goodwin Hall who named it "The Crusader" which he used to gain support for the repeal of the 18th amendment (prohibition). It was crashed on Sept. 21, 1931 on Staten Island.

C/n 152, (VH-USB) began life as a Sirius 8A and later became Sirius 8 Special owned by Victor Fleming. Lockheed bought it back in 1934 and fitted it with retractable U.C. as an Altair 8D (X118W) intending to enter it in the 1934 Mac. Robertson (London-Melbourne) Race, but Sir Charles Kingsford Smith purchased it, renamed it "Lady Southern Cross" and registered it in Australia as VH-USB. Sir Charles and his navigator, P. G. Taylor, flew it to Oakland, California via Fiji and the Hawaiian Islands between October 20 and November 4, 1934. It was then re-engined with a Wasp C, sent to England and registered G-ADUS. It was lost on Nov. 7 near Singapore in an attempt to fly to Australia from England.

C/n 165 was the last Altair obtained by modifying an existing Sirius airframe. It was built in Detroit, since the Lockheed hydraulic brake Co. was situated there, as (DL-2) (NR8494) and was fitted with a Pratt & Whitney SR-1340E 500 h.p.engine in 1931 and was assigned to Bolling Field of the Army Air Corps. It was scrapped in 1942 at the Middletown Air Depot in Pennsylvania.

C/n 176 was the first A.C. built originally as an Altair and was powered with a 645 h.p. Wright Cyclone R-1820-F2, nine cylinder radial and was decorated with a substantial quantity of gold leaf at the request of its owner, Bernard Macfadden. It was completed in 1931 and was named "The Gold Eagle" and registered as NC998Y. It made the first non-stop Montreal to Havana flight (9 hours 3 min.). One month later it was fitted with extra fuel tanks and its name was changed to "Miss Liberty". in an attempt to halve Lindbergh's Atlantic crossing flight time, it ran out of fuel and was forced to ditch some 17 miles south of Kinsale Harbour in County Cork, Ireland.

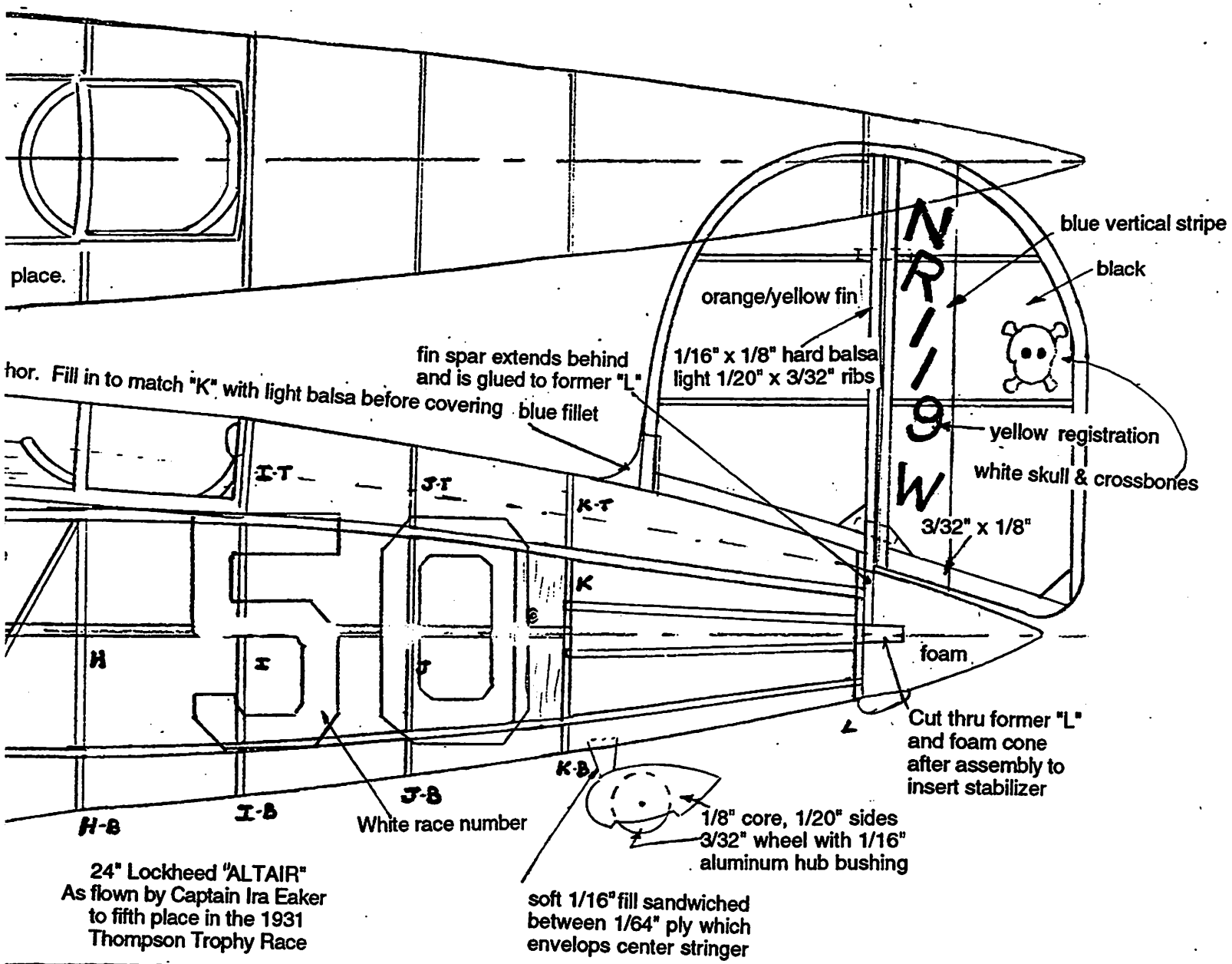
C/n 179 was ordered by the Navy but was placed in storage in 1933 after little use.

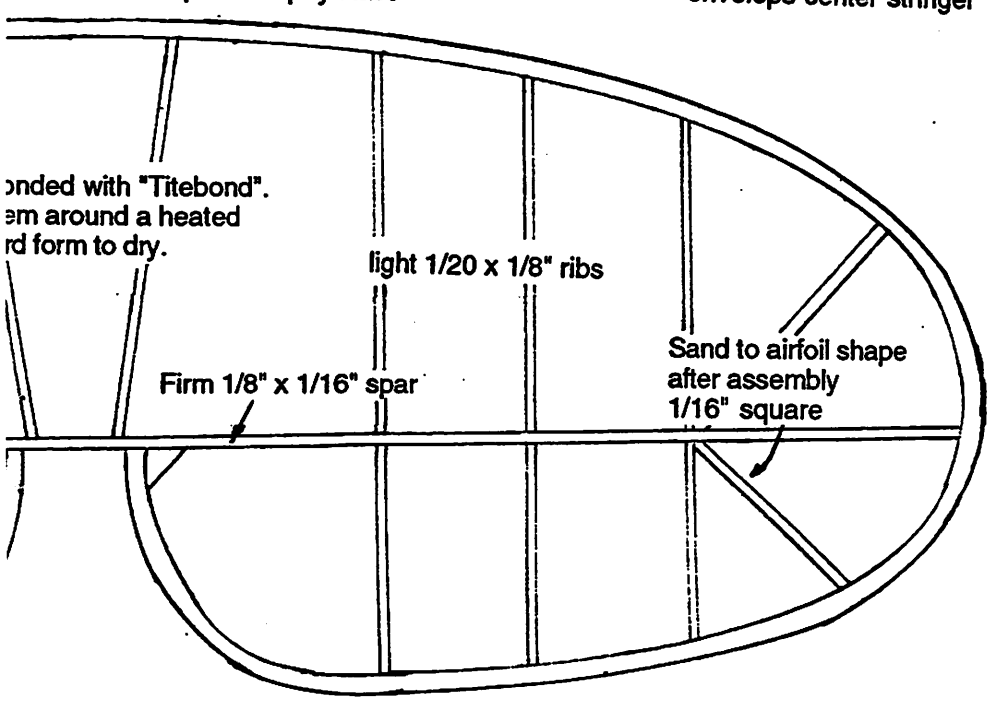
C/n 180 (X12222) was leased to Transcontinental & Western Air in Sept. 1931, but was damaged in a wheels-up landing in October. It was re-built as an Orion 9C special.

C/n 188 and c/n213 were exported to Japan and were used as passenger and cargo aircraft. The first (J-BAMC) made the first Tokyo-Manila round trip between Nov. 10 and 26, 1935 but crashed at Osaka April 12, 1937. The second was destroyed at the Hanada Airport in 1944 during a bombing raid by B-29s of the US 20th Air Force.

C/n 214 was used as a successful test bed for the Menasco Unitwin inline engine intended for the "Vega Starliner". It was later fitted with a Wasp C and sold as an Altair 8D (NC18149), registered to Howard Batt in Sept. 1940. In 1942 it was acquired by he California Aircraft Corp. and later by the Bechtel-Price-Calahan consortium to carry personnel and equipment for a construction project in Northern California.

References: "Beyond the Horizon - The Lockheed Story" by Walter Boyne - Published by Griffon; "Designers and Test Pilots" by Richard P. Hallion - Time-Life Books, Alexandria, Virginia, The Rand McNally Encyclopedia of Military Aircraft 1014 - 1980 by Enzo Angelucci; "Revolution in the Sky" by Richard Sanders Allen - Shiffer publishing Co.. Special thanks to: Tom Nallen Sr.; Ralph Kuenz; Francis Zink; Rudy Profant; Bob Clemens; Ottmar Gangl and Russ Brown who generously provided information and suggested sources for confirming the color scheme of the "Altair" and to the Akron Public Library who obtained books through the inter library loan system.


place.
hor. Fill in to match "K" with light balsa before covering
fin spar extends behind and is glued to former "L"
blue fillet
orange/yellow fin
1/16" x 1/8" hard balsa
light 1/20" x 3/32" ribs
blue vertical stripe
black
yellow registration
white skull & crossbones
3/32" x 1/8"
foam
Cut thru former "L" and foam cone after assembly to insert stabilizer
I-T
J-T
K-T
K
H
I
J
H-B
I-B
J-B
K-B
White race number
1/8" core, 1/20" sides
3/32" wheel with 1/16" aluminum hub bushing
soft 1/16" fill sandwiched between 1/64" ply which envelops center stringer
24" Lockheed "ALTAIR"
As flown by Captain Ira Eaker
to fifth place in the 1931
Thompson Trophy Race


onded with "Titebond".
em around a heated
rd form to dry.
light 1/20 x 1/8" ribs
Firm 1/8" x 1/16" spar
Sand to airfoil shape
after assembly
1/16" square

break-off-blade knives from Japan with the blade extended about 3"). It is best to shape the foam to accommodate the airfoil contour so it doesn't have to be bent to conform to curvatures in two directions. After the fairings are fitted by sanding with #230 grit paper wrapped aroud a 1/2" dia. dowel, coat them with thinned "Titebond' then use acrylic paint to color them dark blue. Glue the fairings to the model with "Titebond".

Vacuform the canopy from .020" butyrate sheet using a harwood form. Tape the plastic to a wood frame with an opening about 5-1/2" x 2" and heat itover an electric heater till it sags. Then immediately put it over the form on your vacuum box with the vacuum already turned on. It will cool almost instantly. Be sure the male form is at least 1/4" deeper than the canopy needs to be to allow for trimming. Structures on the canopy can be simulated with narrow pieces of black trim strip or drawn on with a "Sharpie" pen. These structure lines can also be put into the wood form with a razor saw and a narrow file, and will be molded into the plastic automatically, giving your "Sharpie" an easy guide to follow and a true three dimensional effect!

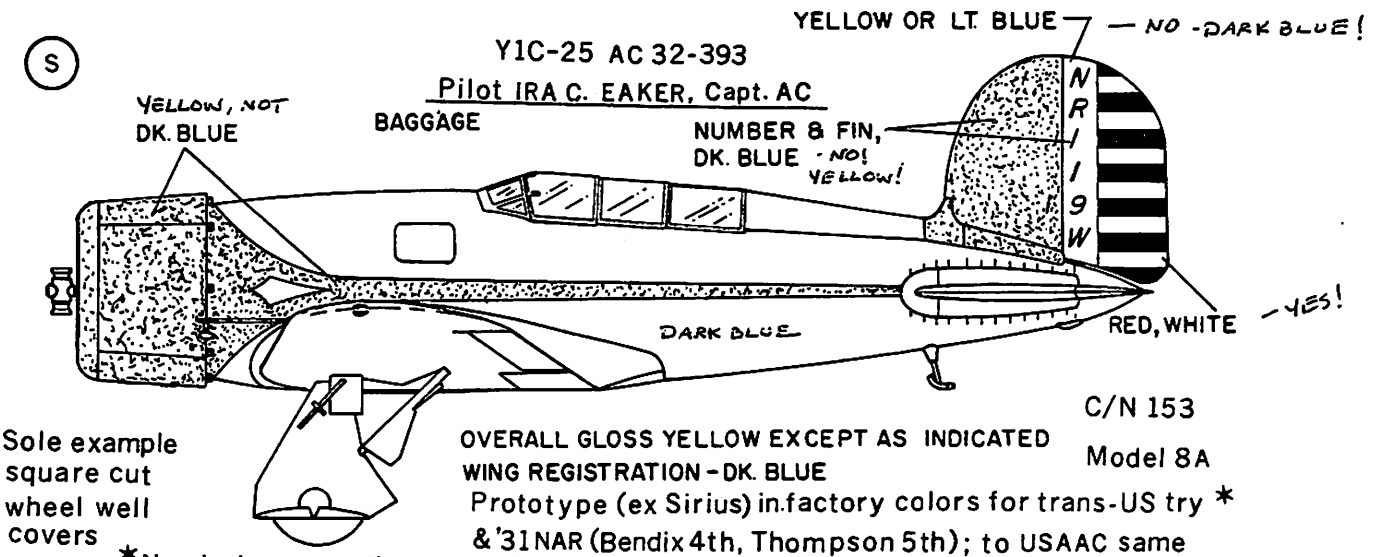
I found that a 9" low pitched plastic prop with a P/D ratio of about 1:1 works well on this model. My original trials with a higher pitched prop were not successful! Four strands of braided 3/16" rubber should be enough to power your "Altair".

Even if you don't build the "Altair", I recommend you try this fuselage construction on a model with a round or oval cross section sometime because it works very well, saves weight and is strong.

References: Many thanks to: Ralph Kuenz, Tom Nallen Sr., Rudy Profant, Ottmar Gangl, Francis Zink, Bob Clemens, Richard S. Allen and his book: "Revolution in the Sky", published by Shiffer; "Air Age" Magazine; "The Air Racer" by Charles A. Mendenhall and " Beyond the Horizon - The Lockheed Story" by Walter Boyne, published by Griffon.

I hope you will have fun building and flying this model - - happy landings! Steve Griebling

Drawing from "Revolution in the Sky", page189. Colors indicated in captions are probably in error due to confusion from black and white photos taken at the time on orthochromatic film. It is highly unlikely that Eaker would have changed the color of the vertical rudder stripe and the included yellow registration for the race.



CFFS CONTEST EVENTS AT LORAIN COMMUNITY COLLEGE ATHLETIC FIELD

1. FAC Peanut Scale, full points.
2. Hi-Wing Cabin Peanut Experimental
3. Hi-Wing Cabin Peanut Production
4. FAC Dime Scale
5. FAC Rubber Scale
6. FAC OH Funk & Waco Ltd. M.L.
7. FAC Jumbo Scale
8. FAC Pinoneer Scale
9. FAC Golden Age Civil Aircraft
10. Golden Age Military Aircraft
11. FAC No Cal Profile Scale
12. No Cal WW II 3 flight. total
13. FAC Power Scale Elect. or CO2
14. O.T. Gas Replica Elect or CO2
15. Embryo Endurance (J) (S) (O)
16. Jr. Rubber 3 flight. No Max.
17. H.L. Glider (J) (S) (O) * $1 Pot.
18. 6" Stick catapult glider, $1 Pot.
19. FAC O.T. Rubber 36" Pot
20. FAC O.T. Stick 36" Pot.
21. FAC O.T. Two Bit. 25" Max. $1 Pot.
22. O.T. Jimmie Allen R.O.T. $1 Pot.
23. Modern Civil Scale, 3 flight total
24. Modern Military M.L. @12:00
25. WW I Multiwing Peanut M.L. @12:30
26. WW I Multiwing FAC M.L. @1:00
27. WW II Peanut Combat M.L @ 1:30
28. WW II Combat FAC M.L. @ 2:00
29. Bendix Trophy Race M.L. @ 2:30
30. Goodyear F.1 race M.L. @3:00
31. Greve In-lines Race M.L. @3:30
32. Thompson Radials M.L. @4:00
33. P-20
34. P-30

FAC rules apply with inspection of No Cal & Dime detail. Mass Launch 45 point Min. detail and O.T. Per Plan. Pre select event for multiple option models. No size changes in O.T. 25" Max. Mass Launch and O.T. Gas replica out of bounds to be set at field. All may pick a plan prize.
I-90 Exit 148 to Rte. 301 (S. Abbe Rd.) Check Hoag Rd or upwind..

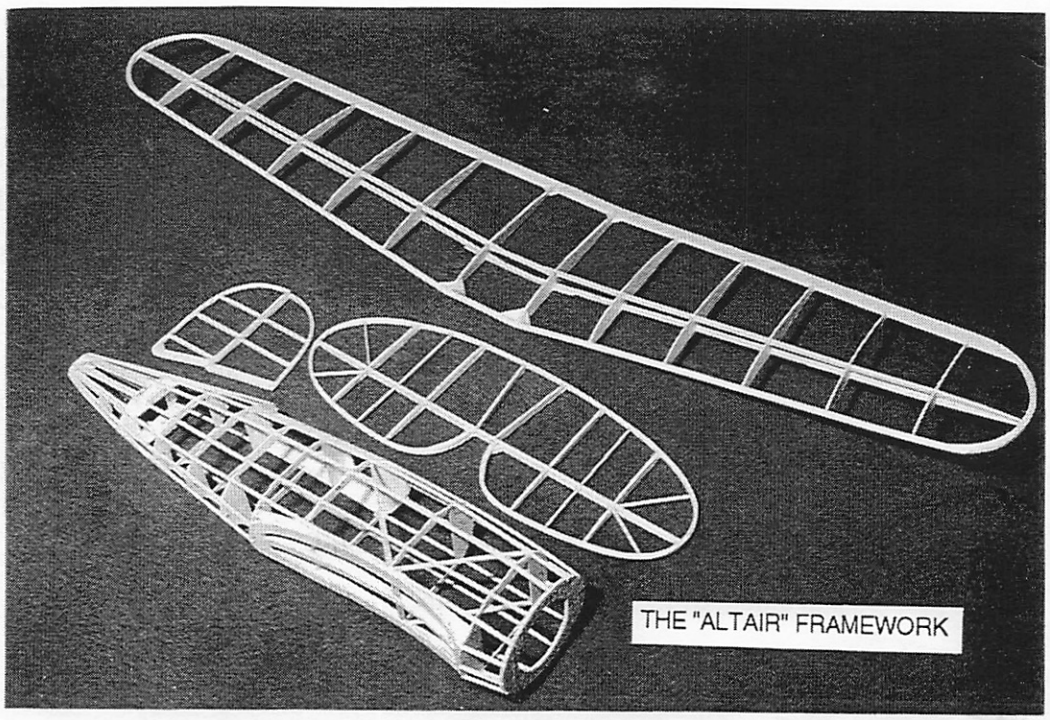
Cleveland Free Flight Society Outdoor Contest Schedule for 2003:
Sunday August 10 at LCCC 9AM to 5 PM, C.D. Peter Zbasnik 216 471-7478
Sunday Sept. 14 at LCCC 9 AM to 5 PM, C.D. Russ Brown 216 382- 4821
Sunday Oct. 5 at LCCC 9 AM to 5PM, C.D. Jim Hyka 216 481-6525

Other Events of Interest:

July 28 - Aug 1	**Outdoor champs for FF at Muncie, IN.**
July 29 - Aug 4	**EAA Air Venture fly - in at Oshkosh, WI.**
Aug, 8 - 10	**5th Aeronca Fly - in at Alliance Barber field 2D1.**
Aug 22 - 24	**Mid Eastern EAA Fly - in at Marion, OH.**
Aug 30 - Sept 1	**Cleveland Air Show & Parma Hobby CFFS Display at Burke Airport**

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THE "ALTAIR" FRAMEWORK