CROSSWINDS

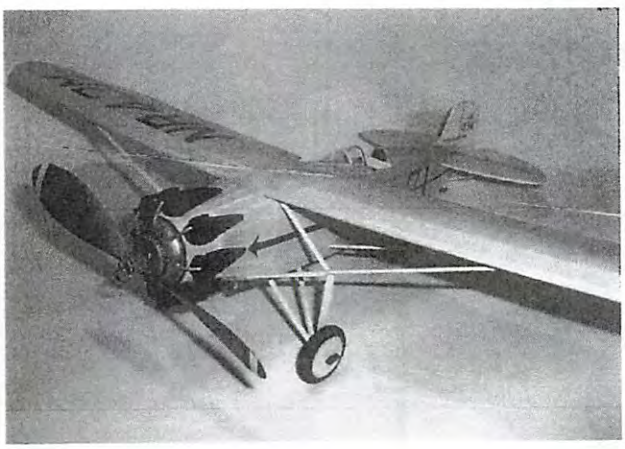
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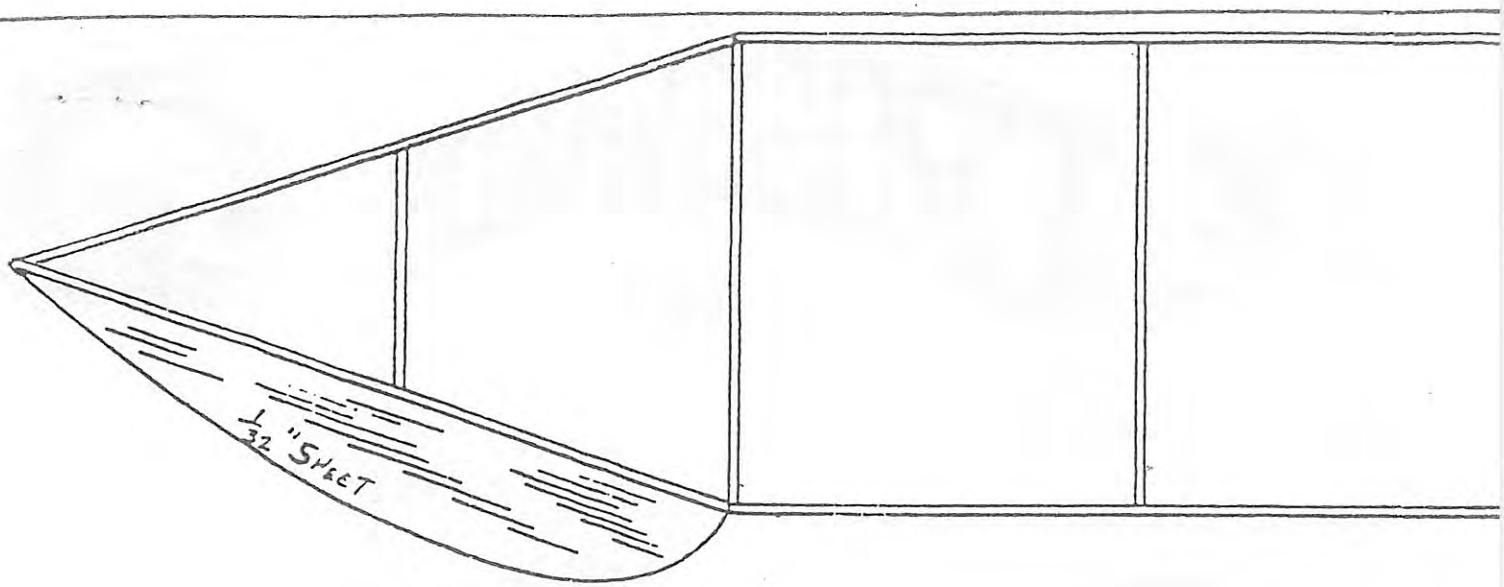
CLEVELAND FREE FLIGHT SOCIETY



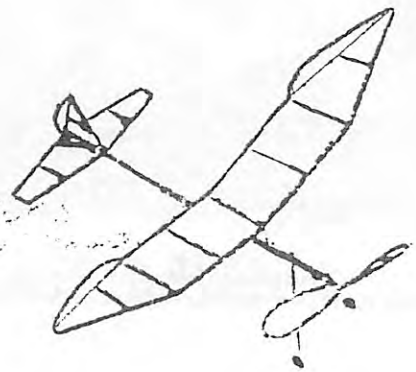
SIMPLEX

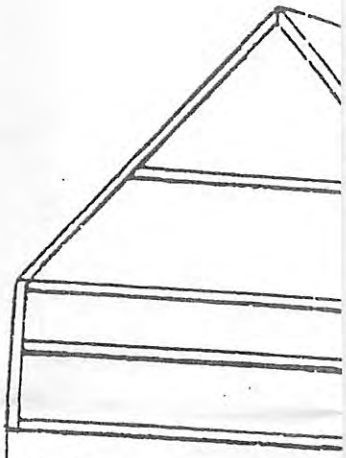
CROSSWINDS
RUSS BROWN
4909 N. SEDGEWICK
LYNDHURST,OH 44124







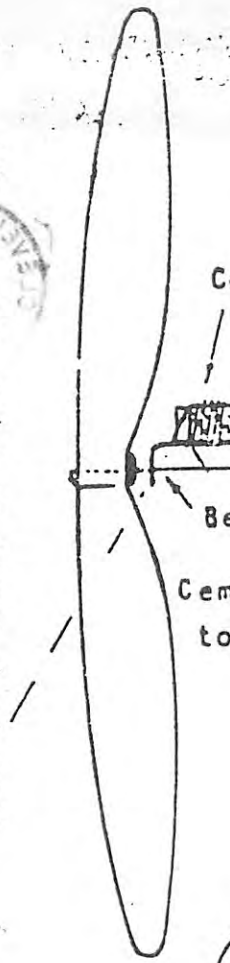


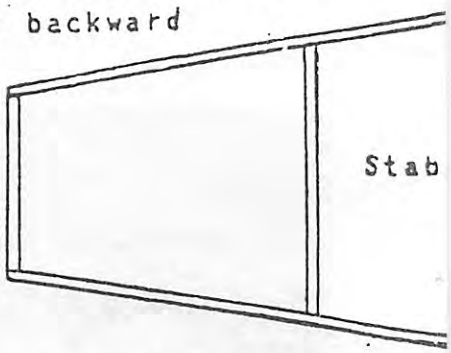


Front wing clip
than the rear to
wing incidence.
0.020" ± 0.013"
0.006 Wire

Jetco R.O.G Rules

1. Build from plan with no structual changes.
2. Any commercial plastic prop may used. It may be cut down to 5½". Prop may be altered by sanding and/or cutting to size.
3. Tissue covering.
4. Model must R.O.G.
5. Unlimited attempts. Official flight is 20". 2 attempts equal 1 official. Best of 5. An attempt is an R.O.G.
6. Any prop bearing or prop hangar may be used.
7. Center section of wing may be flat.
8. Minimum weight of model without rubber is 3.5G.
9. No camber(baggy tissue on wing)





Drop of cement to preve
wheels from coming off

Jetco MODELS

C A. ZAIC CO. INC.

883 Lexington Ave., Brooklyn, New York 11221

Power 7" loop of 1/8" flat rubber.—OPTIONAL

Simplex Racer

Rich Weber

Robert Hirsch is well known in aviation history circles for the wide range of multi-view drawings he has done, and they have formed the basis of several books on air racers. I think it's safe to say that no one has drawn more race plane subjects than he. In 2005, he published Aircraft of Air Racing's Golden Age,* and incorporated his drawings of U.S. racers of the era, along with a huge selection of rare high quality photos. I bought a copy of this 1,000+ page, two volume set, and for the last several years I've been enjoying the opportunity to browse through it looking for unusual modeling subjects. That's how I discovered the Simplex.

The Simplex Racer had a brief racing career, but despite it's relative obscurity, a number of very nice photos have survived, showing the aircraft in several configurations. When I first opened the page on this one, I knew I had to build it. The ship had lines that were classic Golden Age, and a configuration that promised to be Free Flight friendly. It looked like Lindberg's teenage son turned the Spirit of St. Louis into a hot rod.

The Simplex Aircraft Corporation built the model R2D (nothing to do with Star Wars) in its Defiance, Ohio plant in 1929. It was equipped with a 225 hp Wright J-6 Whirlwind, and offered an unusual feature. It could be quickly converted from a shoulder wing monoplane to a biplane by bolting on a set of wings and interplane struts.

It was flown at the 1929 National Air Races in Cleveland, and did well enough to win $1,000 prize money for pilot Dick Myrhes. Unfortunately, the aircraft was slightly damaged on a bad pylon turn when one of the wheels hit the ground. It sat out the '30 and '31 racing seasons and reappeared at the '32 N.A.R. in Cleveland sporting new wheel pants, but did not race. After that, the trail goes cold.



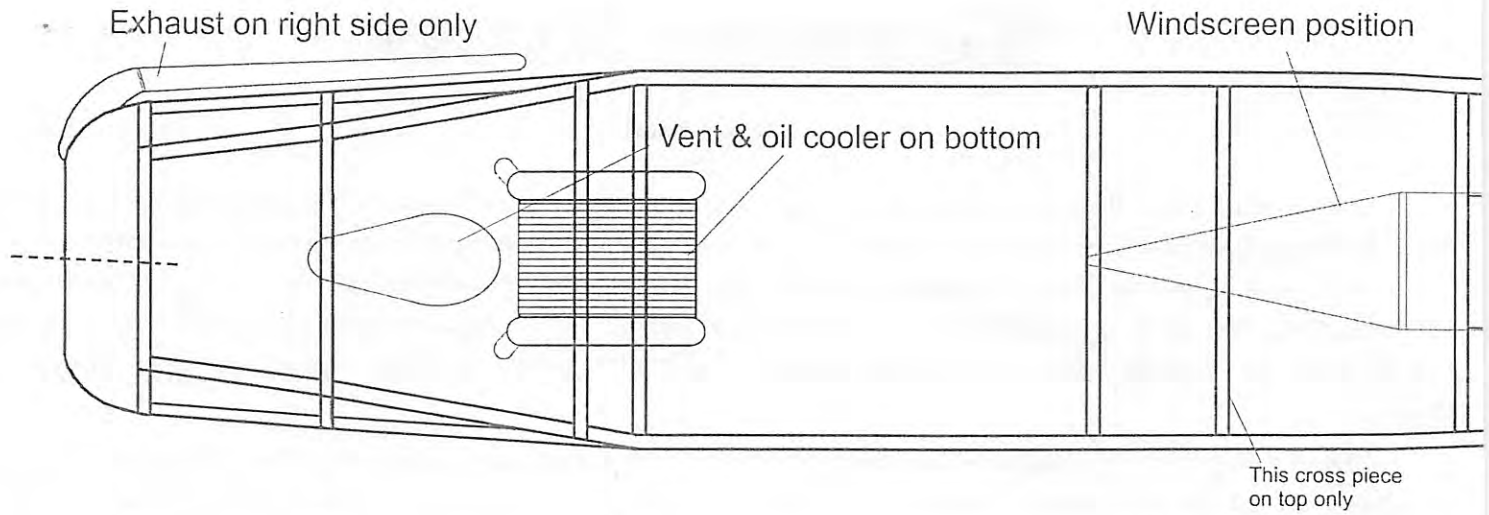
Simplex Racer - 1929 monoplane configuration

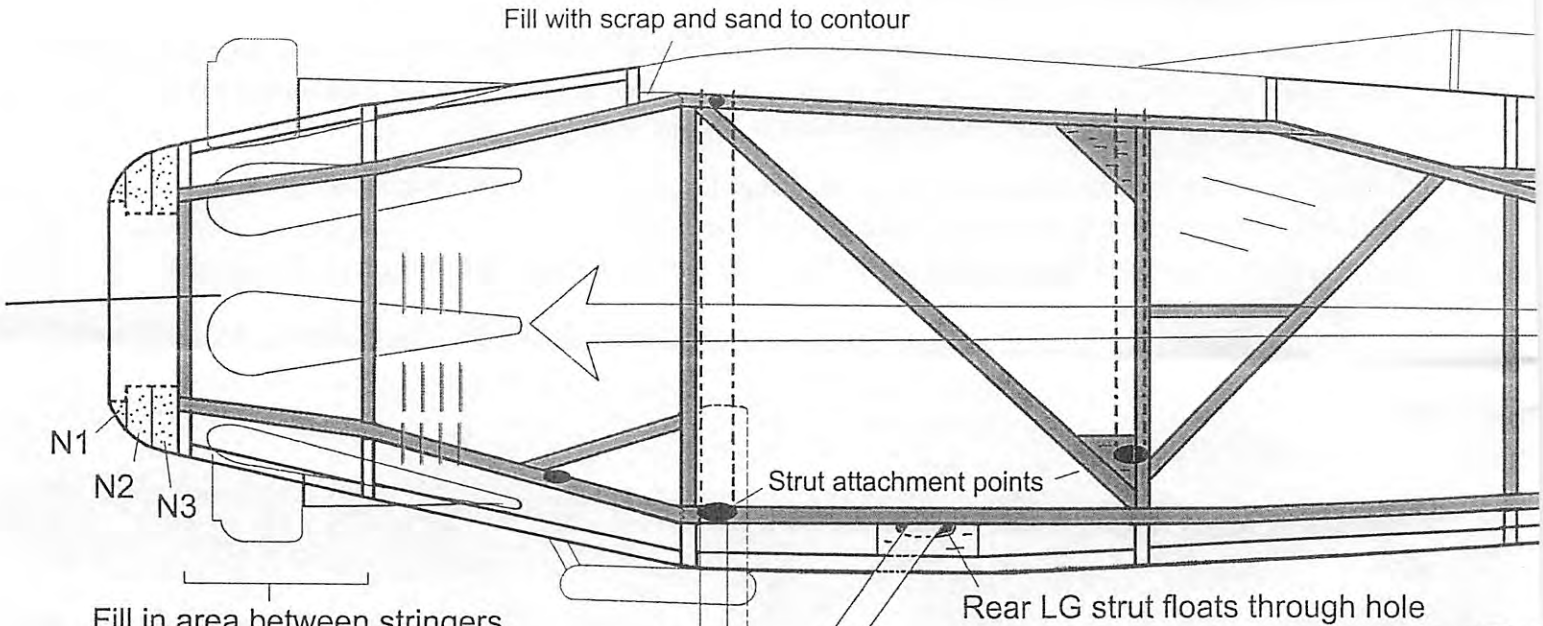
The model

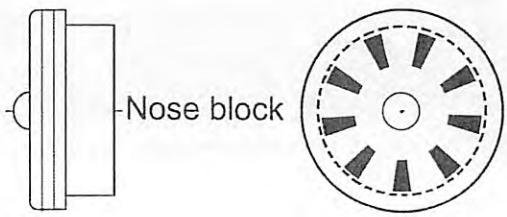
I can honestly say that the Simplex is my favorite model of all time. That's saying something. It started off with the major attraction (for me) of never having been modeled before, then added in oodles of Golden Age charm, a simple and yet attractive color scheme, and capped it off by being a great flier.

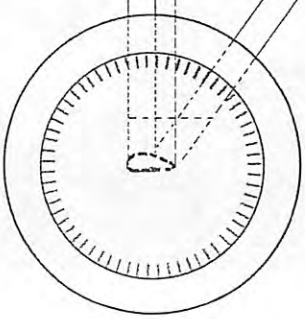
Construction

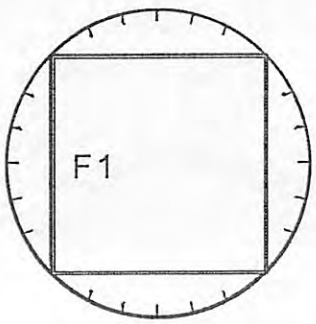
At first look, the exposed radial engine and that maze of wing struts can be a bit intimidating. On the plus side, the fuselage is slab sided, and there's nothing very complicated about the basic airframe. That means that keeping the structure light isn't too big of a challenge, and combined with generous wing area and a good nose moment, flight potential is good. Lets get those intimidations out of the way.

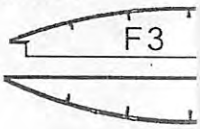


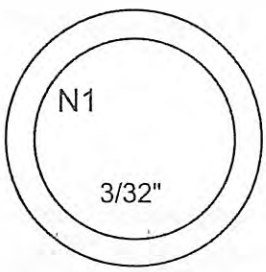


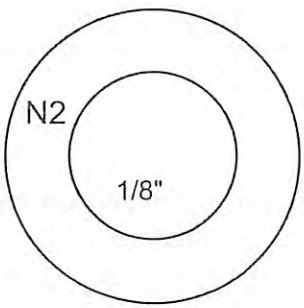


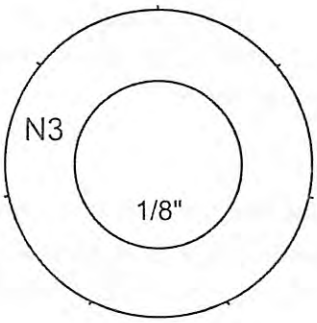




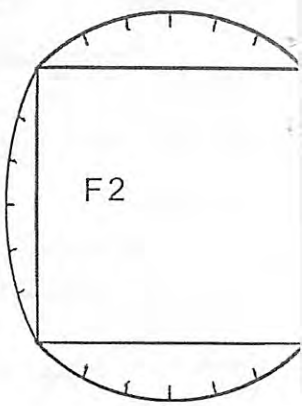








Nose formers

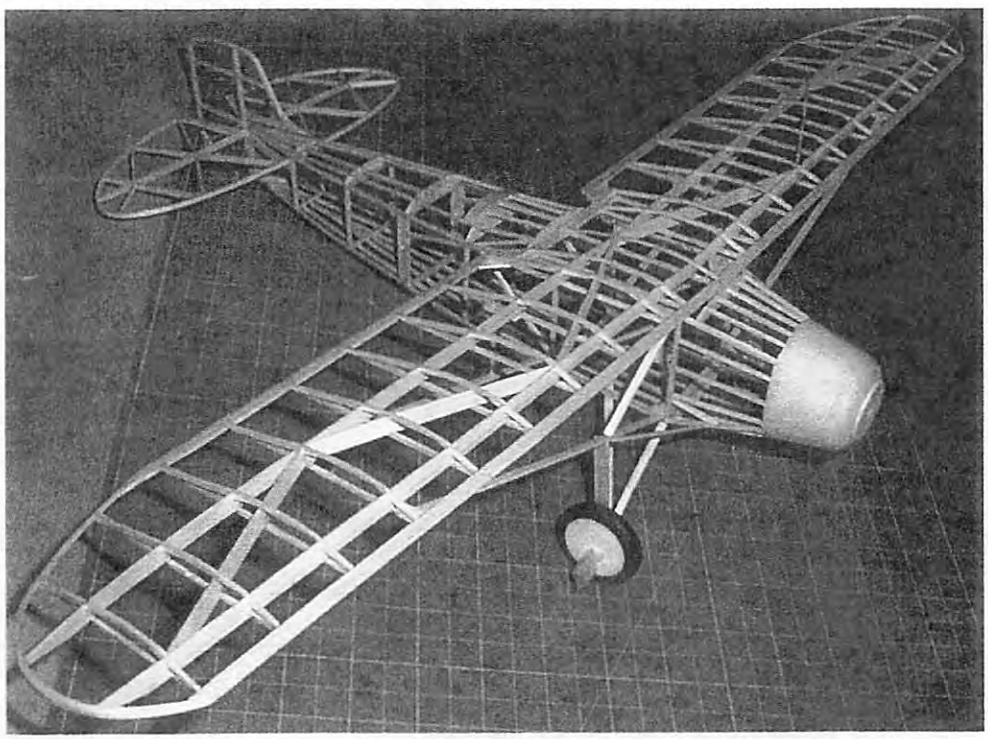


The engine only took two evenings to assemble, and most of the first evening was spent figuring out the best way to go about it. I didn't want to put simple thread wrapped tubes on it because the Wright Whirlwind has a lot more complicated shape than that. I opted for foam, but balsa would work if you prefer working with it.

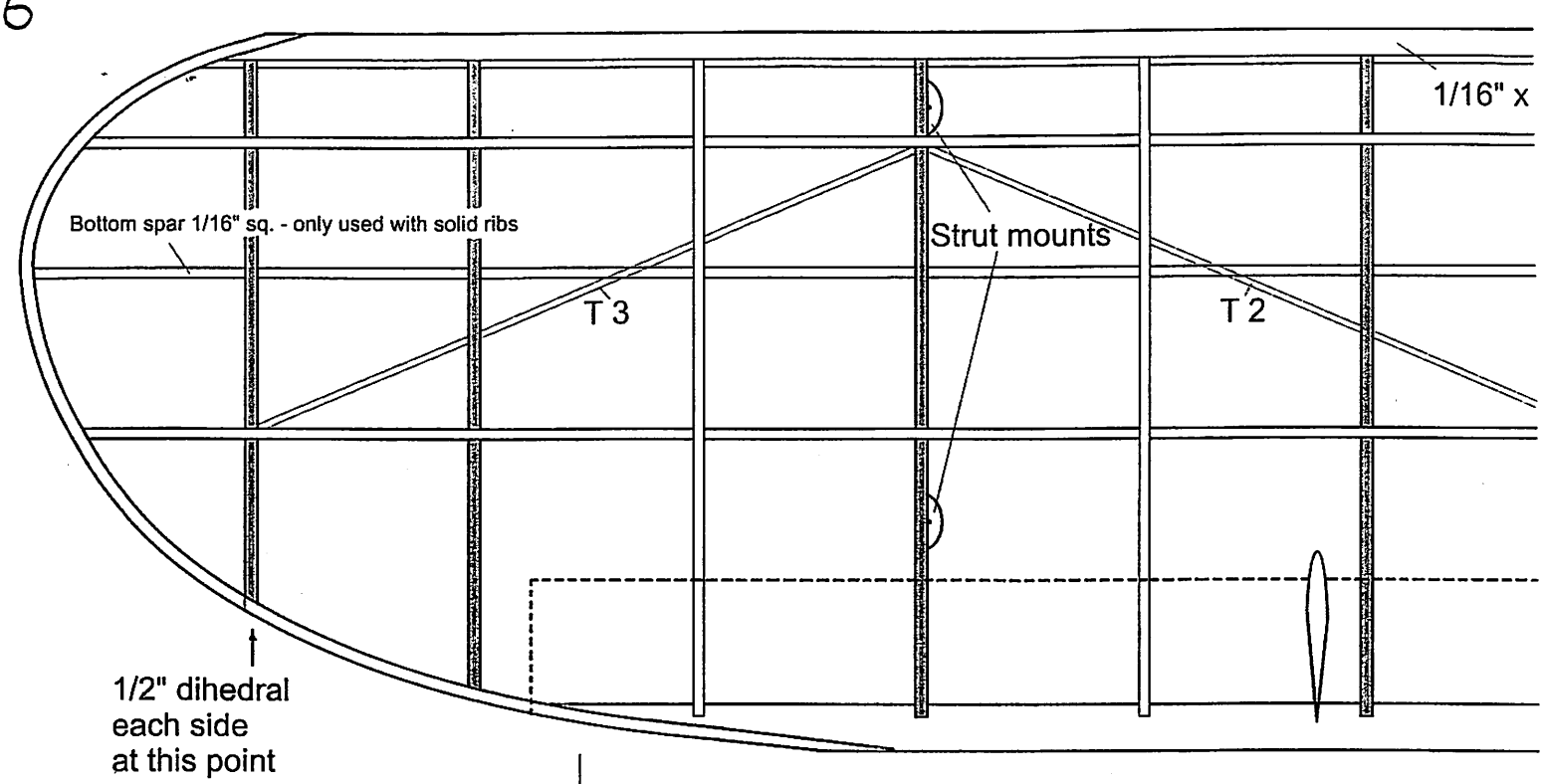


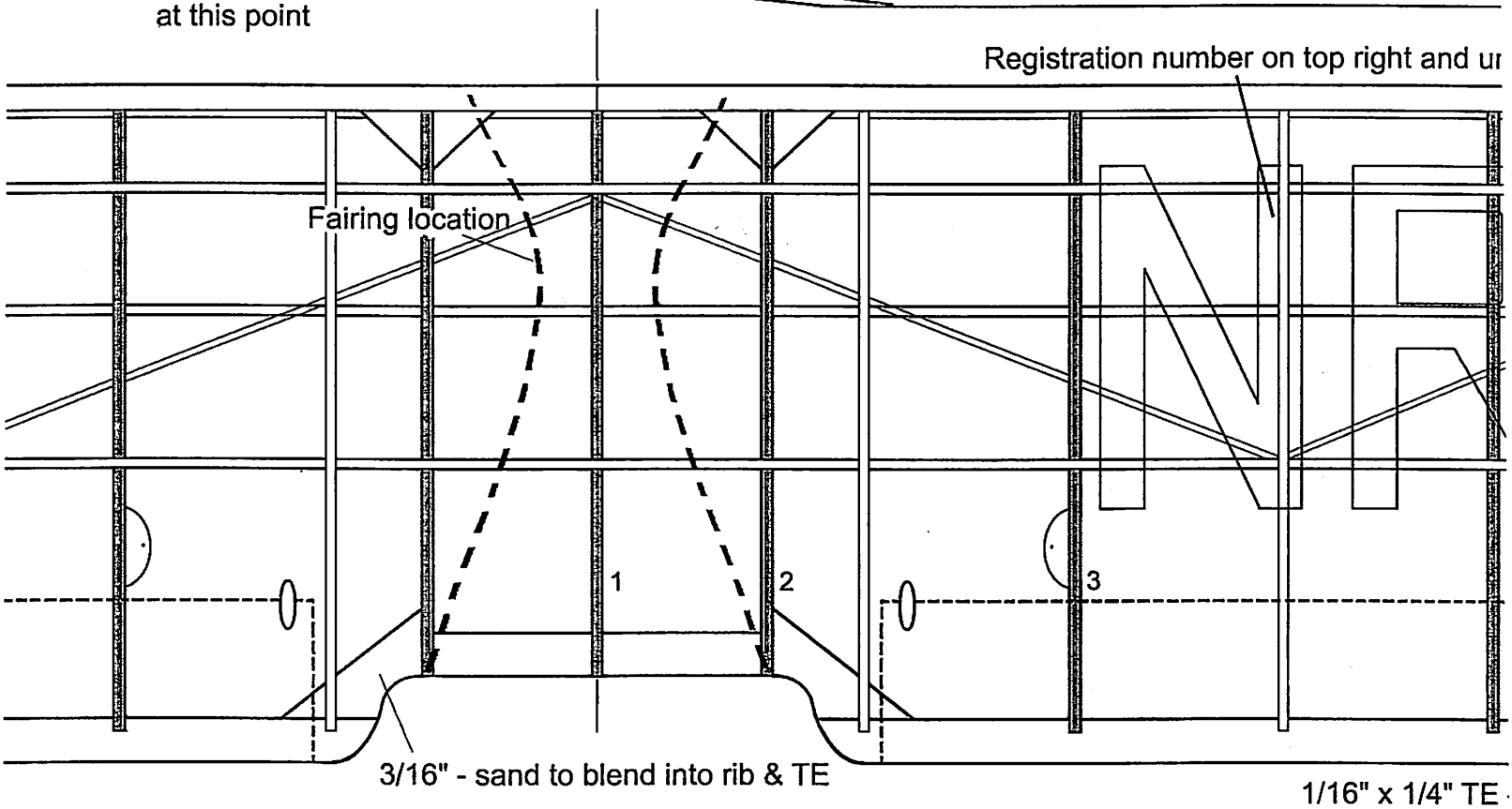
Simplex Racer - 1929 monoplane configuration

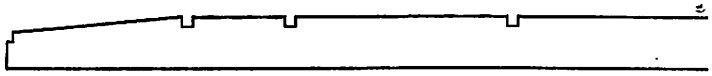
Step one is to make a cylinder cutter. I have a collection of brass tubes (available at most local hobby shops) that I use for this purpose. They're cut off in 2" lengths, and then one end is sharpened. A little work with a rattail file gets this done quickly. The half inch ID tube was run through a piece of "polyiso" foam. This is sold in the big box stores as Tuff-R insulation sheets locally, usually with foil on one side. It has a much more granular structure than the pink or blue stuff, and is about the same color as balsa. It's very easy to carve, and it's light. I made the cylinder blanks extra long so I'd have something to hang onto as I threaded them through a nut. Fishing around the hardware bin netted an old machine nut that was a snug fit on the foam cylinder. Twisting those foam cylinders through the nut left a thread pattern that looked close enough to cooling fins to work for me. I made ten of them. Seven for the model, and a few to experiment with. The intake lobe on the top of the cylinder head is smooth so it was easy to make a small batch of them. The exhaust lobe is finned, and not being cylindrical, presented a puzzle. I found that I could slice-and-smoosh (technical modeling term) the foam after running it through the nut and get an oval cross section without destroying the finned effect. The rocker covers that cap it off were a simple shape that presented no challenge. When all the bits were cut out, I glued them together (Polyiso foam can be glued with solvent based glue, unlike the pink or blue stuff), painted them black, and had seven nearly identical Wright Whirlwind cylinder heads ready to stick on my model.



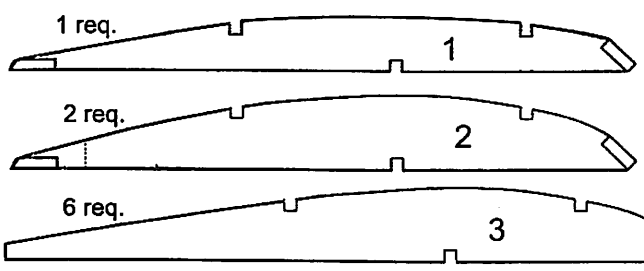
The plan shows the positions of the cylinders on the front view. Cut the teardrop shapes from black tissue and glue or dope them on the cylinder positions. The base of each foam cylinder is then sanded to fit the nose contour so they stand perpendicular to the thrust line, and glued at the front edge of the black tissue. The wedge shape cylinder fairings are also carved from foam and painted black. They get glued in directly behind the cylinder heads over the back portion of that black tissue teardrop.



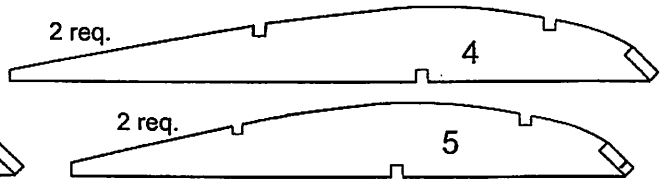




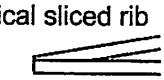
Solid ribs

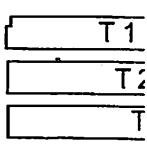


Positions for solid ribs are shaded



Typical sliced rib

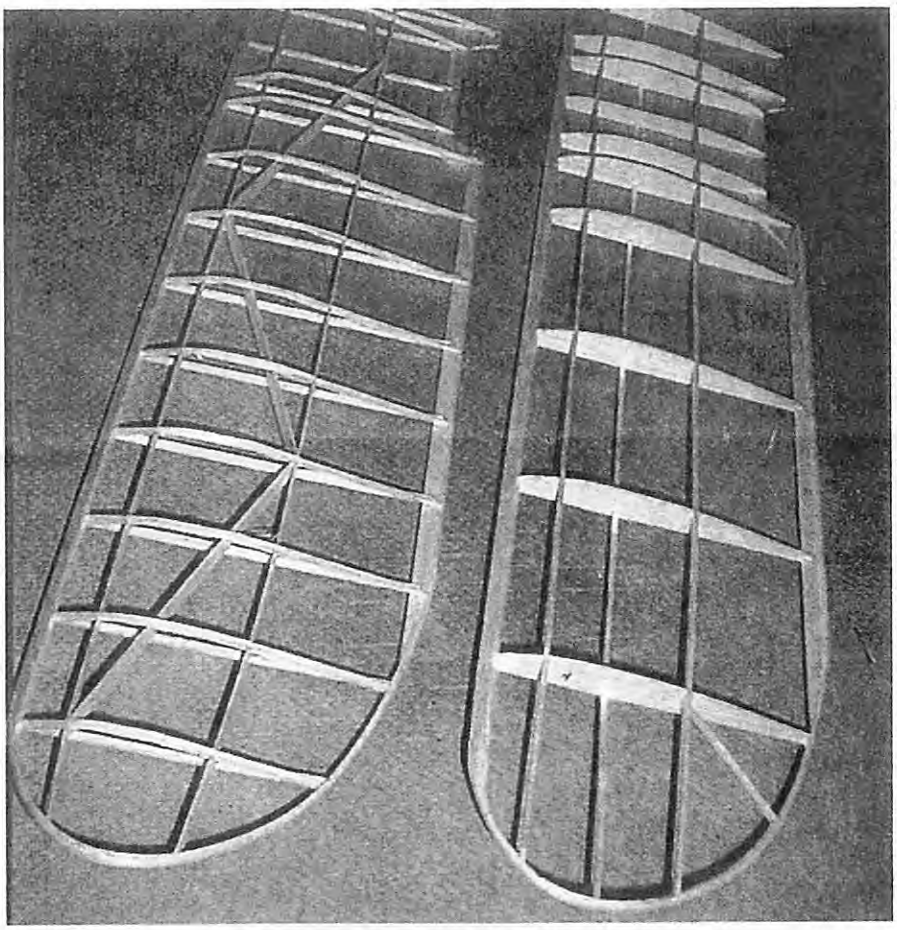




The exhaust collector ring is built into the nose of the fuselage so all that needs to be done is make the exhaust pipes that go from the cylinders to the ring, and these are simple rounded L shapes. A short exhaust pipe runs from the collector ring to the side of the fuselage too. I made the pipes out of Crayola Model Magic. It's a lightweight modeling clay that air dries. It can be bought at art supply houses or toy stores. It works nicely for parts like exhausts, but be aware that it shrinks some as it dries. These parts could also be carved from balsa or foam.

The process takes more work to describe than to do. Take a look at the photos and the description will make more sense.

Then there's those struts… Best advice I can give you is to study the photos, to get the layout, and fit them before you cover the model. It's an extra step that really ends up saving a lot of work later. Assemble the wing to the fuselage using a glue that you can undo later. I use white glue so I can soak it in water and get it to pop off clean. The strut ends are all fitted with monofilament fishing line pins. This lets you fit everything together without glue, disassemble, and then get it all back together without distortions after the model is covered. If you put a small black dot over the holes where the monofilament pins fit in, they're easier to find after covering. They add an amazing amount of flexibility to the structure. I've flown mine for more than two flying seasons without any landing damage.



The only other item on the plan that's worth mentioning is the wing structure. I built the wing frame using the classic Comet style: solid ribs with 1/16" spars top and bottom. As an experiment, I built a second wing frame using a Dave Rees style structure: double sheet spars with a warren truss, and sliced ribs. I threw the two frames on the scale and found that the weight was nearly identical, but the Rees style wing was a LOT stiffer. That's the one I went with. Both structures are on the plan. Take your pick.

You might think the dihedral looks inadequate, but it's enough. Honest. There is some effective dihedral from the shoulder wing and the wingtip configuration. The tip laminations are brought up to the level of the top surface. Not as ugly as cranking in an extra degree on the whole wing, and it works.

Finishing

The look of doped plain white tissue usually ends up looking like a translucent tan, not white. In order to get a model that looked more scale, I used white paper pastels. Smeared into the tissue fiber before covering, it gave the model a more solid look, and really made the red markings pop. The registration letters and other markings were cut from tissue and applied with gluestick. The small registration and logo on the tail were printed on my computer, but the simple block lettering wouldn't be too challenging to do by hand.

Flying

The model flew without any major fussing. Total weight came in just a bit under 30 gm without the rubber motor, and it balances at the usual 30% of the wing chord. I used a 8" blue plastic prop, and two loops of 1/8" Tan SS 32" long. All it needed was a minor tweak to the thrust, and it was soon flying in nice big right hand circles.

I finished this model just in time to fly it at the contest at Wawayanda, NY in the Fall of 2009. At that point, I hadn't gotten the thrust set exactly right, but it was close enough to get second place in the combined racers mass launch. Very encouraging! Next year, I took it to Geneseo with some confidence. The Thompson was a 15% motor event that year, and I had cut the motor down and rebalanced the model. In test flights, it looked like a winner. When the day came however, I managed to flub

7171

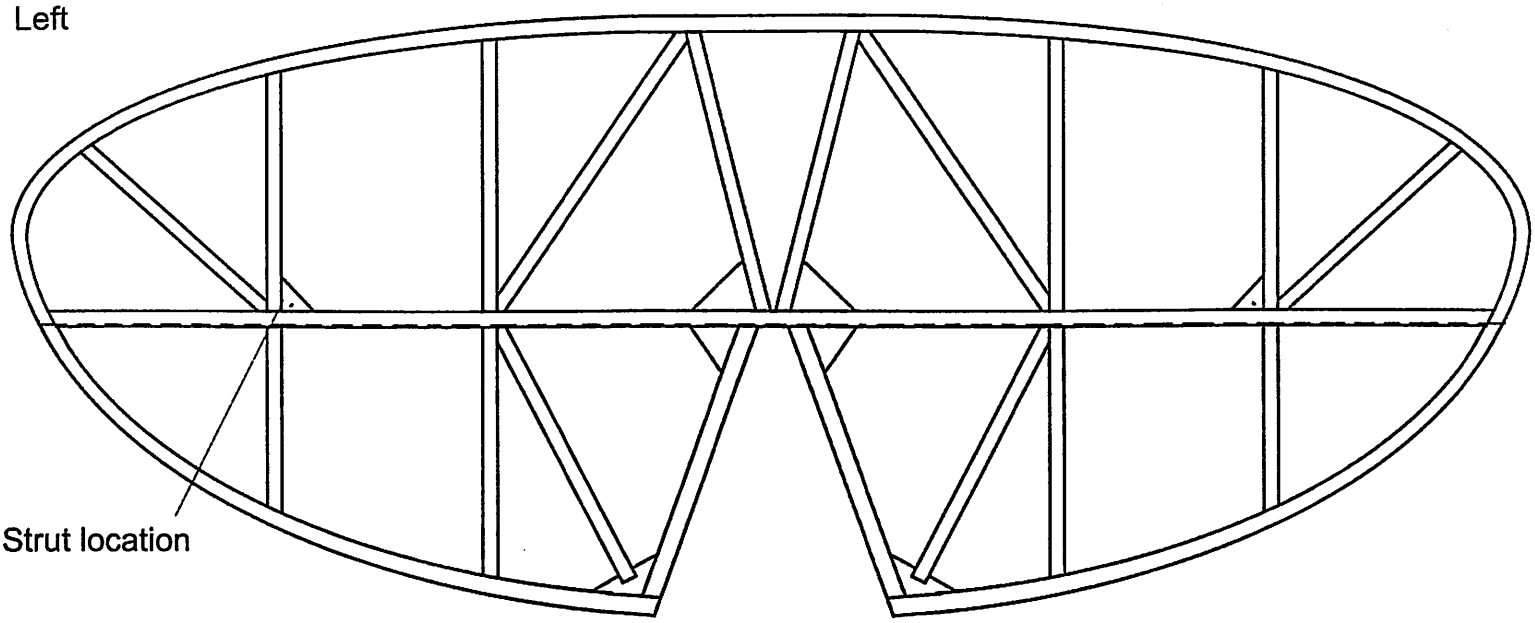
Right

NR
43M
SIMPLEX

Left

NF
431
SIMPLEX

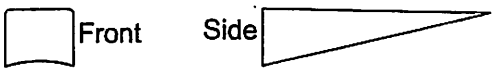
Left



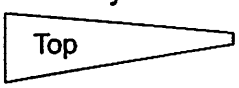
Strut location



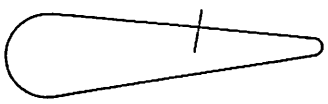
Engine cylinder head
7 req.



Cylinder head fairnings - foam
or soft balsa



Cut from black tissue and
place at cylinder head positions.
Mount Cylinder heads and fairings
directly over. 7 req.



Landing gear wire - true length

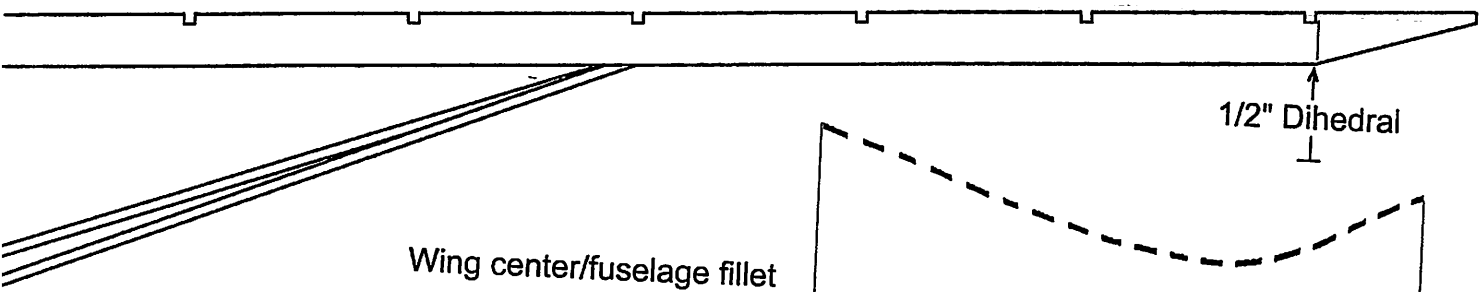
Landing gea
length. Rea
to float.

Exhaust pipe - side view

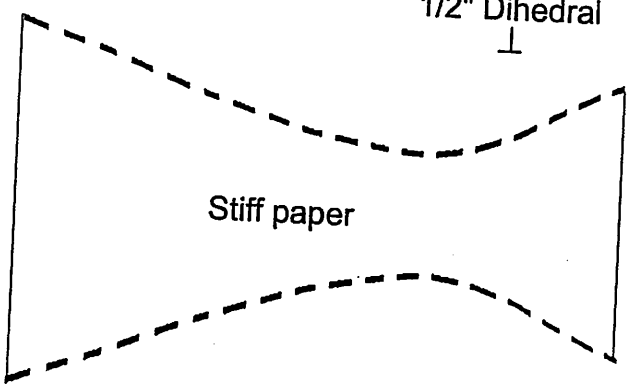
NR43M

71

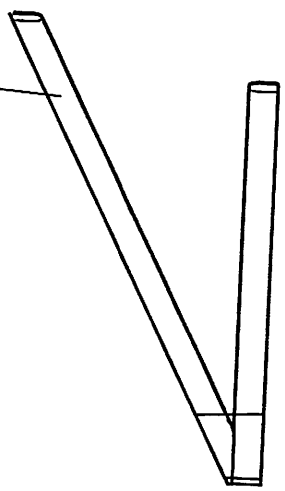
Color Scheme: Overall - White.
Reg. numbers, arrow, & wheel hub - Red
Race numbers - Black
Simplex on vertical fin - Gold



Wing center/fuselage fillet



struts - true
strut over size



SIMPLEX RACER

Model R2D **1929**

24" span
Page 3 of 3

Wingnut Aero Works
Rich Weber 2011

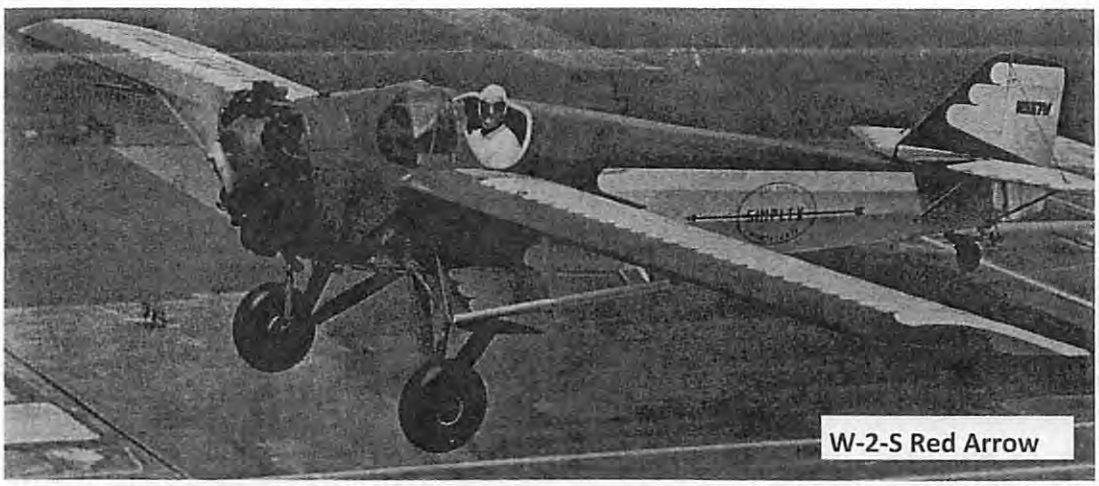
Another Simplex

One of the delightful things that can happen when you're doing research on a modeling subject is the unexpected bits of related history that sometimes come to light. I asked a group of aviation buffs about the Simplex R2D Racer to see if there was any more information out there, and it turns out that one of them had some first hand experience with another of the Simplex aircraft. I received this very interesting letter From Bob Rogers:

It's interesting to me that the Simplex Red Arrow Monoplane is known in other parts of the world and I thought that you might like to know a bit of the history of the sole remaining example since it was part of my life, too.

In the 1963 Earl Adkisson from Tuscola, Illinois got a phone call from one of the volunteer fireman in St. Bernice, Indiana telling him about an airplane they found in a barn after a fire. Earl had spent a lot of time over a fifteen year period talking to people while trying to track down this airplane and the local fire departments are always good places to go for information about the area. Fortunately, the wings were in another building so only the fuselage went through the fire and the airplane was pretty much complete. Earl trailered it home and started the restoration when he had time from his job as airport manager, aircraft mechanic, aircraft restorer, charter pilot, grass mower, runway roller, and snow remover. You see, the Tuscola Airport was a grass strip, and he had built the hangar out of used gas pipe and corrugated steel sheeting when he opened the airport in the early 1950's. The hangar was less than ideal, but it did the job and is still in use today. Anyway, with a lot of us pitching in, the Simplex was ready to fly in a year or so.

I was in high school at the time and one of my tasks was to learn how to weave wicker seats and the Simplex seats were good teachers. When he got her flying she had less than 90 hours on the airframe, which is pretty good for an airplane built in 1930. Earl flew The Simplex for several hours to fly-ins and such with he and his wife, Wanda, becoming known as Mr. and Mrs. Waffle Bottom due to the way their pants looked after sitting on the wicker seats for a while. The airplane flew well and Earl enjoyed it a lot. You could make it turn by sticking an elbow over the cockpit edge much like resting your arm on the windowsill of a car. It was #39 out of 39 built as I recall, the only one with the 125HP Warner radial engine, and the last remaining example in the world. There was a story that some miners used this airplane to drop dynamite bombs on some of the mines during a nasty strike, as most mineworker strikes were in those days. They went to jail and the airplane sat until Earl gave it a new chance to fly. Whether or not the story is true, I don't know but, it sure adds to the history of the airplane.

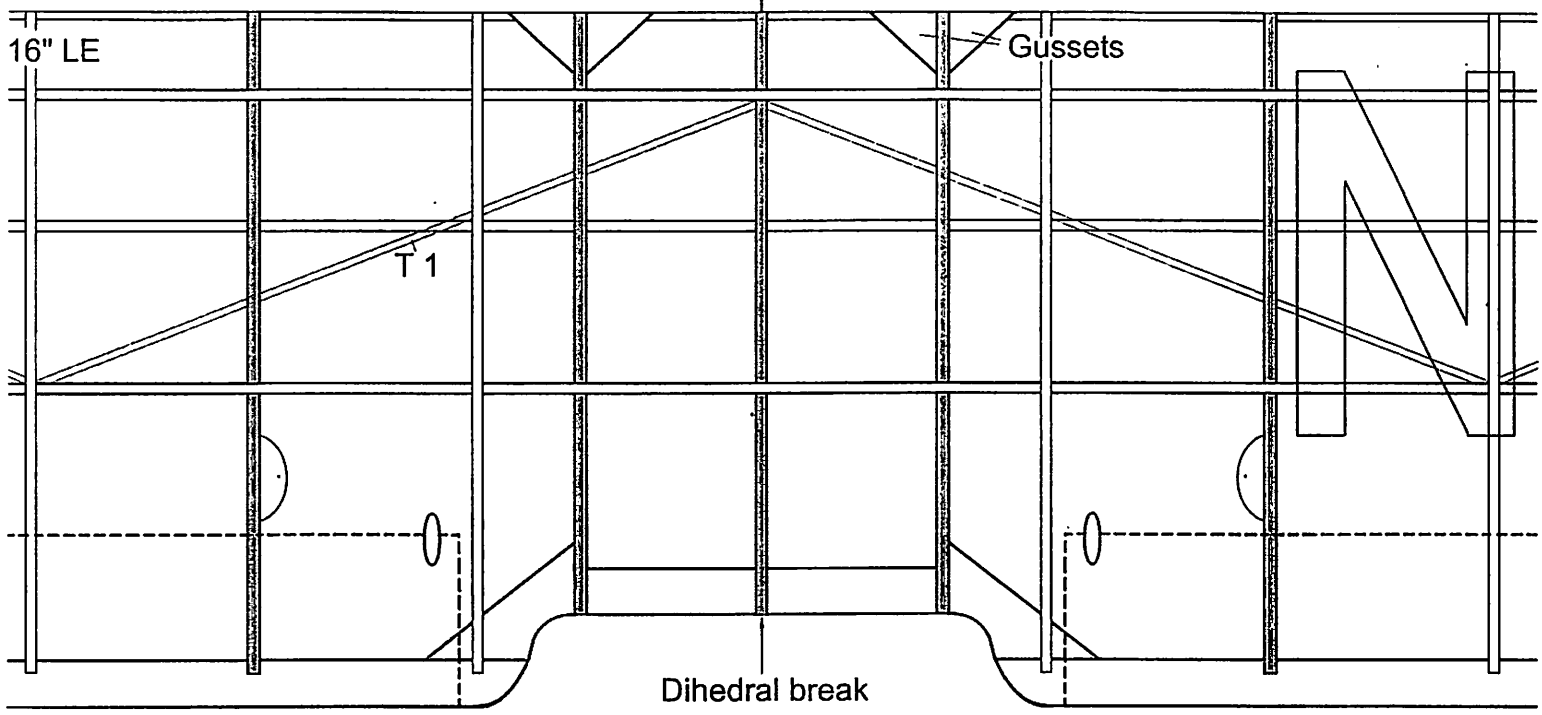


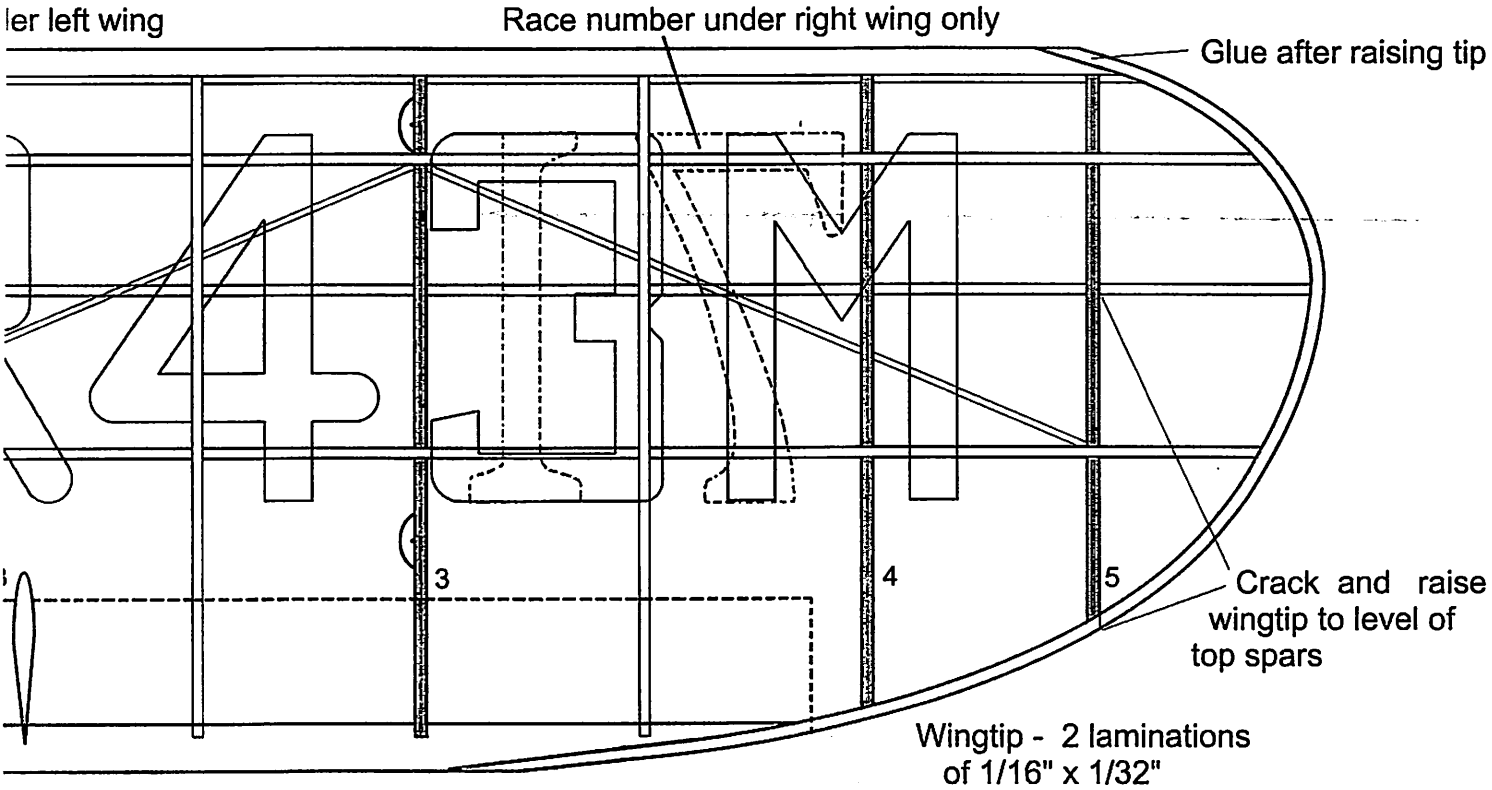
W-2-S Red Arrow

There was some discussion between Earl and the museum at Defiance, Ohio, where the Simplex was built, for purchase but, no agreement was ever struck. Cliff Robertson, the actor and avid collector, tried to buy the airplane as well but, once again, they couldn't agree on value. Then the Simplex fell on hard times. While on tiedown vandals tore up the fabric, punched holes in the fuselage and wings, and did some internal damage. Earl disassembled the airplane and put it into storage. Some years passed, other projects came along, and finally several years ago he had the wings rebuilt. He never was able to complete the restoration again so, the Simplex is still in storage at this writing. He was always working on other people's airplanes and was committed to doing all he could to help them be able to afford to fly.

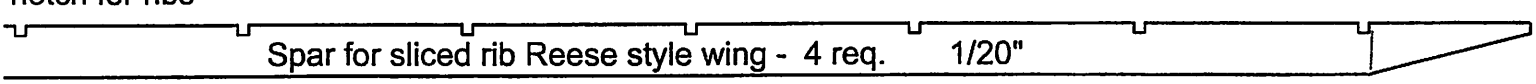
That's a short story about the Simplex Red Arrow Monoplane. Earl gave me my first airplane ride when I was 8 or 9 and was my best friend for over 50 years until he died last year. In my mind the man was a genius. He and his brother designed and built a gull wing homebuilt in the 1950's using mostly Luscombe parts. He designed and built a 1/3 oversize replica of the Demoiselle after we had seen "Those Magnificent Men In Their Flying Machines". Now, that was a fun project and another whole story in itself. He designed and developed a clipped wing Luscombe aerobatic airplane. He designed, developed, and got an STC for "Zip Tips" for the Navion. They were winglets long before anyone else knew what winglets were. His advice to antique owners and restorers as well as experimental aircraft owners and pilots goes all over the world. He helped me design and build a Rogallo Wing glider when I was in high school. This was "old school" design on a napkin or envelope but, I learned so much from him. Whenever any of us doubted our abilities he assured us that yes, we could do it, and we did. He and his wife were more parents to me than my own folks. All this is only the tip of the iceberg about Earl Adkisson. One last thing about the man behind the Simplex. Some years ago he moved to a private, grass strip and set up a new shop. Several of us were sitting in the shade one day visiting and the subject of Heaven came up. He said, "I have Heaven right here". It can't get any better than that. Good friends, good surroundings, and a passion for what you do. I can't tell you how much I miss him.

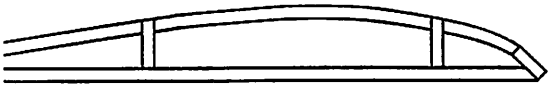
Bob Rogers Highland, Illinois



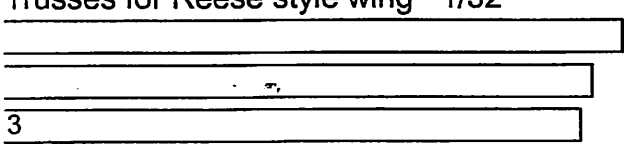


notch for ribs





Trusses for Reese style wing 1/32"



SIMPLEX RACER

Model R2D 1929

24" span

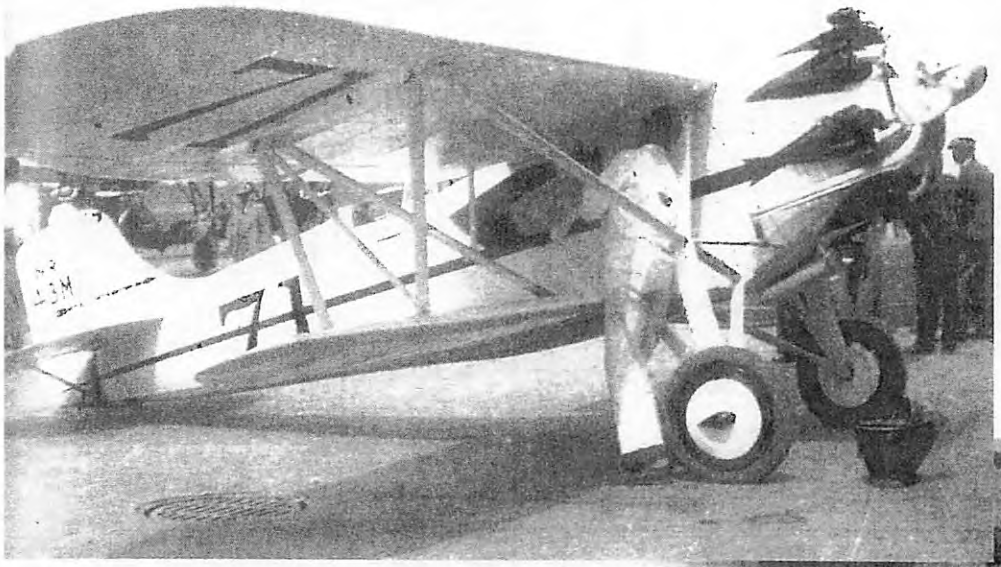
Page 2 of 3

Wingnut Aero Works
Rich Weber 2011

it. The model made the qualification flights without any trouble, but in the first round, I caught my thumb on a wing strut when I launched, and the Simplex was the first model down. The good news is that it returned to Geneseo in 2011 and vindicated itself with a win in the Thompson.

It would be a fun project to work up the biplane version too, but that will have to wait for another day.

Wingnut



1929 biplane configuration - The wheel covers appear different than the ones in the monoplane pictures, but all other details look to be the same.

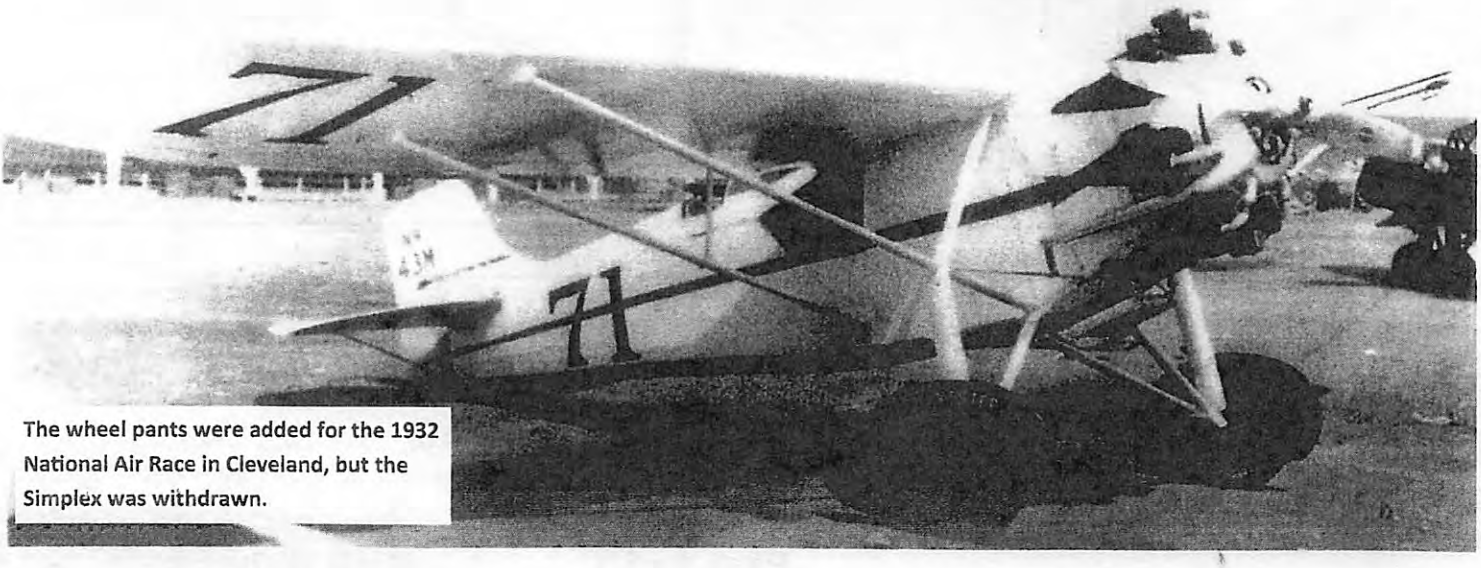


References:

*Aircraft of Air Racing's Golden Age by Maj. Robert S. Hirsch is still available from the author. Sales are handled through eBay, and a search using the title will bring up the listing. Highly recommended.

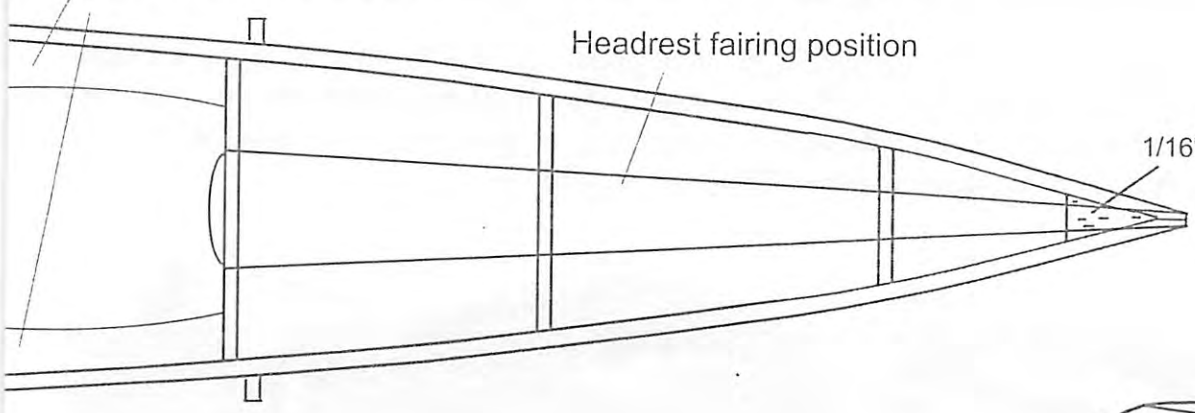
The Golden Age of Air Racing by Schmid and Weaver

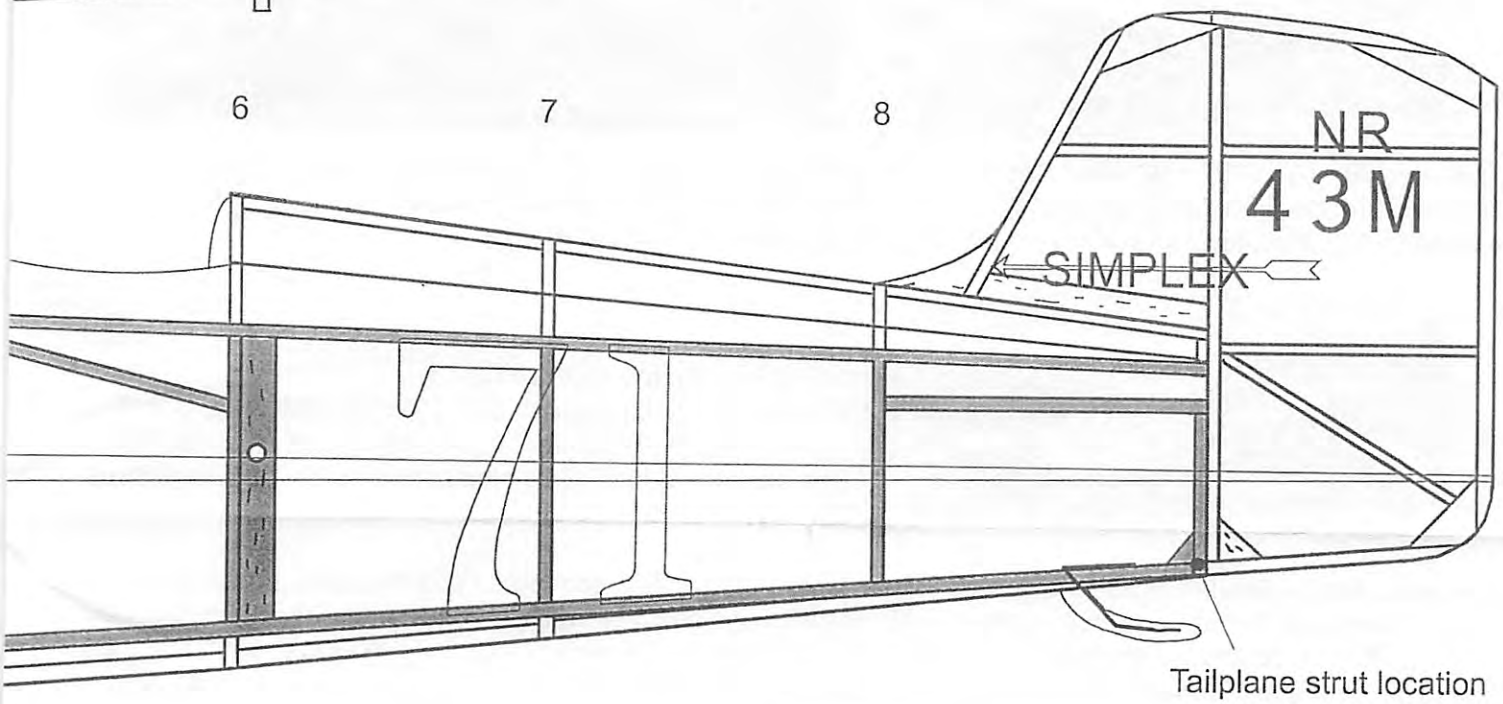
Racing Planes and Air Races - Book I by Reed Kinert

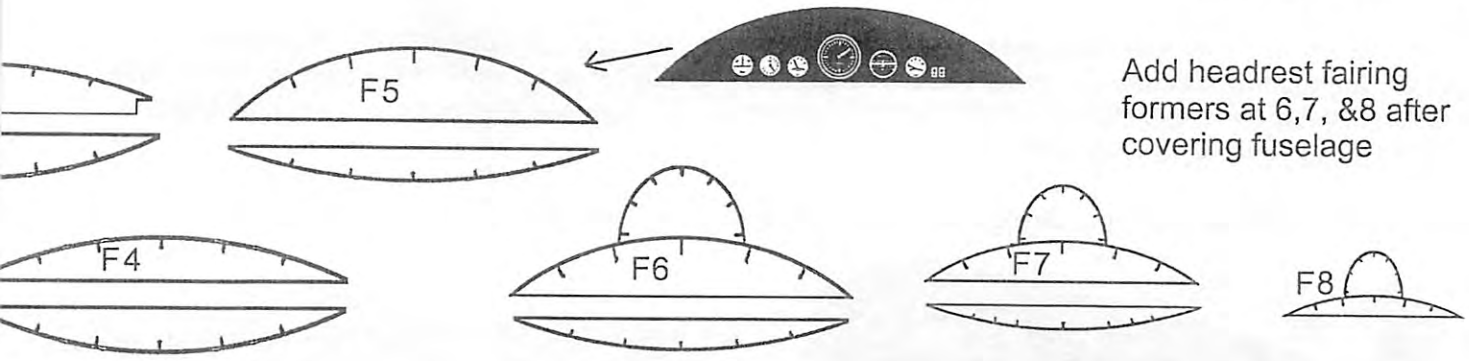


The wheel pants were added for the 1932 National Air Race in Cleveland, but the Simplex was withdrawn.

Stiff paper or thin balsa sheet







Add headrest fairing formers at 6,7, &8 after covering fuselage

All balsa is cut from 1/16" stock unless noted

SIMPLEX RACER

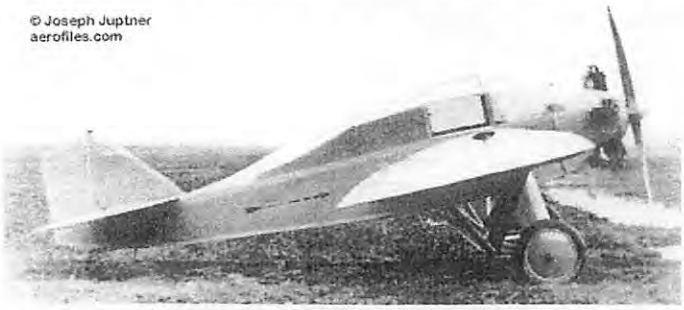
Model R2D 1929

24" span
Page 1 of 3

Wingnut Aero Works
Rich Weber 2011

...and the rest of the Simplexes

The Simplex Aircraft Company didn't last very long. Founded in 1928 in Defiance, Ohio by E. J. and F. W. Allen, it was purchased by the Aero Corp of America the next year, and by 1932 had filed bankruptcy. Nothing unusual about that in the deepest part of the Great Depression, but in the short time that the company existed, they are known to have come up with seven different designs. A quick check of the data on the Aerofiles website brought up this list:





K-2-C Red Arrow 1928 (ATC 44) = 2pCmwM; 90hp Kinner K-5; span: 34'4" length: 22'3" load: 570# v: 120/108/37 range: 550. Omer Woodson; origin in **Woodson M-6**. Side-by-side canopied cockpit; semi-cantilever wing. First few were powered by 75hp Kinner. $4,495. POP: see next.

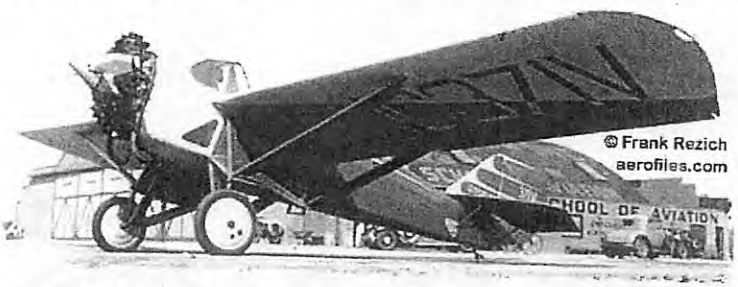


K-2-S Red Arrow 1928 (ATC 43) = Same as K-2-C, with side-by-side open cockpit. $4,115; POP total K-2s: about 10. Won 1928 California Class-A Race (Los Angeles-San Francisco) in a field of 16 aircraft [NC6504] (p: Dick Myhres, 3h:10m, avg: 126mph).

R-2-D Red Arrow Dual Plane aka **Simplex Racer** 1929 = Interesting concept of a convertible monoplane/biplane—top shoulder wing was permanent, 24'0" lower wings could be easily added for increased lift and load-carrying. POP: 1, flown as monoplane racer with 225hp Wright in the 1929 Nationals events with clocked pylon speeds of more than 220mph [NR43M] (p: Dick Myhres).

S-2 Kite 1929 = 1pOlwM; 40hp 3-cylinder Szekely SR-3. Omer Woodson. A probe into the inexpensive, ultralight aircraft market. Uncovered, girder-like fuselage; thick, cantilever wing. POP: 1 [X489M] c/n 1002. Simplex failed to get anywhere with the project, but the idea went with Woodson and company test pilot Myhres when they left in 1930 to form Cycloplane Co (qv).

Special 1928 = 3p unknown type; Dayton Bear. [X7860] c/n 22.

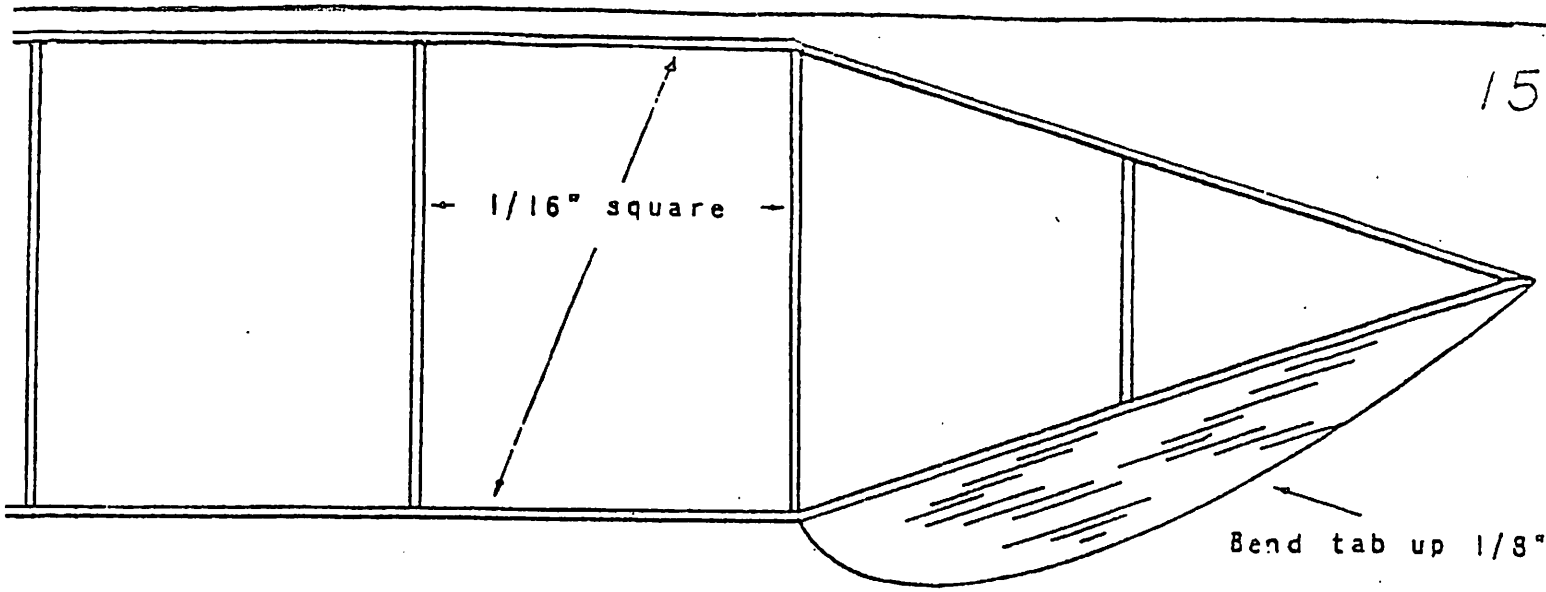


W-2-S Red Arrow 1929 (ATC 238) = 2pCmwM; 110hp Warner Scarab; span: 34'4" length: 22'2" load: 627# v: 125/107/45 range: 650. $4,495; POP: about 10, of which one [X9412] was modified from K-2-S.

W-5-C 1929 = 5p unknown type with 225hp Wright J-5B, possibly a competition version of W-2-S. POP: 1 [X547E] c/n 32-C.

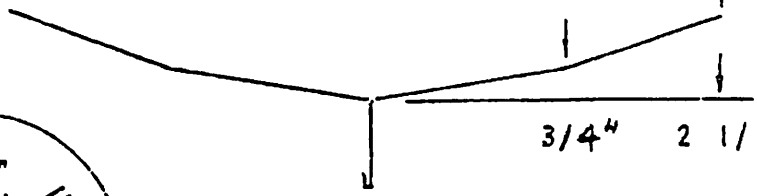
Crosswinds readers with the ~~dreaded~~ red X at issue renewal code #142 or lower can avoid bitter disappointment by sending $20.00 to the address below for another year of Free Flight joy.

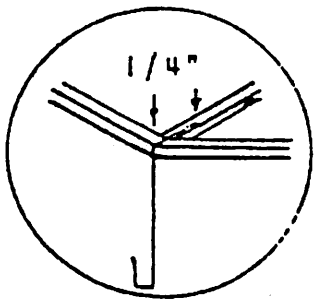
Russ Brown, 4909 N. Sedgewick, Lyndhurst, OH 44124



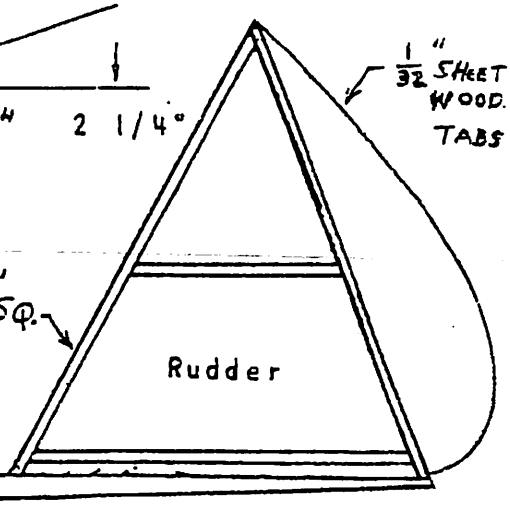
Cover wing with paper on top side only.
Cover rudder and stabilizer on one side only. } WITH JAP TISSUE

Dihedral detail.

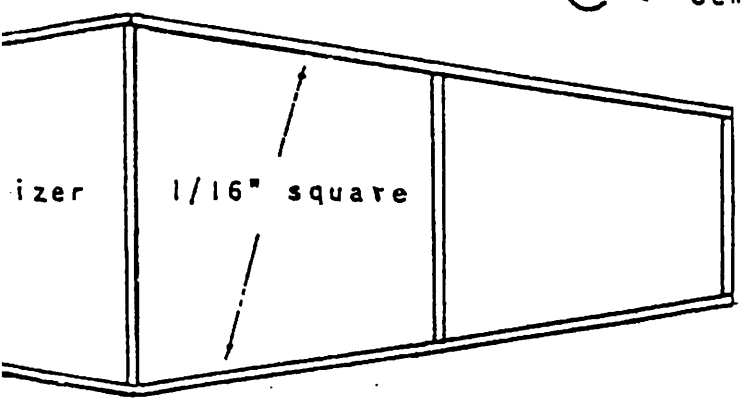




3/32" x 3/16" x 12". Taper as shown.



← Cement rear hook to stick.



Cleveland Free Flight Society

FLYING ACES Club

EARL STAHL

by

Al Cleave

The legendary Earl Stahl died at the age of 94 in October of 2012. His passing marks the loss of one of the most prolific and talented designers in the field of model aviation. During his lifetime, he undoubtedly contributed more to the scale free-flight scene than any other person in history.

He grew up in Ferndale, a suburb of Johnstown in western Pennsylvania, and began building models in 1928. During the 1930's, he became involved in contest flying along with two other local modelers, Ted Just and Art Eck.

His first plan to be published was the *Class C Weight Rule* model. This appeared in Model Airplane News in 1939, followed a few months later by the *Hi-Climber* in Flying Aces. Next came his first scale design --- a *Rearwin Speedster* that was sold to Model Airplane News in 1940. When all was said and done, his published designs totaled some 56.

All of his models flew really well right off the building board with just one exception, that being the Curtiss XP55 Ascender. His thoughts on this monstrosity: "I never could get the damn thing to fly and only built it to humor an editor who insisted on my doing it."

During the late 1930's and early 1940's, All American Aviation was operating Stinson Reliants and furnishing airmail service to many small towns throughout the Northeast that had no airports, Johnstown included. This was accomplished by means of a system that enabled mail to be picked up and delivered on the fly without the airplane having to land.

Earl went to work for this company in 1941. His duties consisted of carrying outgoing mail from the Post Office to the pickup site, setting up the station, and then delivering incoming mail to the Post Office after pickup and drop-off were completed. His presence was required for only a few hours twice each day, which gave him a lot of free time and made it possible for him to be so productive where models were concerned.

During the early war years, he was deferred from military service for a short while due to a minor spinal irregularity. In late 1942, however, he was inducted into the Army Air Corp. Here he served as Link Trainer instructor teaching celestial navigation. When hostilities began to wind down, the Army sent him to NACA's Langley Research Center to build wind tunnel models. His career at NACA (later becoming NASA) lasted for 41 years --- 7 years as model-builder, 22 years participating in wind tunnel research, and during his final 12 years serving as Chief of Operations for the entire center.

Between 1985 and 1996, he was awarded many honors, among which were election to the National Free-flight Hall of Fame, AMA Hall of Fame, Society of Antique Modelers Hall of Fame, Kits and Plans Antiquitous Hall of Fame, and Flying Aces Hall of Fame.

He was one of a kind . . . a legend in his own time.

- END -