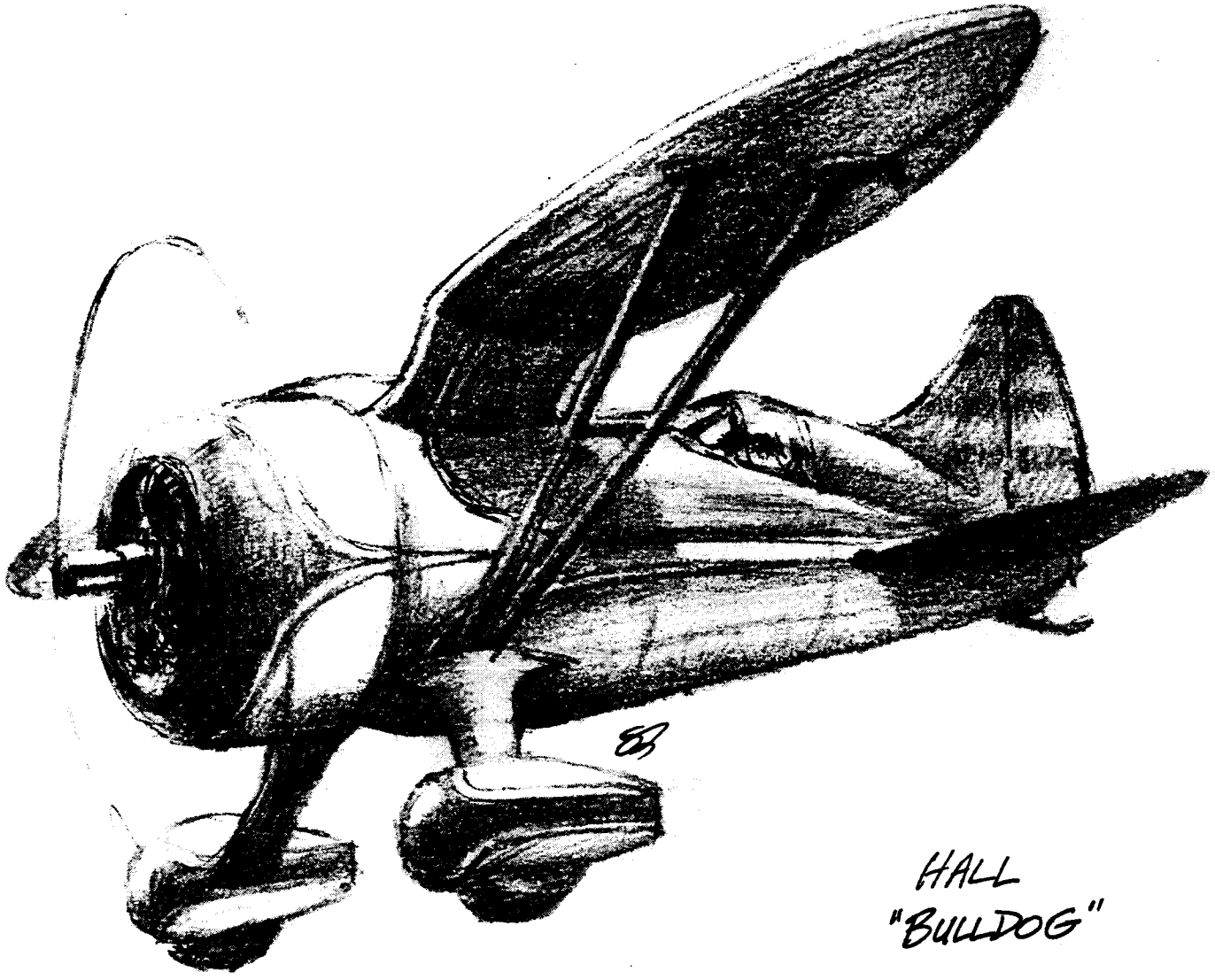
FLYING ACES

ISSUE #209-135 JAN./FEB. 2003

Club News



Cover Story

Being my first year as a FAC member, it's all new and wonderful to me. I really appreciate the effort and dedication involved in the newsletters. The plans are like mannah from heaven (well, Pennsylvania) and it sure is rewarding to know how many others share the affliction.

I was impressed by all the nifty cover drawings so I just had to get in on the act. Here's a Hall Racer (sort of) drawn without the assistance of any reference or anything so the purists will see some inaccuracies, but heck, it's more a charisma thing isn't it?

Sam Burke

Thanks to the following for the plans in this issue. Nate Sturman for the American Eagle A-129, Boeing P-12E from Duane Brehmer (Dime Scale), and the Hall "Bulldog" racer by Pres Bruning. Robert Hirsch has also given his permission to print his excellent scale drawings of the "Bulldog" (Ed. Note; this "Bulldog" flies GREAT!

On a sad note, we have lost 3 more members of the club, John Bernbrock from Anaheim, Ca., Ken Newell Seattle, Wa. And Louis Leifer from Toronto, Ca. Our heartfelt sympathies go out to their many friends and families. They will be missed!

On a happier note, the following members have achieved certain plateaus in the club. Blue Max Medals go to Herb Stevens and to Mike Morrow for scoring their 16 victories in competition. Gordon Roberts has topped the 500 victory total and Phil cox has attained #100 victories. Congratulations to all!

We are still waiting for confirmation from some squadrons who haven't answered our request to up-date the squadron list. Please let us know A.S.A.P. so that you won't be dropped!

The
FLYING ACES CLUB

is a society of unique individuals with a common interest that at times borders on a passion. It is our intent to preserve and promote the traditional building and flying of free flight stick and tissue model aircraft. Although competitive at times, the sharing of innovations, Assistance and comraderie is second nature to all who believe in the spirit of the FAC.

Don Ross reports that copies of his 2 books, "Flying Rubber Powered Airplanes" and "Flying Models" are still available from him. ($14.95 and $19.95 plus $2.00 shipping each book)

We have inserted an ad for the book "Birdflight As The Basis Of Aviation" by Otto Lilienthal with a review of the book. If you are interested in the history of early flight then you must have this book in your library.

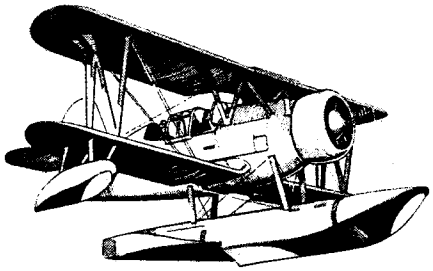
The Dumas kit people have done it again! Three new kits for us to "drool" over and maybe even build! This time they give us the Curtiss F9C-2 "Sparrowhawk", the Brewster F2A-3 "Buffalo" and the Waco CG-4A. These 3 kits contain all of the qualities of their previous kits with good wood, tissue, vacuum molded parts, decals and all of the other nice things that make up their products. Plus, as usual, the parts are all laser cut for you, just punch 'em out and glue 'em together. All are 30" span. I can see that "Sparrowhawk now, skimming through the ozone! Who will be first with one? Get them at your local dealer.

We have recently came into possesion of nine volumes of old magazine plans. We have a list of all of them available for the price of $2.00 to cover the cost of printing and mailing the list. These plans are on 81/2 X 11 inch sheets and must be matched together to get the full size drawing. Send to; FAC-GHQ, 3301 Cindy Lane, Erie, Pa. 16506.

BUILD--FLY--WIN.....EFF--AAA--CEEE!!!!!!!

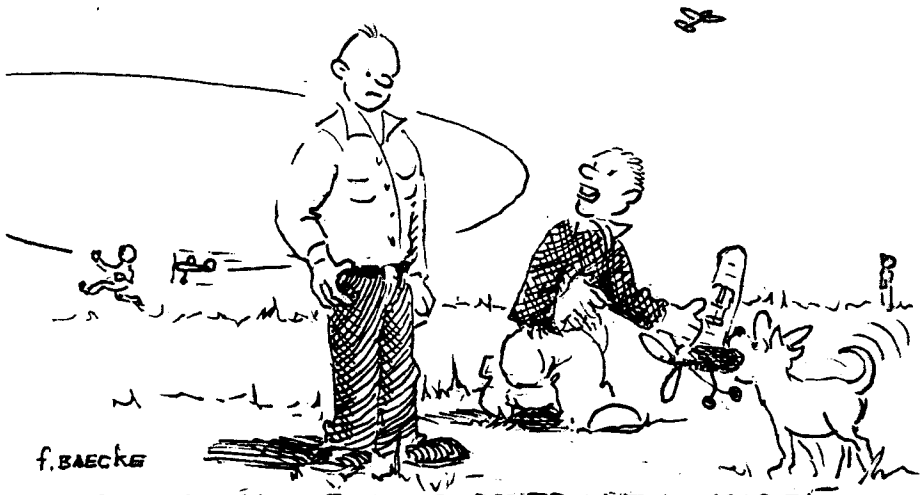
Lin

Col. Lin Reichel, CinC FAC



WANTED:

Printwood patterns for the Peerless Mercury plan that was requested in the last issue of the FAC newsletter. Charles Schultz Plan Service, 910 Broadfields Dr., Louisville, Ky. 40207. Charles has the plan in his inventory but does not have all the patterns.



If the box on the right has the dreaded RED "X" in it, it is time to renew your membership which includes the newsletter. Cost is $15.00 per year in the United States. Cost in Canada is $20.00 per year. Overseas the cost is $25.00 per year. All in U.S. dollars. Six issues per year, published approximitly every other month. Please make checks payable to; "Flying Aces". Send to FAC-GHQ, 3301 Cindy Lane, Erie, Pa. 16506.

FAC RULE BOOK

The 2003 FAC rule book is included with this issue. Please read it carefully and then put it in your fieldbox so that you will have it with you at all of the contests.

NOTES ON THE FAC NON-NATS, GENESEO, N.Y. JULY 19-20, 2003

Scale judging; July 18, at the Days Inn starting at 3:00 pm.

Event sponsors; As always, we need event sponsors. They may be manufacturers, clubs or individuals. If you are interested please contact Lin Reichel at GHQ, 3301 Cindy Lane, Erie, Pa. 16506. Phone (814) 833-0314 A.S.A.P.

Vendor Tables; If you would like a table for July 18th at the Days Inn you must have your reservation in by June 30th with your fee. There will be ABSOLUTE no tables available after June 30th! Space is limited so please get your reservations in early.

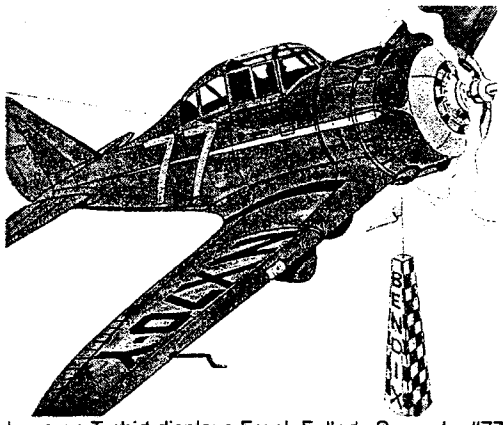
Banquet; We are breaking tradition this year for a banquet. In past Off-Year FAC Non-Nats we did not have a banquet as you all know. There are three reasons for the change, 1st, a lot of you have requested it for years, 2nd, it gives us the opportunity to spend one more evening with our many friends whom we will not see until next year and 3rd, we have been lucky weather-wise when it comes time to hand out the awards on the field. If we do it indoors we won't have to worry about a little rain.

Radio Control flying; Because of complaints by some of our contestants about R.C. flying there will be no R.C. flying permitted during the contest.

Junior events; We would love to have a Junior event or two this year. If you are planning to bring a Junior with you please let us know as soon as possible so we can plan something for them.

Foam Models; The subject of foam scale models competing in FAC contests has come up again. No, we will not allow them to be lumped in with the stick and tissue type models. However, we will do this, as I have said before, if enough foam scale models show up at a contest we will have an event for them. Please let us know in advance if possible.

Entries; Please get your entries in early if you know you are going to attend. It sure helps not having to do more paper work at Geneseo than we have to. THANK YOU!

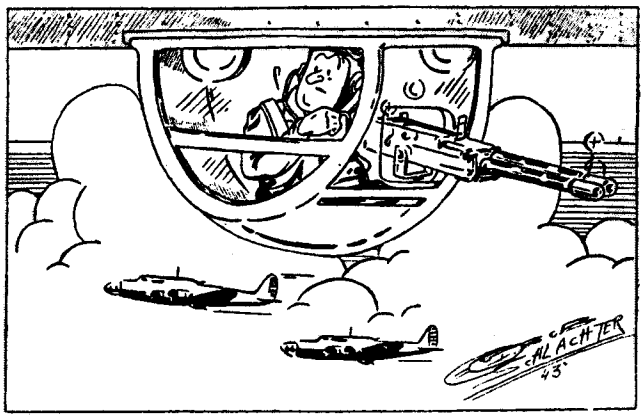


Logo on T-shirt displays Frank Fuller's Seversky #77

Did you get your FAC T-Shirt from the FAC Outdoor Champs yet? You still have time. The price is $12.50 postpaid. Sizes left are; small, medium, large and X-large. Send your order to; FAC-GHQ, 3301 Cindy Lane, Erie, Pa. 16506.

We still have available the plans for theSeversky SEV-2 at $6.00 per plan and the Douglas O-38 at $4.00 per plan.

We break' em, we fix 'em,
Fly 'em, crash 'em,
Fix 'em, fly 'em again, and grin



"Attention, crew members! Prepare for pancake landing!"

BULLETIN

This just in! We just received word of the passing of the following members, John Grega from Cleveland, Vivian Skrjanc of Micro-X and the GREAT Bill Brown of Brown Jr. Motors fame. We want to express our sympathies to their families and many friends.

S.O.S.---S.O.S.---S.O.S.

Help! Does anyone know where I can get a building plan for the Christen Husky? Doug Oleson, 1604 Fulton, Tell City, In. 47586

Wanted: Any info, 3-views, etc. for the Bellanca XSOE-1. Wayne Love, 108 Bush Gardens, Alden, N.Y. 14004.

My First OOS Flight

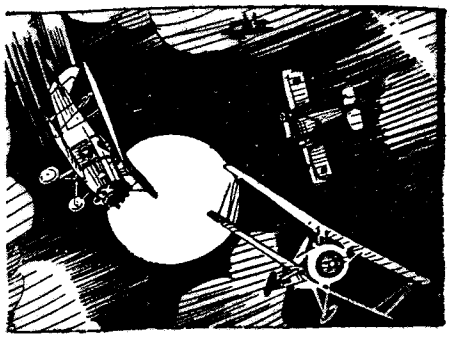
I've been building and flying model aircraft since grammar school in the 1940's, and I'll be on Medicare next month, but my first OOS flight occurred just a few weeks ago.

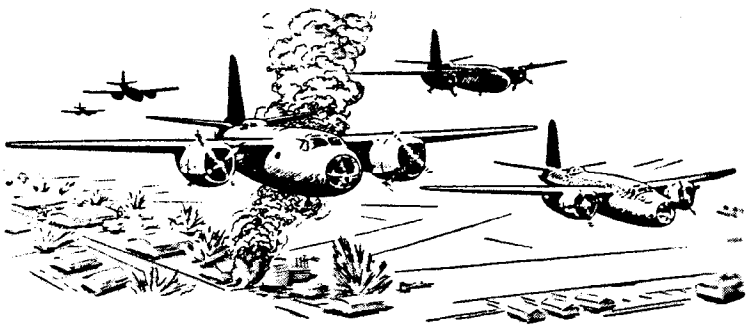
For the past few months I've been trimming some hand-launched and catapault gliders in preparation for the June contest at Pinkham Field in Durham. CT. One of the gliders, a Sweepette on which I had tried out some wing finishing ideas, was so heavy that it earned the sobriquet "Lead Sled," and generally flew as that name implied.

However, on a pleasantly breezy afternoon I launched it with a short catapault consisting of 1/4-inch wide rubber bands that you'd use to hold the wing on a R/C glider. The "Lead Sled" suddenly caught a thermal and became the proverbial "Homesick Angel!" By the time it got to the old growth trees two city blocks away it was well above them and still circling merrily on it's way. I guess I had trimmed it out well!

This whole event lasted no more than 4 minutes, but it provided a memory that was long-awaited and will last for the rest of my lifetime.

Jim Burke





Flight Trimming Rubber Scale Models

by Mike Morrow - August 5, 2002

It looks like we had another successful QUIET RIOT event - Lots of models, lots of events, and lots of great flights. I think there could be even more participation, but one of the stumbling blocks in getting more participation seems to be getting models to fly. Long ago, I came across a very simple formula for trimming rubber scale models. It involves just three simple steps, performed in strict order. Every time I've found myself with a model that didn't want to fly, it turned out that I'd failed to follow the formula. So; presuming you have constructed a warp-free model, here is that formula - copy it and stick it in your flight box!

STEP 1: Balance the model at 25% wing chord with the rubber motor installed.

a) CALCULATE, MEASURE, and MARK the balance point !! DO NOT GUESS !!
b) Wind the motor up so it is evenly distributed, and pin the prop in place.
c) Add clay or lead till the model balances at the calculated and measured C.G.
d) NEVER CHANGE THE BALANCE POINT AGAIN - UNLESS YOU CHANGE RUBBER SIZES OR LENGTH - THEN YOU MUST REBALANCE THE MODEL.

STEP 2: Adjust the Stabilizer to achieve a good glide with a partly wound motor.

a) The stabilizer MUST BE ADJUSTABLE. Fix either the leading edge or the trailing edge, but leave at least one of them free to be adjusted, and have enough adjustment range to achieve the desired results - usually about 5 degrees.
b) Add balsa shims above or below the stabilizer to achieve the required adjustment for a good glide.
c) When a good glide has been achieved, NEVER TOUCH THE STABILIZER AGAIN!

STEP 3: MAKE ALL FLIGHT ADJUSTMENTS WITH THRUST LINE CHANGES.

a) During construction, build 3 degrees down thrust and 3 degrees right thrust into the nose block of the model.
b) Make sure you have room for further thrust line adjustment - the propeller should not hit the cowl, and there should be room inside the nose for the prop hook and a knotted rubber motor. Keep it simple - stay away from gimmicky thrust adjusters. Use small balsa shims glued in place for additional thrust adjustment if required.
c) Adjust the model so that it does NOT fly around in a fast left bank. Fast left banks gain you no altitude, and waste the high-thrust portion of your motor run.
d) Start with 500 turns and observe the model. Correct left banks with right thrust. Correct stalls with downthrust. When you have a smooth flight, move up to 700 turns. Again - adjust for smooth flight with thrust adjustments. Move up to 900 turns and repeat. Continue until you reach maximum turns. You MUST test at maximum turns so you aren't surprised under contest conditions!

Continue to Check the model for warps during the testing process - Most models are tested on sunny days, and warps can appear where none previously existed after exposure to the sun. Wing warps can sometimes be counter-acted with small paper tabs. Stabilizer and tail warps usually require building a new part, so make every effort to make sure they aren't warped to start with!

If you've got a model that just does not want to fly, see me on the field, and I'll try to help!

SO NOW YOU KNOW THE SECRET TO SUCCESSFULLY FLIGHT-TRIMMING A RUBBER SCALE MODEL - GET OUT THERE A BUILD A BUNCH OF NEW ONES!!!

BUILD -- FLY -- WIN !! -- F. - A. - C. !!

Staggerwink Plans are STILL Available!

Staggerwink plans are now available, just in time for the September 21st meet in Sequim. A very special thanks goes to Clive Wienker for providing Eagle Squadron with Staggerwink plan packages.

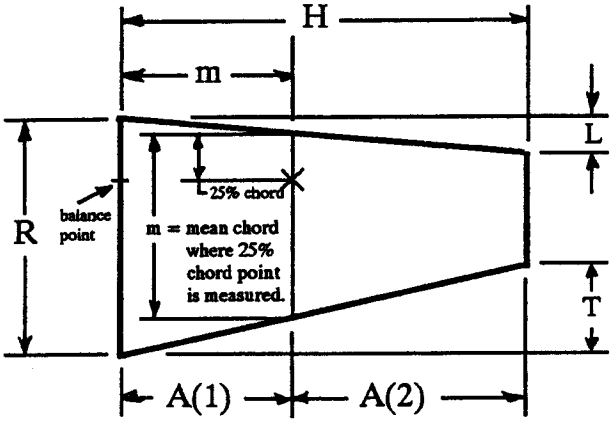
What's a Staggerwink? The Staggerwink is a cute little Bostonian size sport model. Clive Wienker, who designed and built it and has provided plan packages to the Eagle Squadron for distribution to anyone interested. These plan packages are outstanding in quality, and include a full scale drawing, four large photos, and a very nice letter from Clive. The cost is $6.00 if mailed in the U.S. If you want one, send $6.00 to Al Likely, 9722 South 200, Kent WA 98031. All proceeds go into the Eagle Squadron Club Treasury.

Balance Point Calculations for Rubber Scale Models

Last month I published the three rules for trimming rubber models. Rule #1 was "Balance the model at 25% chord with the rubber motor installed. . .". All well and good if you know how to do it, and the wing has a constant chord from root to tip. But what if the wing leading edge is swept back - or the wing trailing edge is swept forward - or both? Under these circumstances, finding the 25% chord point is a little more difficult, and involves MATH. Fear not (all right, fear it lot, but do it anyway - you need this!), here's a relatively simple way to find that 25% balance point.

In order to calculate the balance point, first you'll need to find the MEAN CHORD - that wing chord section where the area A(1) between the wing root and the mean chord is equal to the area A(2) between the mean chord and the wingtip. This will require using the dreaded QUADRATIC FORMULA, one of those things you should have learned in high school (unless you went to a government school).

First, you'll need to draw the wing outline and take some measurements. I've drawn a generic wing half here with the needed dimensions:



Here are the variables needed to do the calculations:

H = half wingspan (or in trickier cases, a wing section)
R = root chord
L = leading edge sweep-back
T = Trailing edge forward sweep
A(t) = total area of wing half = A(1) + A(2)

The generic quadratic equation is: $aX^2 + bX + c = 0$

After much manipulation, the constants were found to be:

a = L + T
b = - (2*R*H)
c = A(t)*H
where **A(t) = (R*H) - (H*L)/2 - (H*T)/2**

The solutions for the quadratic equation are:

$$\frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad \text{and} \quad \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

Calculate the values for a, b, and c, and plug them into the two equations above. One will provide a rational answer, and one will plainly be nonsense. Use the correct one to draw the mean chord line on the scale drawing of your wing, and measure a point 25% from the leading edge ON THAT CHORD. Now draw a horizontal line from that point to the root chord - that is your balance point.

For those who want to plug this into a handy spreadsheet, the two solutions will look something like this:

solution 1: m = (-(b)-SQRT(ABS((b)^2-4*a*c)))/2*a

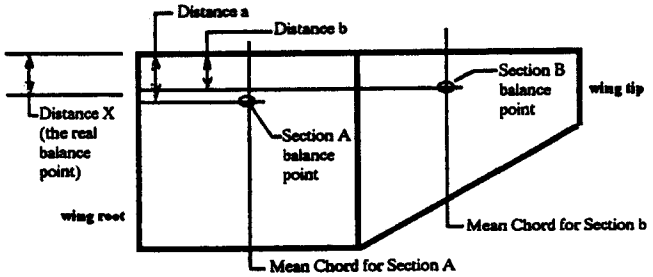
solution 2: m = (-(b)+SQRT(ABS((b)^2-4*a*c)))/2*a

This is an invaluable tool for calculating balance points. For models like the He-162 with it's straight leading edge and swept-forward trailing edge, there is no other way to find the CG. This method can also be used with wings that have curved leading and trailing edges, but you'll have to approximate the curves with straight lines. For those with a little STATICS background, this method can also be used on wings with multiple sections of different shape. Just calculate 25% chord points for each section, then do a moment calculation using the root chord and the areas of each section.

MORE Balance Point Calculations!

Last month I showed how to calculate the CG for a wing with swept leading and or trailing edges. However, those calculations were for a wing with a constant taper from root to tip. What if the wing has several DIFFERENT sections, each with it's own taper? An example would be a wing with a constant chord center section and a tapered outer section like the P-63 Kingcobra or the Parnall Pixie II. Here's how to deal with multiple sections.

Treat each section as a separate wing. Using the method presented last month, calculate the mean chord and balance point for each section, and then draw a complete wing with the balance point shown on each section. Draw a horizontal line from each balance point all the way to the wing root. Now you're ready to calculate the overall balance point. You should have something that looks like this:



To get the real balance point X, add the product of each wing section area and balance point distance, and divide by the total area. For the example above, it looks like this:

(wing area of sect. A)(Distance a) + (wing area of sect. B)(Distance b)
(wing area of sect. a) + (wing area of section b)

The result of the above calculation is Distance X, the real balance point. This method can be used for any number of wing sections, and can also be used to approximate the balance point of wings with curved leading and trailing edges.

THE GOLDEN AGE

by
Fran Ptaszkiewicz D.S.M.

Boeing 307 "Stratoliner"

In March of 2002, aviation buffs, who were very observant, may have caught the small filmed report on National Television News Channels which showed the 307 resting in the water just off shore and in close proximity to the Boeing Company's, Seattle, Washington facility.

An early report indicated a loss of three engines which prohibited returning to the airport and the pilot was able to ditch in a shallow area. Fortunately, on June 14, 2002, the Boeing Company announced that it had salvaged the aircraft and will have it repaired to flying condition.

Named "Clipper Flying Cloud" in keeping with the Pan American Airways tradition of calling their aircraft Clipper's, this rebuilt version was the last "307" manufactured. Serial number 2003, it bears the original C.A.A. registration NC 19903 and is the sole survivor of ten manufactured.

The Model 307 "Stratoliner" was the first four engine, passenger airplane designed and manufactured for airline service in this country, to be used specifically for high-altitude flight. Surprisingly many aviation types were not aware of this fact.

Utilizing information gleaned from various sources having to do with research in the high-altitude flight regime. The Boeing Company then proceeded to design and build the first fully-pressurized transport for commercial use. With provision for thirty three passengers and a crew of five, this airplane could fly at altitudes above 20,000 feet with all aboard in comfort and no oxygen mask's required.

Developed from the B-17 "Flying Fortress", the "Stratoliner" was considered to be a somewhat commercial adaptation of the B-17 and was able to use the wings, engine nacelles and in it's original layout the tail surfaces of the B-17. Although initial test's indicated the need for an enlarged fin and rudder as well as the addition of a dorsal fin on the production models of the transport. These changes were also added to the later model B-17's. The fuselage was circular in cross-section as this was believed to be the best form for use in a pressurized airplane.

The first flight of the Model 307 occured on December 31,1938 and unfortunately the aircraft crashed during testing and just prior to being delivered to Pan American Airway's. This prototype, NX 19901 went down near Alder, Washington. The flight test crew of 11 men were lost. Photograph's seemed to indicate the airplane came down in a somewhat flat mode. Two engines appeared not to be running at the time of impact as the propeller blades were not bent. Final investigation found thattwo right side engines had been shut down as part of the flight test and the aircraft entered a flat spin from which it could not recover.

As a result only nine more were built and delivered to the airlines, with Pan American receiving three instead of four, Trans World Airlines received five and intrestingely, legend has it that one went to Howard Hughes who planned to use a modified version in his then attempts at braking records. Following the story further, Boeing turned down Hughes who supposedly then bought T.W.A. and received his airplane. Legend or fact ??

With all the aircraft delivered, production was halted as orders began to increase for war aircraft.

After crew training, T.W.A. introduced it's fleet of five airplanes on July 8, 1940, using them on it's trans-continental routes and later that month on it's New York to Boston service. Pan American utilized their fleet of "Clipper's" on it's Latin American routes.

The aircraft performed well, however it's commercial airline service was short-lived as in 1941 five of the airplanes of T.W.A. were called up for World War II military service and as such were designated C-75. In April 1942 they began serving on North Atlantic operations.

Following wartime service the T.W.A. aircraft were rebuilt as unpressurized 38 passenger craft and put back into civil operations.

Once the war had ended, technology learned during the wartime period having to do with high altitude flight was incorporated into the new transport's which were beginning to come off the production lines and into the world's Airline's.

Subsequently, the old "Stratoliners" were then used in Central America and the Far East, with report's of a few still operating into the mid 1960's.

Sadly the "307" was an airplane lost in time and rememberance due to the circumstances of the period in which it was designed built and flown.

The first aircraft to fly was powered with four 900 hp Wright Cyclone engines which were later increased to 1,100 ho and resulted in improved performance in speed and range, these being 246 mph and 2,390 miles.
Specifications were; Wingspan 107 ft-3 in; Lenght 74 ft-4 in; Service ceiling approximately 24,500 ft. Best cruise altitude 17,000 feet with 186 mph speed.

A solid model of the first version of the "307" designed by Nick Limber was published in the April 1938 issue of Flying Aces magazine.
The enclosed 3-view which depicts the modified version with increased fin and rudder, is from Frank Slavin who built and flew the 4 motor electric powered version at the 2000 Flying Aces Nationals. A photo of which was published in the May / June 2001 issue of the Flying Aces Club News.

In a discussion with Bill Smith, owner and operator of Smith Airfield in Cambria, New York, he described the well restored "307" that was shown at the E.A.A. convention at Oshkosh, Wisconsin in the summer of 2001.

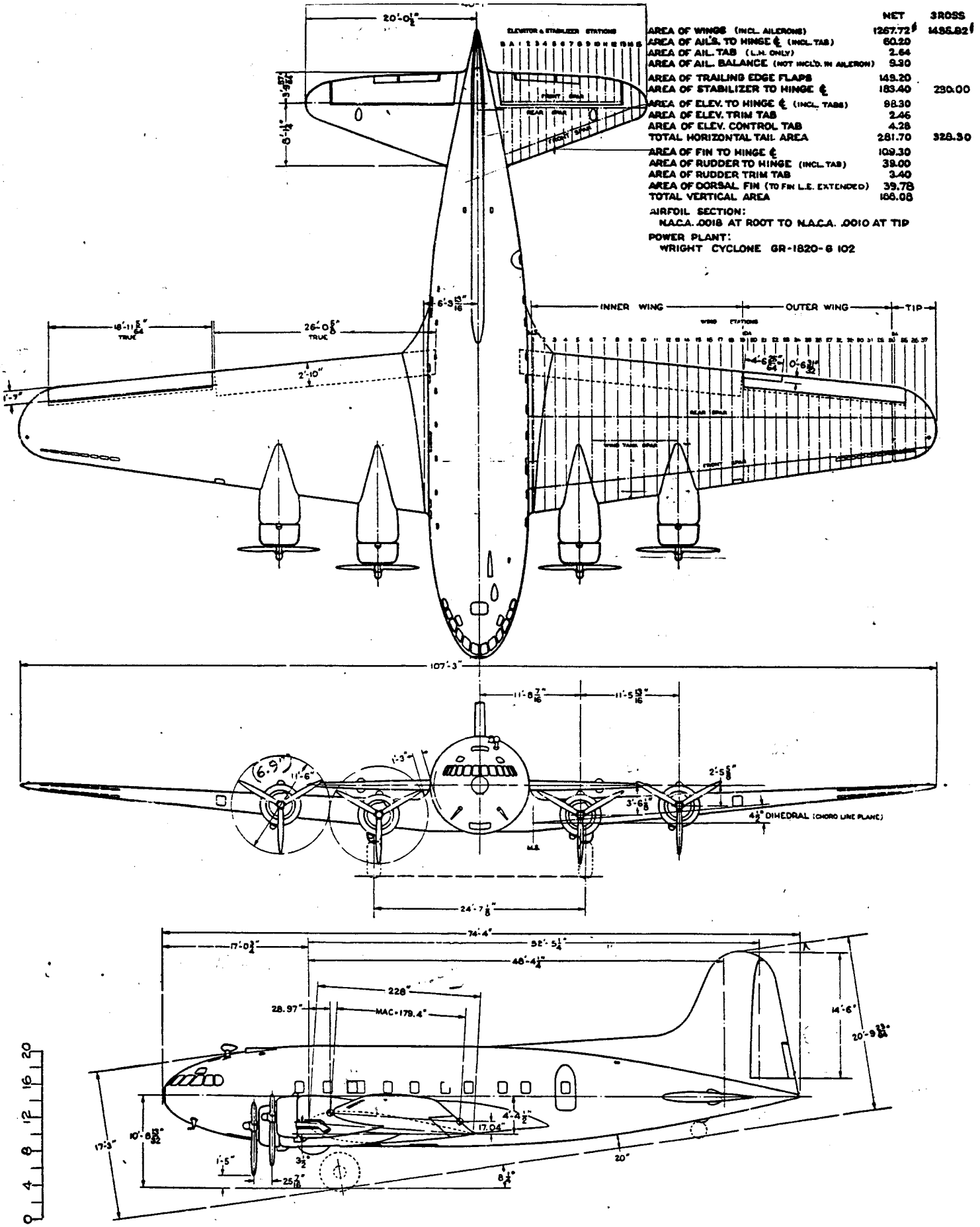


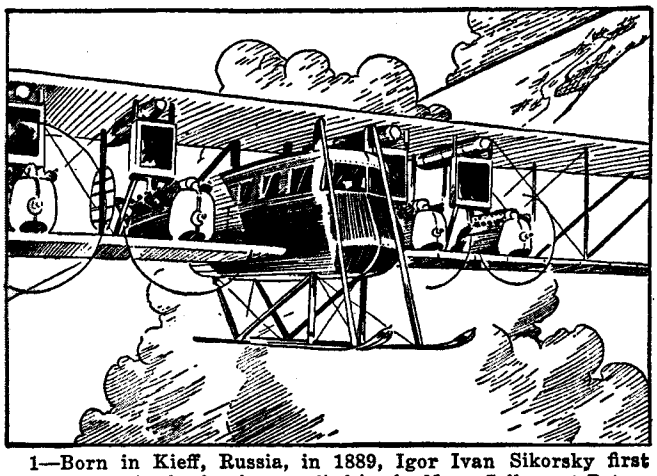
FIG. 1004. GENERAL ARRANGEMENT — MODEL S-307.

This is a three-view general arrangement drawing of the Model S-307. The side view shows the airplane both in flight and at rest on the ground, the latter being shown as a diagonal line $8\frac{1}{4}°$ from the flight position of the airplane. This type of dimensioning eliminates the need for two side views as it is necessary that over-all heights be given for both conditions.

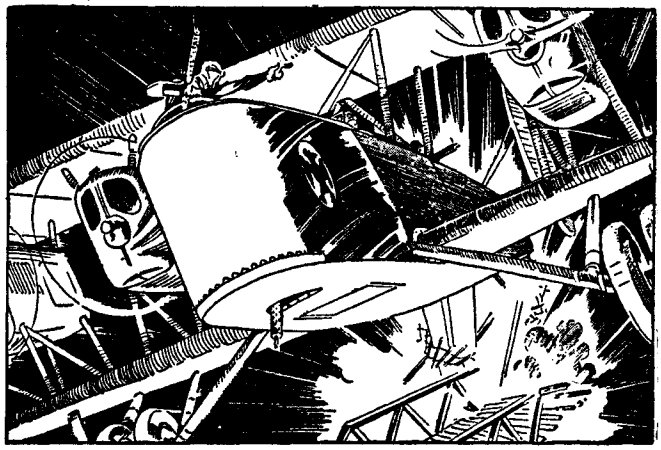
They Had What It Takes

VIII—IGOR SIKORSKY—MULTI-MOTOR MIRACLE MAN

By ALDEN McWILLIAMS

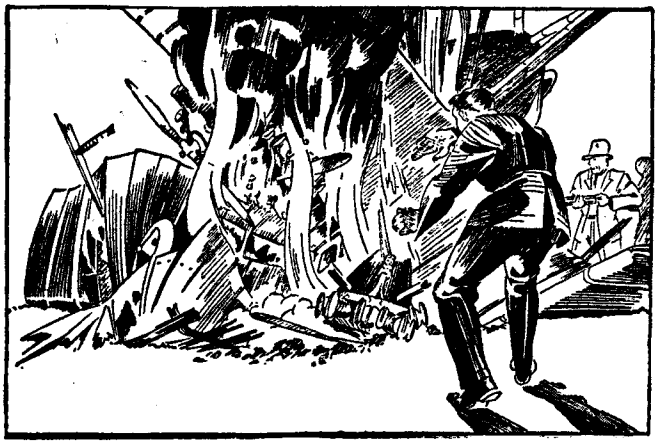


1—Born in Kieff, Russia, in 1889, Igor Ivan Sikorsky first attended local schools, then studied in the Navy College at Petrograd (now Leningrad). After further training in Paris, he returned home and conducted several pioneer experiments with helicopters. Then, in 1911, he built the first multi-motored airplane—a striking craft which mounted four 100-h.p. engines.

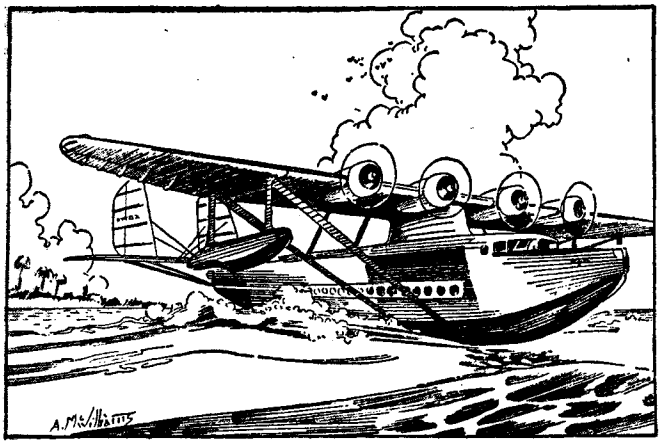


2—Two years later, the young designer entered a pair of planes in the Russian Military Competition—and carried off the two top prizes. The Czar was impressed; hence when war was declared in 1914, Sikorsky was commissioned to build bombers. He constructed no less than 73 four-motored ships, some of which are said to have mounted eleven machine guns.

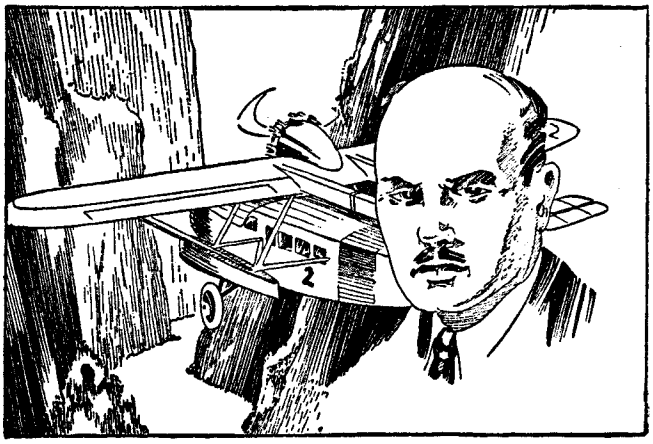
3—In 1918, France asked Sikorsky to make military planes. But the Armistice precluded this plan, and shortly thereafter, the designer and a few of his faithful mechanics boarded a trans-Atlantic liner and sailed to New York. Here, Sikorsky encountered hardships; for the U.S.A. wasn't very interested in aviation immediately after the War.



4—Nevertheless, 1924 saw Sikorsky developing his fourteen-passenger S-29. Then later came the three-motored S-35 amphibian for Rene Fonck's trans-Atlantic attempt. But Fate was frowning. On the take-off for France, the S-35 roared into a ditch and was destroyed in a mass of flames. Fonck and his co-pilot escaped, but their mechanic was killed.



5—Undaunted by this set-back, the skilled Russian established a factory near Bridgeport, Conn., and continued to design and build amphibians. Finally, he turned his attention to huge flying boats for P.A.A.'s inter-America routes. And most recently, his mammoth four-engined S-42 boats have been used to pioneer both the trans-Pacific and trans-Atlantic airlines.



6—Twenty-five years of noteworthy aircraft production have ensconced the name of Igor Ivan Sikorsky among the half-dozen great aero designers of history. His honors have been many, his fame is world-wide, his ships have achieved scores of records. And this multi-motor miracle man is busy this very minute—busy planning even greater craft of the skies.

FAC Postal Contests

The winter postal contests are now on as you read this! As before, we will have four events. Indoor Peanut and Indoor No-Cal, Outdoor Peanut and Outdoor No-Cal. Send your times to GHQ, 3301 Cindy Lane, Erie, Pa. 16506.

Every time you better a score with a particular model send it in as well. Contest times also count. The contest will end on May 25, 2003. Entries postmarked after May 27, 2003 will not be accepted. BUILD--FLY--WIN..EF.A.CE

PHOTO PAGE

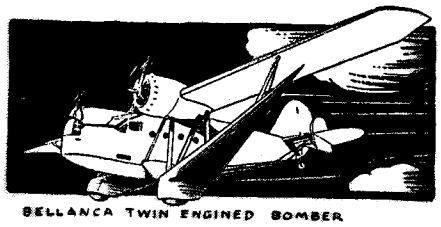
Left column; Dave Stott's pic of his Boeing P-12 Built from plans in this issue. Model is eligible for Dime Scale and O.T. Kit Scale.

Fine looking PZL-11 by Dave Dulaitis. Looks Like it came from a Dumas kit. Pic from Dave.

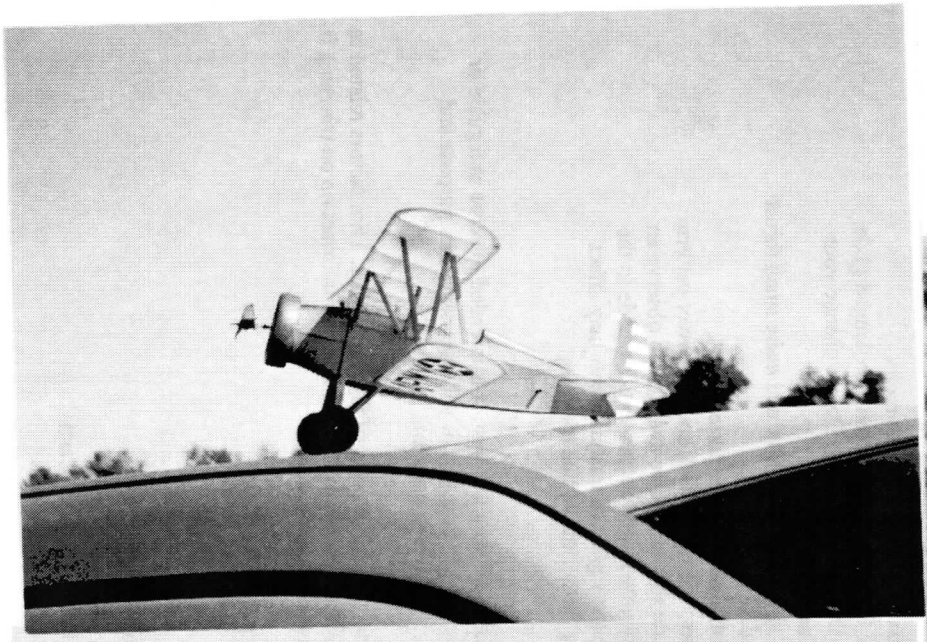
Here is Bob Wetherill and his Monocoupe for The Single Engine Power Scale event. Photo?

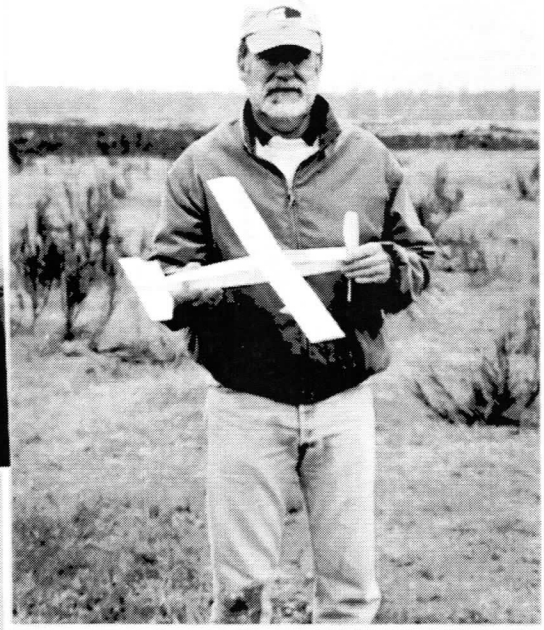
Right column; Al Likely sent this photo of himself with his Embryo, Bits and Pieces.

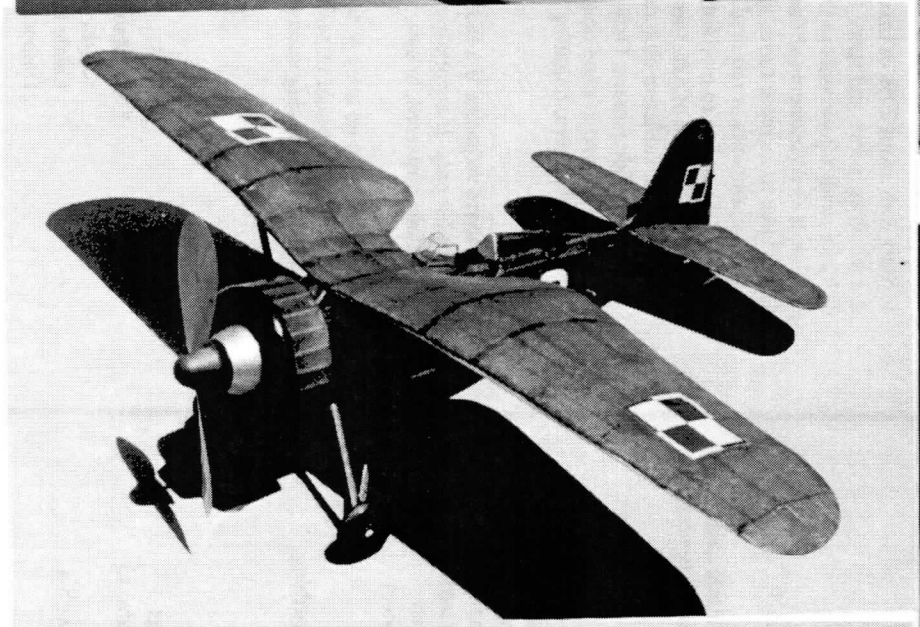
Here is Tom Nallen I's Seversky SEV-2 racer. Plans and T-shirt still available from GHQ, see ad in this issue. Pic by Walt Engelbrecht.

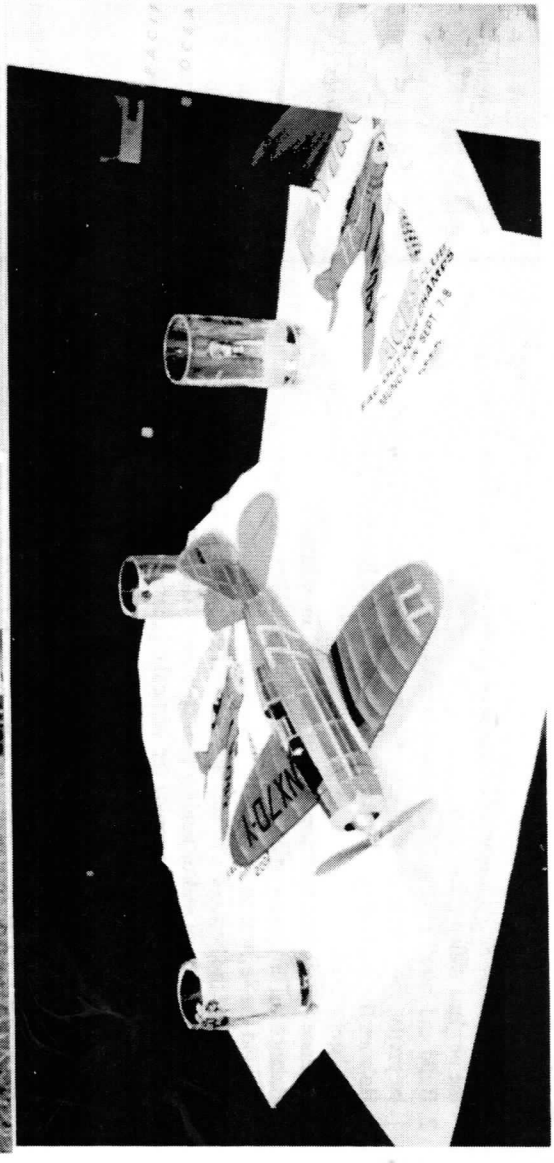


BELLANCA TWIN ENGINED BOMBER










NX211

On The Bench

1. Locate the DESIGN longitudinal center of gravity (c.g.) and mark it on the airplane with a pencil dot.
2. Build and install a "false" nose plug with no prop. It doesn't have to be pretty, just a snug fit. We will use this during the glide trim process.
3. Balance the airplane to the marked DESIGN longitudinal c.g. around the lateral axes.
4. Balance the airplane laterally, around the longitudinal axis.
5. Balance the airplane vertically, around the longitudinal axis. (Not around the vertical axis)

Note: One of the best ways to establish the vertical c.g. is by adjusting the weight of the wheels and/or landing gear structure. Although an argument can be made for keeping the vertical c.g. low on a free flight model, it's preferable to start with it on the intersection of the three axes. This helps keep the total weight down. ALWAYS attempt to establish these c.g. points by subtracting weight rather than adding weight.

6. Wash in/wash out? I have found it best to build in (or warp in) approximately 1/16 inch of wing tip wash out, for a 36 inch span. This "softens" the initial stage of the stall (or what we flight instructors call buffet), and will aid the built-in down thrust to decrease the angle of attack. Remember, the stall is a function of angle of attack only. NEVER airspeed.
   For fear of opening the proverbial "can of worms" on this subject, I will defer additional discussion to the referenced material.

Helpful Hint: When balancing the airplane longitudinally around the lateral axis, concentrate on the prop. Balance the prop blades as an integral part of the overall construction and longitudinal balance of the airplane.

Let's Go Gliding

Go to the field with the "false" nose block installed. Leave the flying nose block and prop assembly home! Leave the rubber motor home! The prop will create unwanted drag and the rubber will only get in the way at this point. There is no way to expect the prop to attain the same RPM during a test glide from a hand launch, as it will attain from an extended glide later from a greater altitude. The extended glide (later) will provide time for the prop to attain a "steady state" RPM.

We will be trimming for glide stability only! If you want to fly something take several previously trimmed airplanes to the field with you. Remember this is the method I use, you may disagree.

1. Test glide for stability.
2. PUSH the model gently into the wind, don't THROW the model.
3. Make small adjustments to the primary flight controls or trim tabs, to establish a slow flat glide.
4. Make any longitudinal c.g. changes, if necessary, and re-mark with a pin hole. This provides a permanent reference.
   Remove the previously applied pencil dot.
5. Adjust the glide pattern to suit personal preference. Remember any built-in side thrust that will later affect the power pattern and desired transition from power to glide.
6. TAKE NOTES!
7. Go home.
8. Have a tall cool one.

Back On the Bench

1. Remove the "false" nose plug and install the flying nose plug, prop assembly and rubber motor. Wind any slack out of the motor and hold the prop in place with a pin or tape.
2. Re-balance model to the longitudinal c.g. as marked by the pin hole.
3. Re-check the lateral and vertical c.g.

Finally - Let's Go Flying

We will be trimming for the power pattern only.

1. Start with about 20% of max turns on the rubber motor.
2. Launch as before and strive for nothing more than a prolonged glide.
3. Make small adjustments to the thrust line only. Do not change your glide trim adjustments at this time.
4. Continue to increase turns, about 10 % at a time and make small thrust line adjustments as required.
5. Adjust thrust line to establish desired power pattern.
6. When 50 – 60 % of max turns are being used, and the power pattern is adequate, sufficient altitude should now be available to observe an extended glide pattern. Only now should refinements be made to the glide trim. Keep in mind that any glide trim adjustments may affect the power pattern, requiring further thrust line trimming.

The above sequence is a thumbnail sketch at best. It is intended to serve as a guide or check list only. If anyone can benefit from this, it will have served its purpose and hopefully answered, in part, the opening question.

There has been no attempt to cover all aspects of flight trimming. Trim factors related to the prop alone would fill volumes. If details or more in-depth information on trimming is desired, the following works are recommended.

* Adjustable Nose Button
  Knight & Pridham Ltd.
  Castle Road Rowlands Castle,
  Hampshire PO9 6AS UK

A Basic Flight Trimming Guide
Outdoor Rubber Powered Flying Scale Models

One Modeler's Philosophy

Al Likely

Having been asked on several occasions how one goes about flight trimming a rubber powered flying scale model, I have always been able to wiggle out of a definitive answer. There are two basic reasons for my reluctance. First, there exists in the aircraft modeling literature an overwhelming amount of creditable articles on the subject. A few of those works will be referenced. And secondly, it is my firm belief that flight trimming is just as much of an art as it is a science. The science is, of course, objective and the art is subjective. Thus, two people will trim the same airplane two different ways.

One can learn a great deal about the science of flight and flight trimming from books, articles, engineers, videos, etc. The accumulated knowledge of this science is accurately documented, and for the most part, well proven. The majority of aero engineers seem to believe science is all that is required for successful flight trimming. Ask one, if you have the time.

Now, I am not anti-science or anti-engineering. Having some forty years flying and flight instructing in full scale airplanes, I know full well the value of each. However, there is a certain "feel", or "touch", or an "art" to flying full scale airplanes which is acquired with your butt in the air that is not experienced, or attainable, on the ground. Examples are many, too many to list here. I like to walk into a flight office on a rainy day and ask "what controls airspeed on the ILS, pitch or power?" and then leave. Come back the following day and the discussion is continuing. But I digress.

Getting to the point of this short paper, there is also a "feel" or "touch" required in model flying and, in my opinion, is a large factor in achieving success in the trimming process. This is the subjective part of flight trimming and can only be achieved one way, by doing it. By flying. Doing it over and over and over and doing it again. You have to fly. Not talk about it, but fly. This of course not only applies to rubber powered scale models but any small rubber powered model. I have also observed over the years that many modelers, in my opinion, over design, over engineer, over construct, over talk, over test, over worry, over "plan", and generally fiddle around and make everything overly complicated. So follow ground rule number one – keep it simple! Remember, overly complicated generally leads to over weight. These models should be constructed to fly. They should not be constructed to withstand crashes. They should not be constructed for longevity. They should be constructed for one thing – to fly. As Don Ross reminds us, "force of impact equals mass times speed"!

With the above in mind, most of us through a wide range of experiences and education, have formed a variety of philosophies and methods for trimming our models. The following is far from being original and may not be the best, but it has served me well. It provides no explanation of the art, but may effect an artful outcome if followed over several years of application. This is my philosophy condensed into a general guide.

Assumptions:

1. We are trimming a typical high wing monoplane.
2. The design is proven.
   We are flight trimming, not flight testing.
3. The builder understands basic flight trimming techniques.
   This is not a "fit tab A into slot B" article.
4. The builder understands basic aeronautics and trim terminology.

Ground Rules:

1. Keep it simple
2. Build light, if not light step on it. (.4 grams / sq. in of wing area max)
   All trim adjustments are more easily effected with a light airplane.
3. Build straight and flat, if not straight and flat step on it.
4. Build often.
5. Build simple uncomplicated structures.
6. Build a design that is appropriate for rubber power. Stay away from that Fokker Tri-Plane because it "looks cool". (Initially, anyway)
7. Build often.
8. Build expendable models.
   Never get "attached" to a model .... (airplane).
   It's quite often easier and/or faster to build a new one than search for a lost one, or make extensive repairs.
   Someone once said, "we don't own these models – we are just borrowing them".
9. No field repairs.
   A field repair always looks and often acts like a field repair.
   Take it home, repair it once and repair it correctly.
   Forget the contest. If you are that competitive, go bowling.
10. Build often.
11. One trim change at a time.
12. Build in adjustable flight controls, either primary or secondary surfaces. (Trim tabs)
13. Build often.
14. Build in a means of adjusting thrust. Adjustable nose buttons are preferred. *
15. Take notes and maintain a log.
16. Build often.
17. Create and use a check list.
18. Don't rush anything.
19. Build often.
20. Take advice on the flying field only from someone that is flying.
21. Give advice on the flying field only when asked.

The Trimming Process

It has been this modeler's experience that approximately 90% of the trimming process is best accomplished on the work bench. So.....

APPLIED MATHEMATICS

BY BOB ISAACKS

MANY ARTICLES (SCIENTIFIC AND OTHERWISE) HAVE SHOWN THAT RUBBER POWERED MODELS ARE AT OPTIMUM TRIM WHEN THE DECALAGE (ANGULAR DIFFERENCE BETWEEN WING AND STAB) IS APPROXIMATELY 3 DEGREES.

THE TANGENT OF THREE DEGREES IS .0524; THEREFORE THE AVERAGE CHORD OF THE STAB, MULTIPLIED BY .0524, WILL GIVE THE AMOUNT OF "UP" ELEVATOR* TO APPLY, ASSUMING THAT THE WING IS AT ZERO DEGREES.

SEE CHART BELOW FOR SOME TYPICAL MEASUREMENTS.....

AVG. STAB CHORD	DECALAGE (EXPRESSED IN INCHES/ FRACTIONS)
1"	.052 (A LITTLE LESS THAN 1/16")
1 ½"	.078 (A LITTLE MORE THAN 1/16")
2"	.104 (A LITTLE MORE THAN 3/32")
2 ½"	.131 (A LITTLE MORE THAN 1/8")
3"	.157(A LITTLE MORE THAN 5/32")
3 ½"	.183 (A LITTLE LESS THAN 3/16")
4"	.209 (A LITTLE LESS THAN 7/32")
5"	.262 (A LITTLE MORE THAN ¼")

CENTER OF GRAVITY, THRUST LINE, AND LATERAL BALANCE, ARE ALL IMPORTANT FACTORS IN ACHIEVING FLYING TRIM: BUT THE DECALAGE IS CRITICAL IN ACHIEVING OPTIMUM GLIDE TRIM WITH MINIMUM ADDED NOSE WEIGHT WHICH IS OFTEN REQUIRED IN FLYING MODELS.

*"UP"ELEVATOR CAN ALSO BE EXPRESSED AS NEGATIVE INCIDENCE.

REFERENCES FOR AL LIKELY'S ARTICLE

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S.O.S.

Looking for a 3-view, photos and/or text on the McCarthy Air Scout, a small hi-wing cabin monoplane dating from the early 1920s. It had an uncowled 6 cyl. radial and very poor forward visibility. The wing may have come from a Spad XIII

Dave Stott, 4304 Madison Ave.
Trumbull, CT 06611

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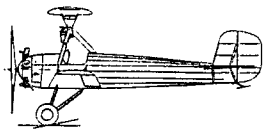

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"Bill's Background"
"The French Adventure"
"Petite Rotorcraft Review"
"Williams Brothers Remembered"
"Ray Malmström Remembered"
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"Starting From Scratch"
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"Don't Just Sit There, Do Something!"
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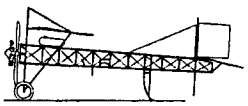
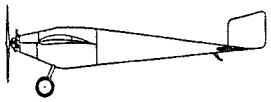
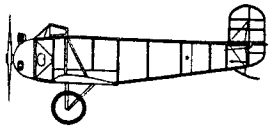
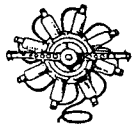


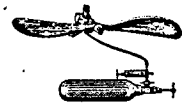




DOCUMENTATION DRAWINGS
1910 Farman Mono
1920 Farman Goliath
1921 Avia B.H.2
1923 Marais
1923 Udet U2
1934 Fairchild 22
1936 Caudron Ramier
1936 Douglas DC-2
1937 Herrick Vertaplane

MODEL PLANS
1870 Pénaud Hélicoptère
Hanriot R.O.G.
1913 Borel Hydro
1924 Dietrich





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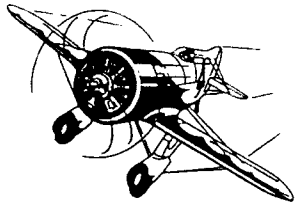

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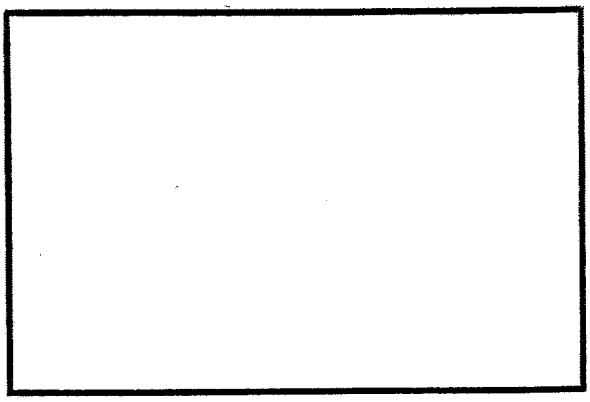

We believe this to be the most striking World War photo ever brought to America! Snapped in the Vosges in 1917, it shows the invisible plane flying through a heavy snow storm. It is reprinted here by courtesy of the Phineas Pinkham Memorial Shrine, of Boonetown, Iowa.

S.O.S.--S.O.S.--S.O.S.

Dave Keats, 2014 Atlas Rd., Troy, Mi. 48083 is looking for plans of the following Comet kits; #A2 Zippy, #A3 Shooting Star, and #A5 Piper Cub Cruiser. Wingspans 12".

Wanted; Plan or kit of the Kokusai Ki-76 code name "Stella". Larry Taggart, 58 Independence Dr., Westbrook, Me. 04092.

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Send your order to; Flying Aces, 3301 Cindy Lane, Erie, Pa. 16506.

PHOTO PAGE

Left column; American Eagle A-129 by Nate Sturman. Plan is in this issue. Nate's photo.

Here is Nate himself posing with the Am. Eagle.

Sim Wilson sent this pic of his partially built Curtiss O-52 "Owl". Plan from December 1941 Air Trails magazine.

Right column; Al Likely sent this photo of Tim McCall Launching his Embryo Sport. Tim is 12 years old.

Here is Skip Long's 1910 Avro IV Tri-Plane. Built From an R/N Models kit and converted to rubber Power. Skip's photo.

CLEVELAND FREE FLT. SOC. CONTEST

April 6, 2003 at Kent State University, Kent, Ohio. 8:00 am til 4:30 pm.
Events; Catapult Glider, EZB, Limited Penny Plane, Mini-Stick, 7 gram Bostonian, Jetco ROG, WW-II Combat, Peanut, Golden Age Scale, Dime Scale, No-Cal Scale, Pioneer Scale, WW-I Peanut BiPlane, WW-II No-Cal Combat, Science Olympiad (?). For more info contact; Mike Zand, 5803 East Ash Rd., Independence, Ohio 44131, Phone 216-524-3480 or Larry Mzik, 117 Sycamore Drive, Painsville, Ohio, 44077 Phone 440-357-7361.

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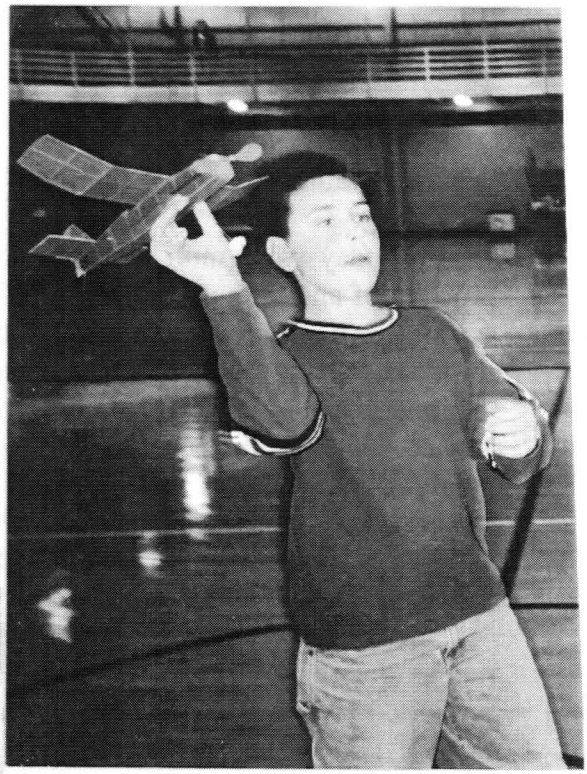
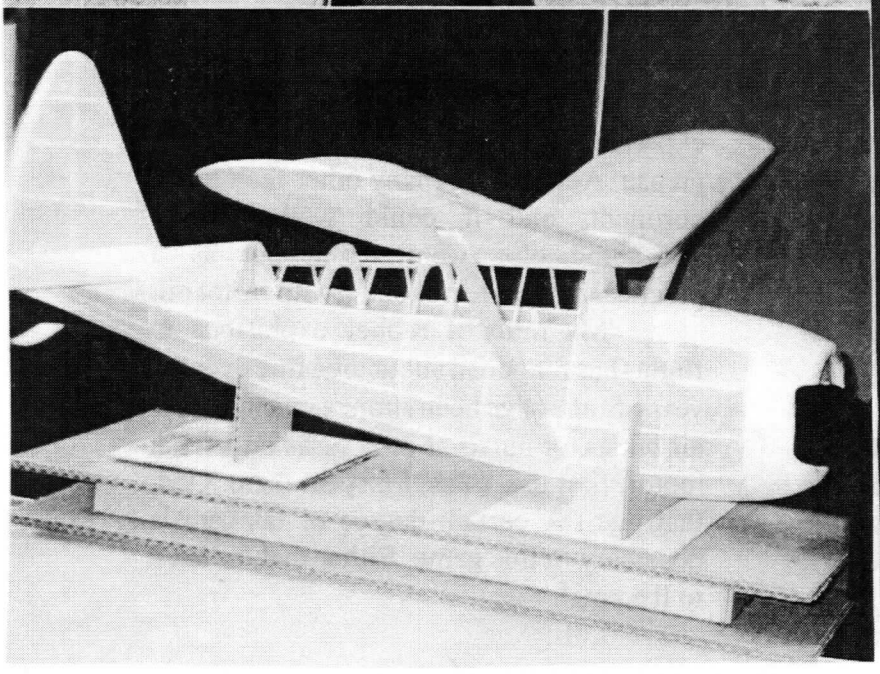
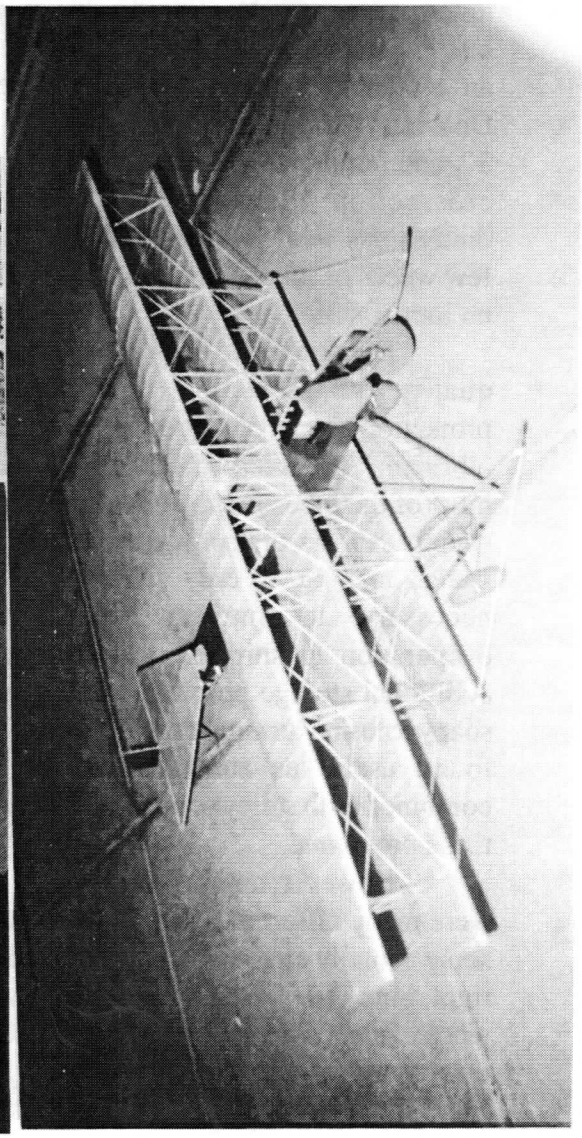






* * Rubber Nectar, Circa 1912 * *
Mumbo Jumbo # 110

Today we'll mull over the classic problem of an optimum rubber lube. Even as tots, we were assailed by dubious formulas for magic elixirs, each guaranteed to energize a rubber motor while lengthening its life. Mostly, the motors ignored the magic and blew to bits anyway, in the same old self-destructive fashion. Why? Was there something wrong with the formulas or was it all nonsense?

We need two different qualities in a rubber dressing. First is the lube itself, acting to lower the friction between rubber strands as they are twisted. One automatically thinks of oil for this purpose, but unfortunately most oils attack rubber. As an extreme example, there's engine oil. Dousing your rubber motor in ordinary SAE 30, and letting it stand, results in the motor crossection actually increasing in dimensions while turning cheesy. After a few weeks of this treatment, the rubber will no longer store energy–it's all over.

Demonstrated above is the need for quality #2–protection; in particular, protection from whatever is serving as a lubricant. To avoid attacking the rubber, most of the lubes in the good old days were soap based. As the soap was suspended in water, making it easy to apply, it was necessary to prevent freezing and evaporation in shipping and storage. An additional storage problem was that of the soapy solution turning moldy. Glycerine was found useful as an additive, and when combined with salicylic acid could solve all these problems.

However, new problems arose–there were many different types of glycerine and some actually attacked rubber. Locating the right kind wasn't easy, and cooking the whole mess together, stirring constantly, was not usually regarded favorably by Mom. Even if patient and understanding so far, something about part two, involving the mixing in of a generous portion of graphite, turned good old Mom into a bitter enemy, more concerned with pots than progress. When all was done, the results "should be of a thick consistancy, something between jelly and thick soup, and should have a most unpleasant slimy feeling, like nothing else on earth."(The Aeroplane, Feb. 1, 1912, page 118).

Certainly, brewing this stuff to the right disgusting level wasn't easy, for the formula was vague and the glycerine potion always uncertain in its friendliness. In short: the good old days were truly terrible.

It's possible that some few old time modelers, gifted at practical chemistry, did prepare a good lube, one even better than our store-bought products. However, the odds don't favor this premise.

Today, a good soap type lube can be simply purchased from any supplier. As an alternative, there's much to be said for castor oil, nowadays made without odor and available cheaply at any drug store. Silicone oils and grease have their fans as well, for these tend to retain their viscosity ratings despite drastic changes in temperature.

The catch with the grease is a need to rub it in very carefully, for it doesn't "flow"–an area left bare remains bare–perhaps to haunt you later on. The single worst explosion I"ve ever experienced came after applying silicone grease. Admittedly, many other factors are pertinent, and it could well be that something else went wrong–but as a practical matter–I'm sticking with castor oil.

My ratio of rubber explosions to flights has remained about the same over the years. Some have been strange–such as mid-air bursts, or bursts at 25% turns on a fresh motor, first use. (Yes, I inspect them. Odd, that one.) A certain degree of fatalism is necessary in this game. Either that, or back to the pots!

FAC KANONES
as of 12/31/2002

AIR MARSHALL

ROBERTS, GORDON	501
WECKERLY, STU	280
MCGILLIVRAY, JACK	248
SRULL, DON	216
REES, DAVE	167
LIVESAY, DAVE	147
GRIEBLING, STEVE	141
MILLER, JIM	133
ZAPF, RICHARD	129
NORMAN, DENNIS	119
MARTIN, DOC	111
BRIEHL, DAN	108
MIDKIFF, MIKE	105
COX, PHIL	100
BOYANOWSKI, PAUL	99
STOTT, DAVE	96
THOMAS, MIKE	94
ZAND, MIKE	92
FINEMAN, MARK	91
PORTER, JERRY	91
NALLEN, TOM JR.	88
LAWTON, AL	86
MACENTEE, RICH	82
HALLMAN, TOM	79
BREDEHOFT, GEO.	75
NIEDZIELSKI, DAVE	70
STARLEAF, CHRIS	70
ROWSOME, FRANK	60
MATHER, CLARENCE	59
MEYERS, III GEORGE	58
MAYO, ROSS	56
KRUSE, LARRY	54
BUKOWSKI, CHET	52
HOWARD, DICK	52
SCHANZLE, ALLAN	52
SMITH, DAVE (AZ)	52
HOUCK, JOHN	51
NIPPERT, VIC	51
SMITH, DAVE (SC)	51

AIR VICE MARSHALL

LOUCKA, LARRY	49
STOTT, JOHN	49
WUNSCHE, FRED	49
BROCK, WAYNE	48
GROENING, TOM	48
SMITH, GENE	47
KANE, DAN	46
PELATOWSKI, ED	46
BROWN, RUSS	45
EGGERT, WALT SR.	45
KOTHE, HERB	45
SCHOBLOWER, CHAR.	45

GENERAL

PERES, VIC	44
SCHLOSBERG, BOB	44
MOSES, JACK	43
GILBERT, VANCE	41
LEWIS, GEORGE	40
MEYERS, STEW	40

LT. GENERAL

DRISCOLL, DAN	39
NASSISE, MIKE	39
TRIVIN, WAYNE	39
BENTON, OLIVER	38
BLAIR, JOHN	38
FARRELL, WALLY	38
HENN, BILL	38
JOSEPH, JOE	38
SANFORD, CURT	38
STOTT, PAUL	38
DELOACH, DON	37
DOCK, TED	37
CHAPPELL, HOWARD	36
KACIAN, JACK	36
KOPTONACK, JOHN	36
LOEHLE, CARL	35
SIEDENTOPF, BOB	35
TUDOR, JOHN	35

MAJOR GENERAL

DUNMIRE, DICK	34
MILLER, RICH	34
NUNEZ, GEORGE	34
OBARSKI, DICK	34
BOJANOWSKI, BOB	33
KESHISHIAN, HARRY	33
KUENZ, RALPH	33
LANG, DON	33
DAILY, PAT	32
NALLEN, TOM SR.	32
PITTMAN, TERRY	32
SLUSARCZYK, DON	32
ARONSTEIN, DAVE	31
BEARRY, GLENN	31
DECOOK, DON	31
PEAVEY, LARRY	31
THOMPSON, BOB	31
BOLLINGER, NEWT	30
KUTKUHN, JIM	30
MCGINNIS, DEAN	30
SUGDEN, BOB	30

BRIGADER GENERAL

KLIENERT, RANDY	29
LIKELY, AL	29
MARETT, JOHN	29
REED, DON	29
BUXTON, JIM	27
CLEMENS, BOB	27
ENGLERT, JEFF	27
BRUNING, PRES	26
DALEY, JIM	26
ISAACKS, BOB	26
POWELL, CLAUDE	26
WELLS, MILLARD	26
AZURE, PETE	25
BACOM, STEVE	25
BURDSAL, LES	25

COLONEL

BARLOW, PHIL	24
GILBERT, SIDNEY	24
MACDONALD, TIM	24
MATHIS, PETE	24
MCLELLON, BOB	24
ORPHAN, WILLIAM	24
SCHLOSBERG, JANE	24
BOYLES, RED	23
CARSON, BUD	23
IVERS, RICHARD	23
LANDRUM, BILL	23
BACKSTROM, AL	22
DELOACH, ED	22
HAWLEY, RICK	22
HIRLEMAN, FRANK	22
MCDONALD, DAN	22
SHARBONDA, KEVIN	22
BALUNEK, DEL	21
DERBER, TOM	21
HILL, CHARLES	21
PAISLEY, JERRY	21
SMITH, OSCAR	21
ZBASNIK, PETE	21
DIETZ, BILL	20
EWING, FRED	20
GILLIS, RICH	20
HINES, MIKE	20
LEFFLER, GEORGE	20
PASSARELLI, BILL	20
PERRYMAN, GEORGE	20
REICHEL, LIN	20
ROPAR, NICK	20
THOMPSON, MIKE	20

LT. COLONEL

BOJAN, ED	19
FINLEY, BRUCE	19
HEYN, ED	19
LINSTRUM, DAVE	19
MCGOWAN, MEGAN	19
SCHMITT, TOM	19
WEBB, JASON	19
FIKE, JACK	18
HELMAN, PAUL	18
HURDLE, JOE	18
KLUIBER, RUDY	18
LANGLEY, TED	18
MOORE, ROYALL	18
NOVAK, ED	18
PARTIN, GENE	18
STEEB, DON	18
BARKER, JOHN	17
BOURKE, ROY	17
BUCHANAN, DOUG	17
CANNON, HAROLD	17
PENNINGTON, BILLY	17
DONOHUE, JERRY	16
GREGORY, ROLFE	16
MCGUIRE, JOE	16
MORROW, MIKE	16
PAISLEY, SCOTT	16
STEVENS, HERB	16
ADAMS, DICK	15
CLEAVE, AL	15
NALLEN, MICK	15
ROTH, MEL	15
STRUCK, HENRY	15

MAJOR

DECOOK, ALBERT	14
ARMSTEAD, GEORGE	13
BRIMMER, DON	13
BROWNHILL, CHRIS	13
CAMPBELL, DON	13
DOBBERFUHL, SCOTT	13
HUNTER, GARY	13
KRAMER, JOHN	13
LIONBERGER, FRED	13
TISINAI, JACK	13
DECOOK, ALLAN	12
ISERMAN, MIKE	12
LAVENDER, TIM	12
SLUSARCZYK, CHAR.	12
GRANT, JIM	11
HYKA, JIM	11
MILLER, DON	11
O'LEARY, JACK	11
RUSSELL, TED	11
RUSSO, ROCKY	11
SHERMAN, LEN	11
BOEHN, CHRIS	10
CHOATE, RICK	10
COLSON, STAN	10
COX, VIC	10
ENGLERT, DAVE	10
ESCALANTE, MIKE	10
HUDSON, NEAL	10
PHILLIPS, GEOFF	10
ROSS, LINCOLN	10
SCHMIDT, WILFRED	10
THORNTON, JIM	10
VOLLMER, AL	10
WHITEMAN, JIM	10

CAPTAIN

FRANKS, DAVID	9
HUMMEL, RON	9
KAGEN, JOHN	9
NEFF, VERN	9
NIED, TOM	9
ODOM, TOM	9
PHILLIPS, BERT	9
SCOTT, FRANK	9
WELSHANS, MIKE	9
ARNOLD, TOM	8
BARFIELD, DAVID	8
BEAL, PETE	8
BENDER, BOB	8
BREDEHOFT, JACK	8
HANNAY, DOUG	8
IVERS, DICK SR.	8
MARCHESE, BOB	8
REES, MARIE	8
SCOTT, CHRIS	8
THOMAS, PHILIP	8
VANDORN, STUART	8
WARNER, BILL	8
ANDERSON, ERIC	7
ASSEL, DON	7
BATIUK, GEORGE	7
BROMM, KARL	7
BUTSCH, ROBERT	7
FEDOR, MIKE	7
FRAUTSCHY, HENRY	7
HARWOOD, DON	7
JACKSON, TIM	7
KAITERIS, PETER	7
KAMODY, RON	7
KONEFES, ED	7
O'BRIEN, TOM	7
PAILLERON, A.J.	7
SMITH, DAN	7
ALDERSON, LEN	6
BOEHN, PRESTON	6
GALLO, GREGG	6
GARAFLOW, DON	6
GUNN, WADE	6
HARWOOD, ERNIE	6
HENDERSON, BILL	6
HUDSON, RALPH	6
HUTCHINSON, BILL	6
MILLER, WILLIAM	6
MORTON, GARY	6
POLENTO, JOHN	6
PRISEL, DUDLEY	6
RICE, JACK	6
ROBELEN, DAVE	6
SHIELDS, ALLEN	6
STEED, CHARLES	6
TAKAGI, FUDO	6
WEBER, RICH	6
WHITING, JOE	6
BARNA, JOE	5
BATTERSON, REG	5
BUCHANAN, MIKE	5
BUCHER, TIM	5
COURTNEY, ROY	5
DRELA, MARK	5
HARDING, BILL	5
HOPKINS, HARVEY	5
HOUCK, MARK	5
HUNT, BOB	5
KOMP, HENRY	5
LANE, RANDY	5
MCCONNELL, KEN	5
MOSKOW, MIKE	5
MOULTON, BOB	5
NUSZER, JOE	5
PARENT, CHRIS	5
PHELPS, JACK	5
PRICE, BRUCE	5
SANDOR, TOM	5
SCHICK, EARL	5
SHIRLEY, HERB	5
SOTICH, CHARLIE	5
STEIN, HARRY	5
TALACKO, RAY	5
TAYLOR, BARRIE	5
TOMCZUK, S.	5
VIGGIANO, LOU	5
WALLACE, PETE	5
WEISENBACH, WARREN	5
WOODS, JIM	5

LIEUTENANT

BARLOW, MARK	4
BRIEHL, JEFF	4
CERESA, BILL	4
COLLINS, DAVE	4
EGGERT, WALT, JR.	4
FACTOR, R.	4
FARANDA, TONY	4
FINK, STAN	4
GARBER, LES	4
GUERRA, OMAR	4
HARLAN, DAVE	4
HASKELL, CURT	4
HAUGHT, DAVE	4
JOHNSON, KEN	4

LAYCOCK, JOHN	4	BALCER, WALT	2	RODEN, BOB	2	CLUTTON, ERIC	1	KING, STAN	1	PIERCE, FRED	1		
LORIMER, HAL	4	BARBER, LES	2	ROTH, BRIAN	2	COLLINS, DAVID	1	KOHFIELD, DICK	1	POLLARD, JIM	1		
MASTERS, BOB	4	BARRETT, KEVIN	2	RUHLAND, D.J.	2	COLT, GILBERT	1	KREMPETZ, KENNY	1	POWELL, CHUCK	1		
MCCOY, TOM	4	BAUMGARDNER, KEM.	2	RUSSELL, BOB	2	COPEMAN, KEN	1	KRUSH, JOE	1	RAMOS, FERNANDO	1		
MILLS, DAVID	4	BELL, BILL	2	SAKS, DAVID	2	CORLETT, NORM	1	KUEHNE, LAVON	1	**RANSOM, MIKE**	1		
MUFFELMAN, BILL	4	BENNETT, LEON	2	SAUTER, CHARLIE	2	CORNELIUS, DALLAS	1	KURTENBACH, JOUR.	1	RASH, FRED	1		
NEWELL, KEN	4	BLACKHAM, RICH	2	SEALS, LARRY	2	COSLICK, LARRY	1	LANDHUIS, ROBERT	1	REYNOLDS, BILL	1		
PETERSON, AARON	4	BLAIS, TIM	2	SEATH, DAVE	2	CUMMINS, STEWART	1	LANG, JOEL	1	RHODES, BILL	1		
PETRINEC, BOB	4	BOWERS, HURST	2	SHAW, DICK	2	DAVIS, CHARLOTTE	1	LANGEVIN, LEO	1	RICE, DAN	1		
PHOENIX, ROCKY	4	BRADLEY, PAUL	2	SIEFRIED, DICK	2	DAVIS, GREG	1	LARSEN, TIM	1	ROBERTS, MIKE	1		
PLACHY, LAD	4	BROCK, PAM	2	**STROUT, REGGIE**	2	DEHAAS, BILL	1	LEE, JIM	1	ROSS, DON	1		
REDDING, HERB	4	BROCKS, PETER	2	TALBOT, RICHARD	2	DOCK, DENNIS	1	LEAH, DAVE	1	ROSS, RICHARD	1		
SIMPSON, BILL	4	BUKOWSKI, BILL	2	**TECHUK, ALEX**	2	DODGE, DAVE	1	LEHR, ROGER	1	RUBRICH, CHRIS	1		
VOORHEES, JOHN	4	CALDWELL, BILL	2	THOMASIAN, HARVEY	2	DOTEN, ART	1	LELONG, HENRY	1	RUPPERT, CONRAD	1		
ANDERSON, DICK	3	CAMPBELL, LEE	2	TRITTLE, PAT	2	ECKERSON, EARL	1	LEONHARDT, WALT	1	RUSSO, GUY	1		
ANDERSON, JAMES	3	CLARKE, BILL	2	VANDEN BOSSCHE, R.	2	ELLIS, D.	1	LIDBERG, AL	1	SANDERS, TOM	1		
BAECKE, AL	3	CRAWFORD, DOHRMA	2	VANDERLINDE, DAVE	2	ENGLERT, DOUG	1	LIGARSKI, STAN	1	SATTERTHWAITE, BAR.	1		
BAECKE, FLORENT	3	DAILEY, JIM	2	VON BUEREN, KARL	2	EPP, BRIAN	1	LINARDIC, VLADIMER	1	SCHUELER, CARL	1		
BARBER, DOUG	3	DERBER, DAN	2	WAGNER, JERRY	2	ESPIL, JOE	1	LOATES, FRANK	1	SCHUTZEL, EMIL	1		
BARISH, JOE	3	DITRICH, BRIAN	2	WALES, TED	2	**FAGS, K.**	1	LUZZI, KRISTINA	1	SEAVER, TED	1		
BAUGHMAN, GARY	3	DITRICH, MIKE	2	WATTS, RON	2	FEDOR, JEFF	1	MAGERS, CHARLES	1	SEBASTIAN, JOE	1		
BIRD, LES	3	EVERSON, WALT	2	WOODS, FRANK	2	FERGUSON, BOB	1	MANKOWSKI, JIM	1	SENNET, BOB	1		
BRAUER, SAM	3	FLESHER, AL	2	WORMLEY, JOHN	2	FLETCHER, BARRY	1	MARCHESE, MATT	1	SHEPHERD, CHARLES	1		
BURKE, SAM	3	FUGIKAWA, STEVE	2	ZAPOLSKI, ED	2	FOSTER, BRUCE	1	MARKSON, JERRY	1	SMALLEY, RALPH	1		
COFFEY, WENDELL	3	GARRISON, BOB	2	**ZEMECK, LEN**	2	**GAMBLE, CLIVE**	1	MCBRIDE, JIM	1	SOLMONOFF, GEORGE	1		
DETAR, JAMES	3	HAAAKONSEN, ERIK	2	ALABACK, JIM	1	GEARING, GEORGE	1	MCELVEEN, JACK	1	SOUTH, STEPHEN	1		
DOCH, ZACH	3	HARLEIN, RAY	2	ALBRACCIO, BUD	1	GILES, RICH	1	MCGEE, DUSTIN	1	SPIESS, MIKE	1		
ELLIS, ART	3	HARRIS, JIM	2	ALLEN, TERRY	1	GORMAN, DICK	1	MCKINNEY, MIKE	1	SQUEGLIA, RALPH	1		
ENGLERT, PAULA	3	HEDLEY, CARL	2	ALLISON, MARK	1	GREGGS, FRED	1	MCMAHON, JIM	1	STEINMAN, ELVIN	1		
HARDCHASTLE, DICK	3	JAMISON, BOB	2	ALVIS, BUNNY	1	GUMM, TERRY	1	MELLANDER, ELMER	1	STONE, RICHARD	1		
HERR, TOM	3	KING, GARY	2	ANDERSON, ART	1	HAGEN, AL	1	MIDGETT, RON	1	STONECIPHER, RICH	1		
HUGHSTON, TOM	3	KNUTSEN, NEIL	2	ANDERSON, WAYNE	1	HAIGH, BOB	1	MIDKIFF, RICK	1	STOTT, PAUL D.	1		
KNIGHT, MARION	3	LEIFER, LOUIS	2	**BAGALINI, LARRY**	1	HAIGHT, BOB	1	MINO, CHRIS	1	SYLVIA, ED	1		
LAMB, ED	3	LEMON, KENT	2	BAIRD, TEX	1	HALES, STEVE	1	**MITCHELL, DAVE**	1	TARANGO, GLENNA	1		
LEWARS, JOHN	3	LUNDBERG, BOB	2	BARKER, JACK	1	HANFORD, BOB	1	MONTEATH, ALAN	1	TAYLOR, BILL	1		
LOVETT, GRANT	3	MANSFIELD, GEORGE	2	BARNES, LOU	1	HANFORD, RIP	1	MOON, ROGER	1	**THOMAS, GREG**	1		
LUZZI, MICHAEL	3	MARCELLO, ED	2	BARR, BILL	1	HARDING, HAROLD	1	MYERS, GREG	1	TIPPS, LEE	1		
LYONS, BOB	3	MASTERS, RICHARD	2	BAXTER, D.	1	HASLAM, LIN	1	NACIN, DICK	1	TOMASCH, WALT	1		
MCBRIDE, DUNCAN	3	MCDANIEL, HAP	2	BENNER, DAN	1	HAWES, DICK	1	NALLEN, KAREN	1	TRACY, DAVID	1		
NELSON, BOB	3	MCDONALD, TIM	2	BETHEA, JIM	1	HAYWOOD, TREVOR	1	NEARING, LARRY	1	TROUTMAN, JIM	1		
ODOM, LOUIS	3	MCDOW, BILL	2	BETJEMANN, ROBERT	1	**HEINRICH, MIKE**	1	NEDS, GEORGE	1	VALLS, JOHN	1		
OLM, ORVILLE	3	MILLER, DICK	2	BETZ, PRISCILLA	1	HENDERSON, JOHN	1	NOLL, JACK	1	WARMONN, BOB	1		
ORZECH, HENRY	3	MITCHELL, BILL	2	**BOWERS, MIKE**	1	HENDRICKSON,CHAR	1	NUNEZ, JONATHAN	1	WEBSTER, LEE	1		
OSBORNE, BOB	3	MOSELY, JIM	2	BRAKE, DICK	1	HENSEL, RICH	1	ODOM, DOT	1	WHITACRE, DON	1		
PACK, CHARLES	3	MUNN, DON	2	BRAUN, DAVE	1	HERBST, PAUL	1	ORTIZ, ELLIOT	1	WIENKER, CLIVE	1		
PAYNE, RAY	3	NUNEZ, JORGE SR.	2	BRAUNLICH, MARK	1	HINTON, BILLY	1	OSALZA, DON	1	WILLIAMS, JAY	1		
RAKOW, RAY	3	OSLAN, ROBERT	2	BURNS, MICHAEL	1	IVES, DAVID	1	PAFIOLIS, ALEX	1	WOJTKIEWICZ, CHUCK	1		
REICHEL, JUANITA	3	PAPIC, FERRIL	2	BURRY, CLAUDE	1	JESSUP, ARTIE	1	PARK, JIM	1	WURMAN, BOB	1		
RZADCA, MARK	3	PEDERSON, JOE ED	2	**CARLS, JOHN**	1	**JOHNSON, BILL**	1	PASTEL, HARVEY	1	YANOSKY, TOM	1		
SAVAGE, TOM	3	PISHNERY, DAVE	2	CASGILL, WALDO	1	JOHNSON, GARY	1	PAVEK, BILL	1	YODER, MARVIN	1		
SHAW, BOB	3	PORTER, CHUCK	2	CASAZZA, DAN	1	KANE, KATHLEEN	1	PAYNE, DOUG	1	**BOLD NAME =**			
SIEDENTOPF, MIKE	3	PROULX, T.	2	CAVE, ED	1	KEAR, KEN	1	PEACOCK, DON	1	FIRST YEAR ON LIST			
SMITH, HOMER	3	RECKER, GERD	2	CAWTHORNE, JOHN	1	KEHR, WILLARD	1	PELATOWSKI, LARRY	1	UNDERLINED COUNT =			
STALEY, BILL	3	**REGALBUTO, JOHN**	2	CERVIONE, MIKE	1	KELLEY, WARREN	1	PENNY, WILL	1	PROMOTED IN 2002			
TELFORD, TONY	3	REUTER, BILL	2	CHAFE, WARREN	1	KERZIE, MARK	1	PHILABAUM, RICHARD	1	**BOLD NAME & COUNT =**			
ALLEN, DICK	2	ROAD, JOHN	2	CHRISTIE, DAVE	1	KING, LES	1	PHOENIX, GOEFF	1	**BLUE MAX IN 2002**			

FAC KANONE REPORT

FAC CLUB NAME ______________________ **CONTEST DATE** ___/___/___

CONTEST DIRECTOR ______________________ **Email address** ______________________ **SQUADRON #** ________

PLEASE LIST THE TOP 4 OF EACH EVENT. **You may indicate the total number of flyers in each event if you wish.**

EVENT

		FLIGHT TIMES or HEAT ROUNDS for ML EVENTS	TOTAL FLIGHT SECONDS	OR	BEST				FAC member?	
					SCALE FLT.	BONUS	SCALE			Y
CONTESTANT'S FULL NAME	MODEL	1	2	3	FACTORED	POINTS	POINTS	TOTAL	PLACE	N

EVENT

		FLIGHT TIMES or HEAT ROUNDS for ML EVENTS	TOTAL FLIGHT SECONDS	OR	BEST				FAC member?	
					SCALE FLT.	BONUS	SCALE			Y
CONTESTANT'S FULL NAME	MODEL	1	2	3	FACTORED	POINTS	POINTS	TOTAL	PLACE	N

EVENT

		FLIGHT TIMES or HEAT ROUNDS for ML EVENTS	TOTAL FLIGHT SECONDS	OR	BEST				FAC member?	
					SCALE FLT.	BONUS	SCALE			Y
CONTESTANT'S FULL NAME	MODEL	1	2	3	FACTORED	POINTS	POINTS	TOTAL	PLACE	N

EVENT

		FLIGHT TIMES or HEAT ROUNDS for ML EVENTS	TOTAL FLIGHT SECONDS	OR	BEST				FAC member?	
					SCALE FLT.	BONUS	SCALE			Y
CONTESTANT'S FULL NAME	MODEL	1	2	3	FACTORED	POINTS	POINTS	TOTAL	PLACE	N

SEND COMPLETED FORMS TO: ROSS P. MAYO, KEEPER OF KANONES, 4207 CROSSWINDS DRIVE, ERIE, PA 16506

FAC NON-NATS, GENESEO, N.Y. REGISTRATION FORM JULY 19--20, 2003

Please print; Name _____ AMA or MAAC No. _____ Jr./Sr. ___Open _____

Street _____ City _____ State _____ Zip _____

Entry fee, $25.00 flies all events. No fee for under 18 years of age. Please remit by June 30, 2003 to ease paper work on the field. Mail entry to; Lin Reichel, 3301 Cindy Lane, Erie, Pa. 16506.

Awards through third place. All contestants must be a member of the AMA or MAAC to participate.

SCHEDULE	Saturday 8:30 am until 5:00 pm	Sunday 8:30 am until 4:00 pm
	FAC Scale	Hi-Wing Peanut
	FAC Peanut	Golden Age Military
	Embryo	Jumbo Scale
	Pioneer Scale	Power Scale
	Greve Race *	Thompson Race *
Mullti-wing	World War I Dogfight *	World War II Combat *
	Giant Scale	O.T. Kit Scale
	Modern Military *	Jimmie Allen
	O.T. Gas Replica	Modern Civil Scale
	O.T. Rubber	Goodyear Race *
	Dime Scale	O.T. Stick Rubber
	Golden Age Civil Scale	No-Cal Scale
	Fairchild "24" * (Guillow)	Two Bit O.T. Rubber
	Phantom Flash (Comet)	No. American AT-6 15% rule *

* These events are mass launch events. Power Scale will be divided into single and multi-engine models. Jumbo and Giant Scale models may be flown either day. All events are for rubber powered models except for Power Scale and O.T. Gas Replica. O.T.G.R. may be powered by electric or CO/2. Pioneer Scale models must be flown in the Pioneer event regardless of size. All O.T. Rubber events must have their flights in by 2:00 pm each day so we have time for fly-offs, NO EXCEPTIONS! Plans must be presented in the Fairchild "24", Dime Scale, O.T. Kit Scale and Two Bit O.T. Rubber events.

Entry fees at $25.00 each (flies all events).....$.....

Banquet tickets at $21.00 each with no dormitory reservations.....$.....

Reservations for double occupancy with meals and banquet at $172.00 each...$.....

Reservations for single occupancy with meals and banquet at $217.00 each....$.....

Total..$.....

No refunds after June 30, 2003. If you plan to share a room with someone please indicate their name so we can set up the proper room arrangements. Your meals at the university will include dinner on July 18, breakfast and dinner on July 19, breakfast on July 20 and July 21 plus the banquet at the Days Inn July 20.

Scale judging will take place at the Days Inn in Geneseo on July 18 starting at 3:00 pm. Please wait till then to bring your models in. Giant and Jumbo models will be judged on the field.

WAIVER: I/we hereby release the Historical Aircraft Group, Inc., Austin Wadsworth, the State University of New York (Geneseo), The Flying Aces Club and all other persons and organizations connected with this contest from any liability whatsoever for accidents incurred while participating in this contest. I/we also agree to abide by all flying and field rules in force at this contest.

 Signature _____

AMERICAN EAGLE

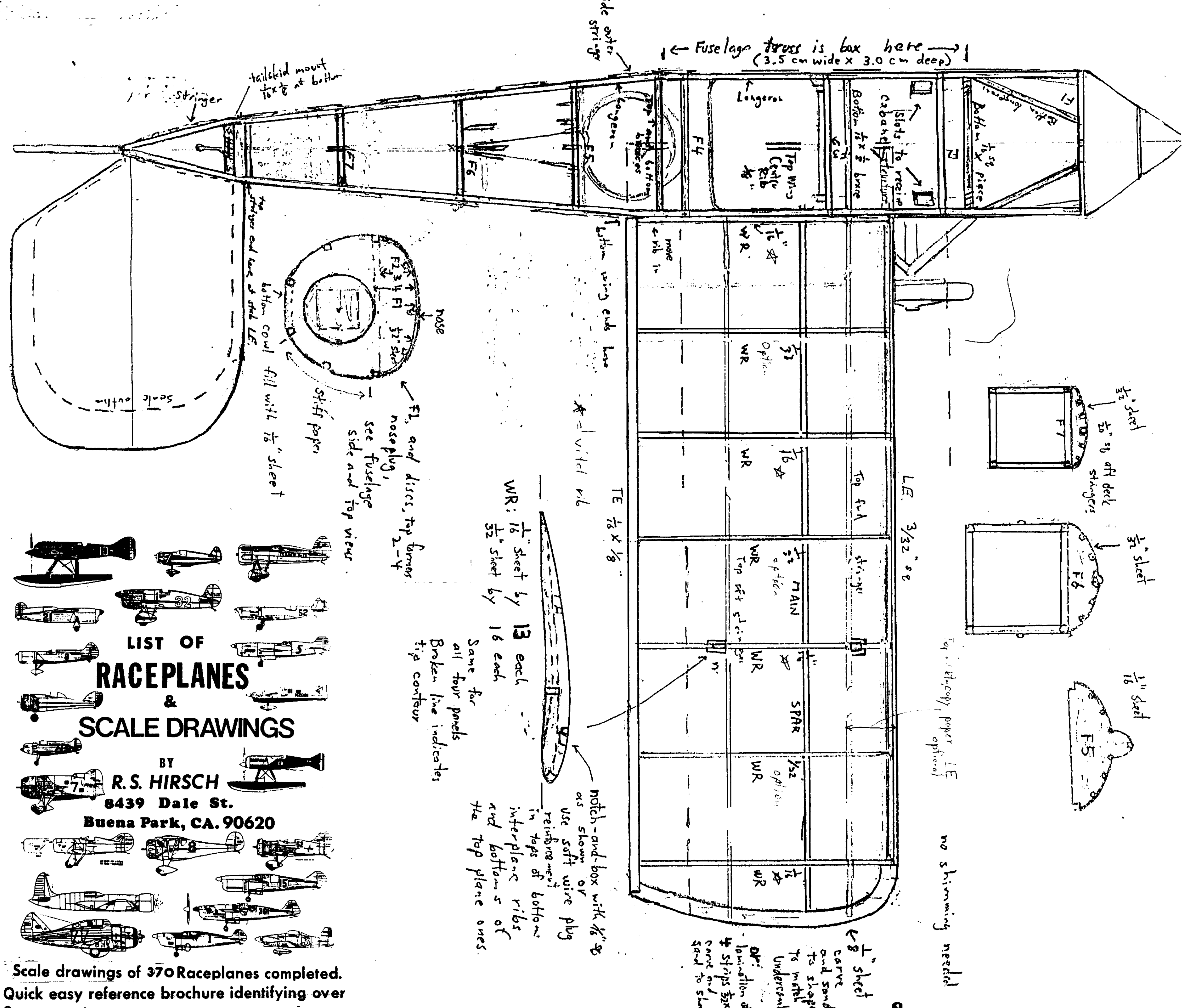
American Eagle A-129 15" span

$\frac{1}{24}$ Scale, $\frac{1}{2}$" to the foot, ff rubber, electric or CO_2 power. Nate Sturman, 10/02

OX-5 powered classic American biplane of the late 1920s and early 30's. Kinner version was good looking but was placarded against spins, reducing its desirability at that time.

18", 20" etc versions easily scaled (x1.2, x1.333)

Checked and Corrected plan against prototype model



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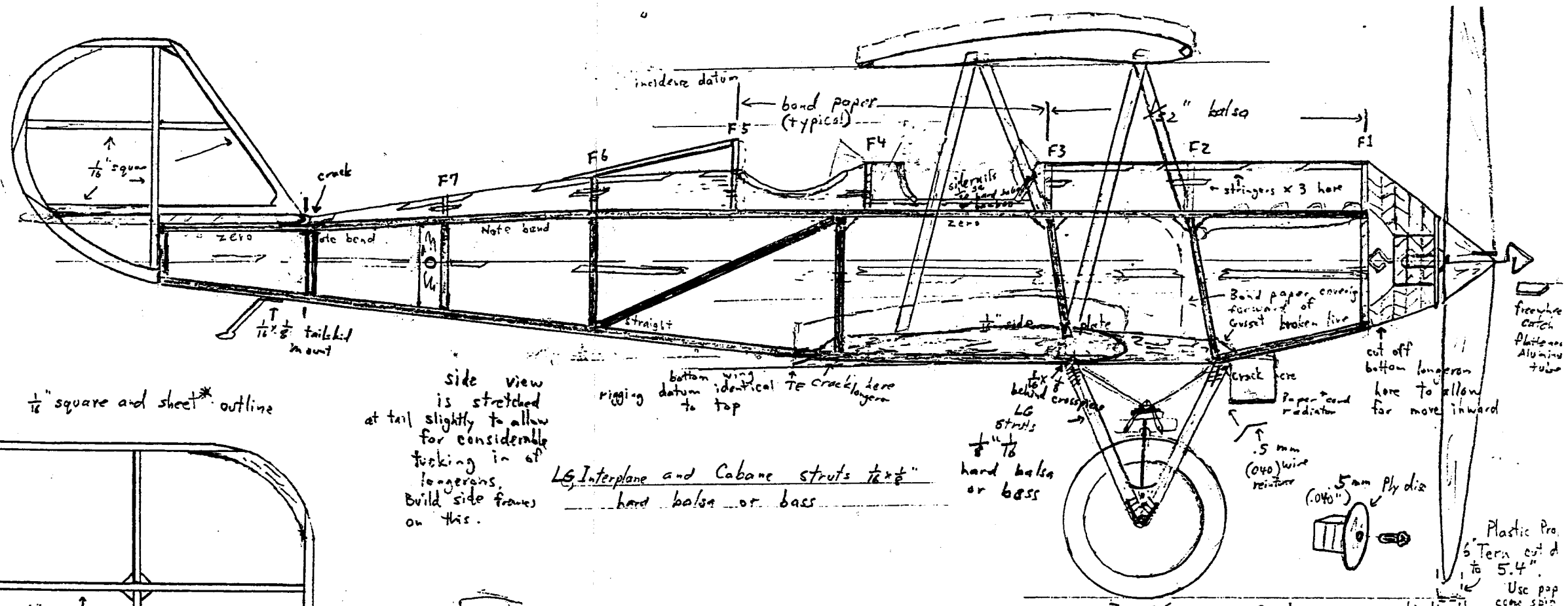
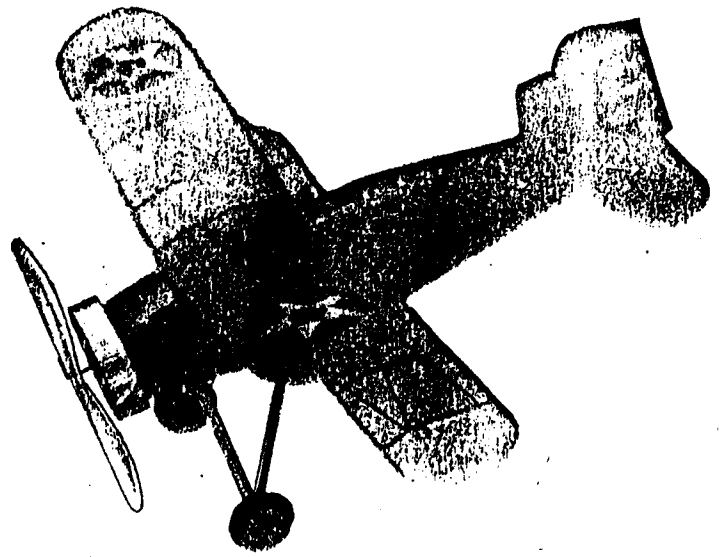
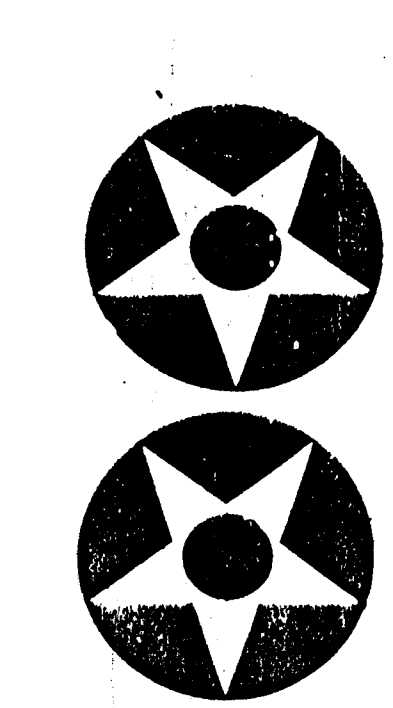
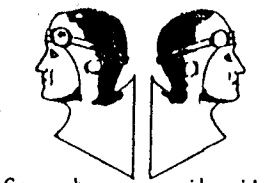

incidence datum
bond paper (typical)
F5
F6
F7
F4
F3
F2
F1
1/2" balsa
1/16" square
crack
zero
Note bend
straight
sidewalls 1/32 hard balsa
stringers x 3 here
Bond paper covering turned up at gusset broken line
1/16" side plate
cut off bottom longeron here to allow for more inward
1/16 x 1/8 tailskid mount
bottom wing datum identical to top
crack here
fix to behind crosspiece
LG struts 1/8" to 1/16 hard balsa or bass
.5 mm (.040) wire resistor
Paper covered radiator
.5 mm (.040") Ply dia
firewire catch
Plastic or Aluminum tube
lower inflight position recommended
Plastic Pro 5 Tern cut d to 5.4".
Use pop corn spin (Typical)
(1.5°)
3/16" dihedral each side at tip under forward stringer
(3°)
3/8" dihedral each side at tip under forward stringer
LE
CTE
Tt
fin
aileron strut rounded 1/16 sq.
stabilizer is at zero incidence but is lower than longeron at nose, due to slight curve aft of mid body point. See side view.
on ground position
LG bungee brace (1/16 dowel on original)
1/16" Alum tubing also possible.
.05 wire (.050")
small rubber band or elastic thread
typical
Plan Checked and corrected against prototype.
1/16" square and sheet* outline
side view is stretched at tail slightly to allow for considerable tucking in of longerons. Build side frames on this.
LG Interplane and Cabane struts 1/16 x 1/8" hard balsa or bass
* or * laminated 1/16 x 1/32 x 2
alternatively,
1/16" Alum Tube
Then wrap with thread
Route strut LE with folded 220 ± sandpaper
hard balsa or bass 1/16 x 1/8 LG pattern
.05 wire (.040)
or
This time honored method also recomend.
cotton thread and cement
to dowel or bamboo
Route LE of struts as above
bamboo
bind and glue or solder
I used 1/16" dowel for the suspension brace triangle bamboo fine too.
I use this in flight position (gives more prop clearance)
cord paper radiator box and louvers
scrap 1/16 x 1/8 wire wrap with tissue (route LE with folded 220 sandpaper)
rubber bungee omitted for clarity
Cowling was "artistically damascened" on originals as on Lindbergh's NYP special -

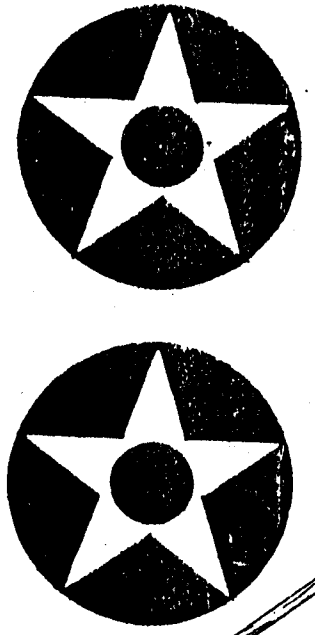
ONE OF MEGOW'S PRODUCTS

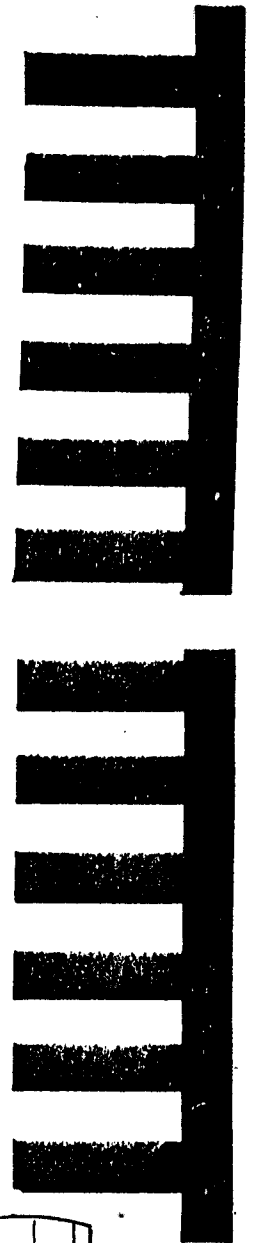


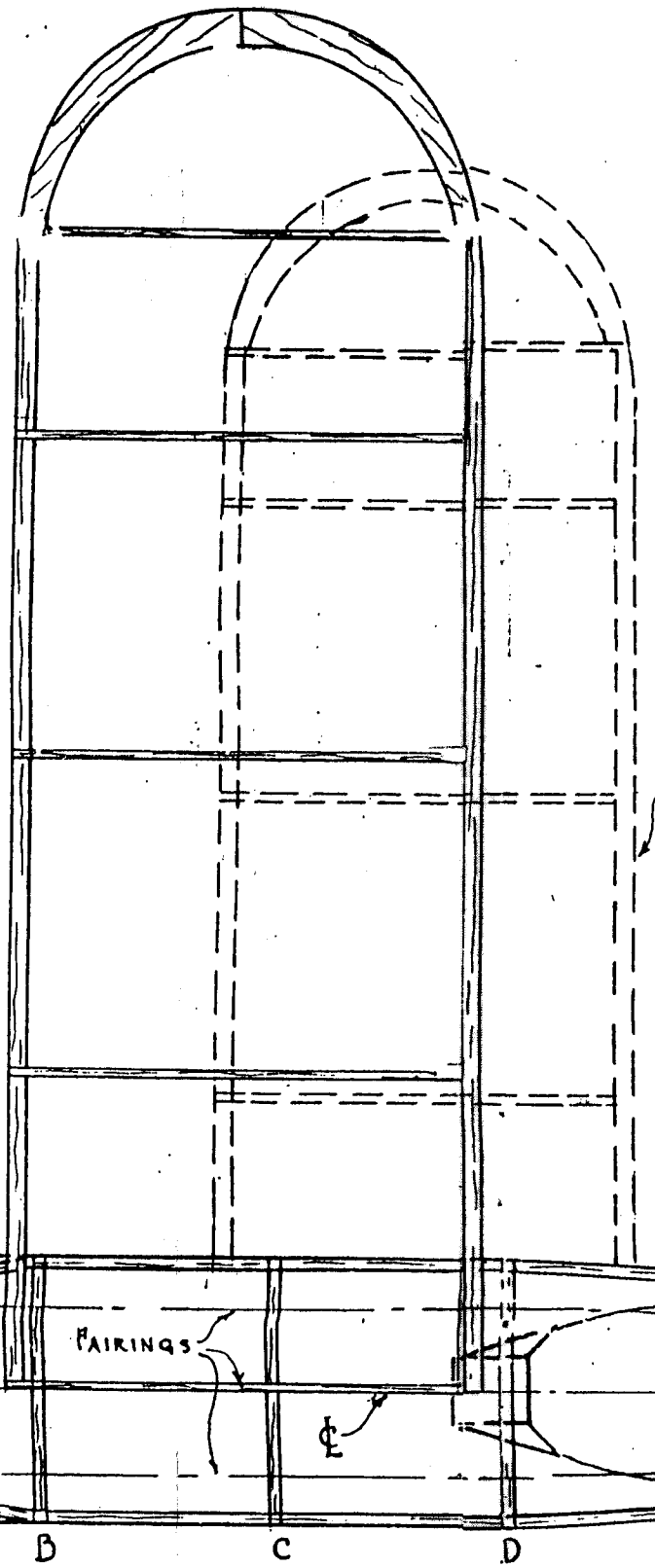




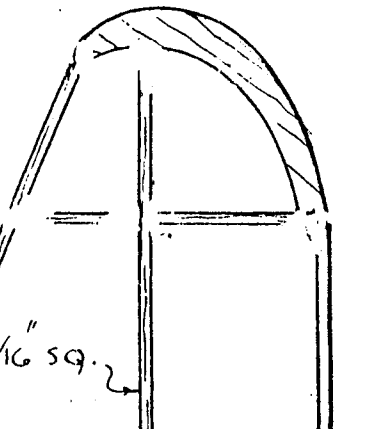
Cement on opposite sides of card board, then cut out.



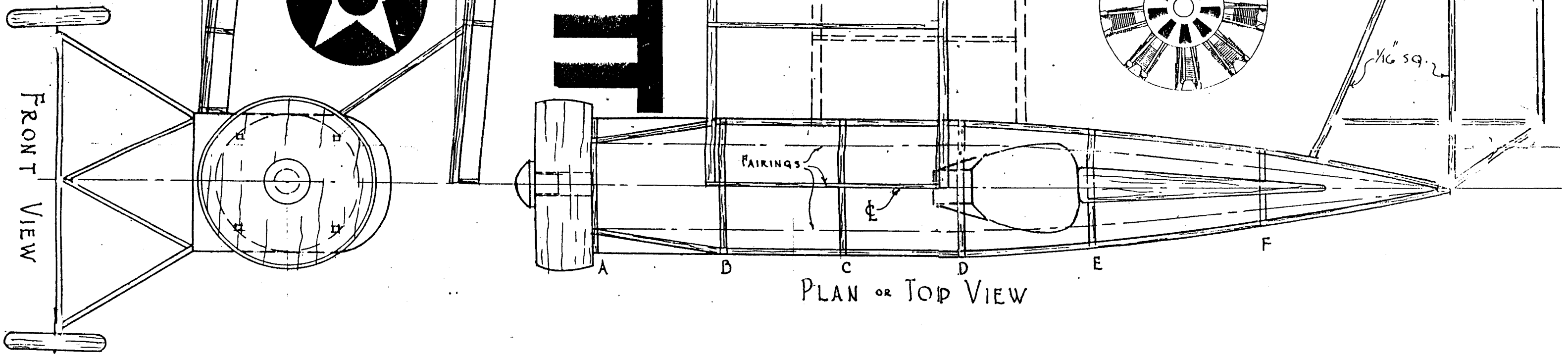




DOTTED LINES SHOW LOWER WING.



1/16 SQ.



FRONT VIEW

PLAN OR TOP VIEW

MODEL AIRPLANE SHOP

N. E. Cor. Howard and Norris Streets, Philadelphia, Pa.

CONSTRUCTION NOTES

1. The Start. The first step in building the model is to lay the drawing out flat on a work table, drawing-board or ply-wood panel. Fasten it down tightly with thumb-tacks or strips of scotch tape. Then begin on the side view and lay down, long 1/16" square balsa strips in their proper places on the drawing, holding them in place with pins. Then cut cross-pieces to length and cement in position. Make two of these sides exactly alike; true each side.

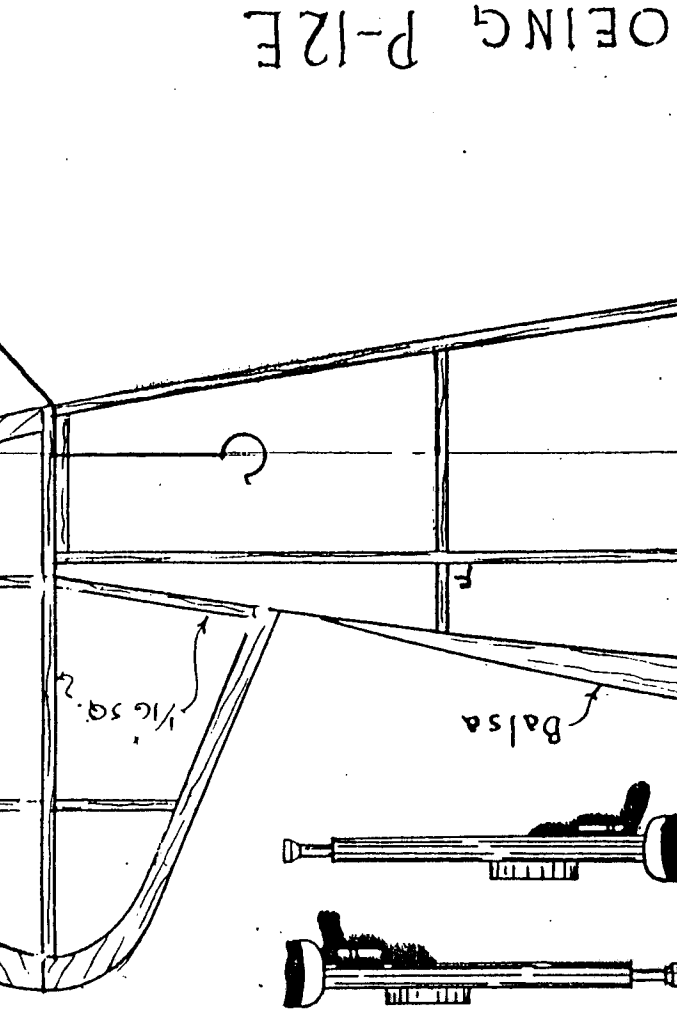


FIG. 1.

2. The Body. The next operation is to assemble the two sides to form the body. This time use the plan view. On it measure the cross-pieces and cut them to length. Set the two sides on edge on the plan and cement together at "Z." It is a good idea to bind at this point with a couple turns of thread until body is completely formed to keep it from spring- ing apart. Then remove the cross-pieces their proper places. on top and bottom in

FIG. 2.

the joints are drying. If the sides of the body make an angle at any point, as near the nose, break the balsa members at the joint by firmly bending it between the finger nails or by notching with a razor blade. If the body has a triangular top, as shown in the diagram, add this next. Check the body for trueness.

By using a few rubber or thread bands around the body it can be held while

3. Formers and Fairings. If the plane has a round or oval shape, this must be made from formers and fairing strips added to the rectangular framework. Trace the formers which are drawn on the plan on to a balsa sheet, or cut them from the stamped pieces in the kit. Cement in the proper place on the frame by checking on the plans. Then add on the fairing pieces, cementing them at the points indicated on the formers. Make the nose block next.

FIG. 3.

4. Nose Block & Tail Assembly. The nose blocks vary for some of the models and can be shaped using accord- following the shape on the drawing. and then cement it to the front of the body. Construct the landing gear according to the drawing, and fasten securely to the body.

FIG. 5.

ing to the drawing. To make the propeller assembly put the prop. shaft through the hard wood thrust bearing, add on two washers, then continue through the hub of the propeller. Next bend over the end of it into a hook, apply a drop of cement, and draw back into the propeller securing the shaft.

The tail assembly and rear hook are usually fastened on the fuselage and can be built directly from the plan. Sometimes a rear post arrangement is used, as shown above in Figure 5.

FIG. 4.

5. The Wings. On balsa sheet trace the ribs from the plan, or use the printed piece in the kits, and cut out the ribs carefully. Fasten them together with a couple of rubber bands. Sandpaper the ribs even and before taking apart, if the plane you are building has different size ribs, mark notches separately. Next lay out the leading and trailing edges of the wing drawing in the plan view, and cement the ribs in place. Be careful to build one right and

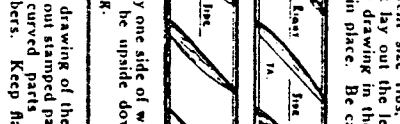


FIG. 6. RUBBER BANDS

FIG. 7.

one left wing in each case. Only one side of wing is shown on the drawing so the ribs for one side must be upside down. Follow diagram 7it in building the left side of the wing.

6. Tail Surfaces. A—Full size drawing of the rudder is found on the side view. Cut out stamped parts from balsa sheet to form the curved parts and cement to members. Keep flat.

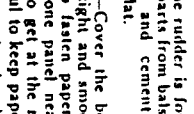


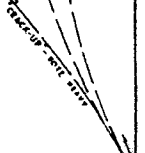
FIG. 8.

7. Assembly. A—Cover the body first, keeping the paper as tight and smooth as possible. Use banana oil to fasten paper to the frame. Leave uncovered one panel near rear-hook in order to be able to get at the rubber motor.

B—Cover the wings and tail parts; be careful to keep paper flat and tight.

C—Assemble the wing surfaces according to the drawing, taking care with placing struts. Make sure everything is even and symmetrical, and when mounting wings be sure to give them the correct dihedral angle shown in front view on drawing.

8. To Fly. First balance the plane for lateral balance. If it keeps tipping to one side, it should balance in level position. If it does not, add weight to the nose or rear, whichever should be necessary. A thumbtack or

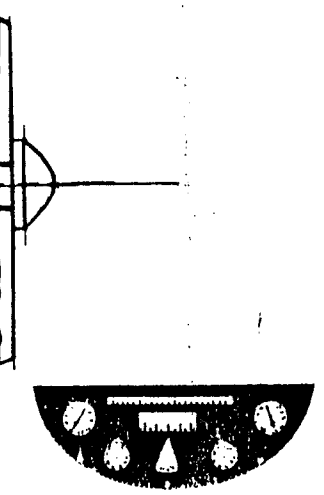


so in the nose block or beneath the rear anchor post should do the trick. If your model needs adjustment at all. Try a glide to make sure of correct balance. See diagram above. Wind the propeller about 50 times, and start plane from hand. If it dives down, bend tail up slightly after dampening with the breath. If it settles down too much, bend tail down. After making adjustments, wind propeller about 100 times or more, and your plane will fly.

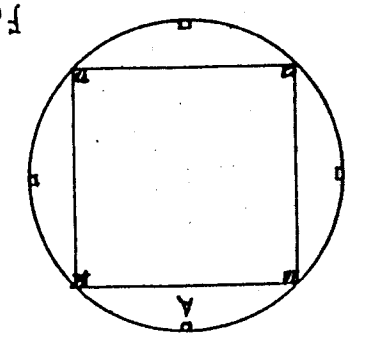
BOEING P-12E

A Late Model U.S. Army Pursuit Plane.

SIDE VIEW

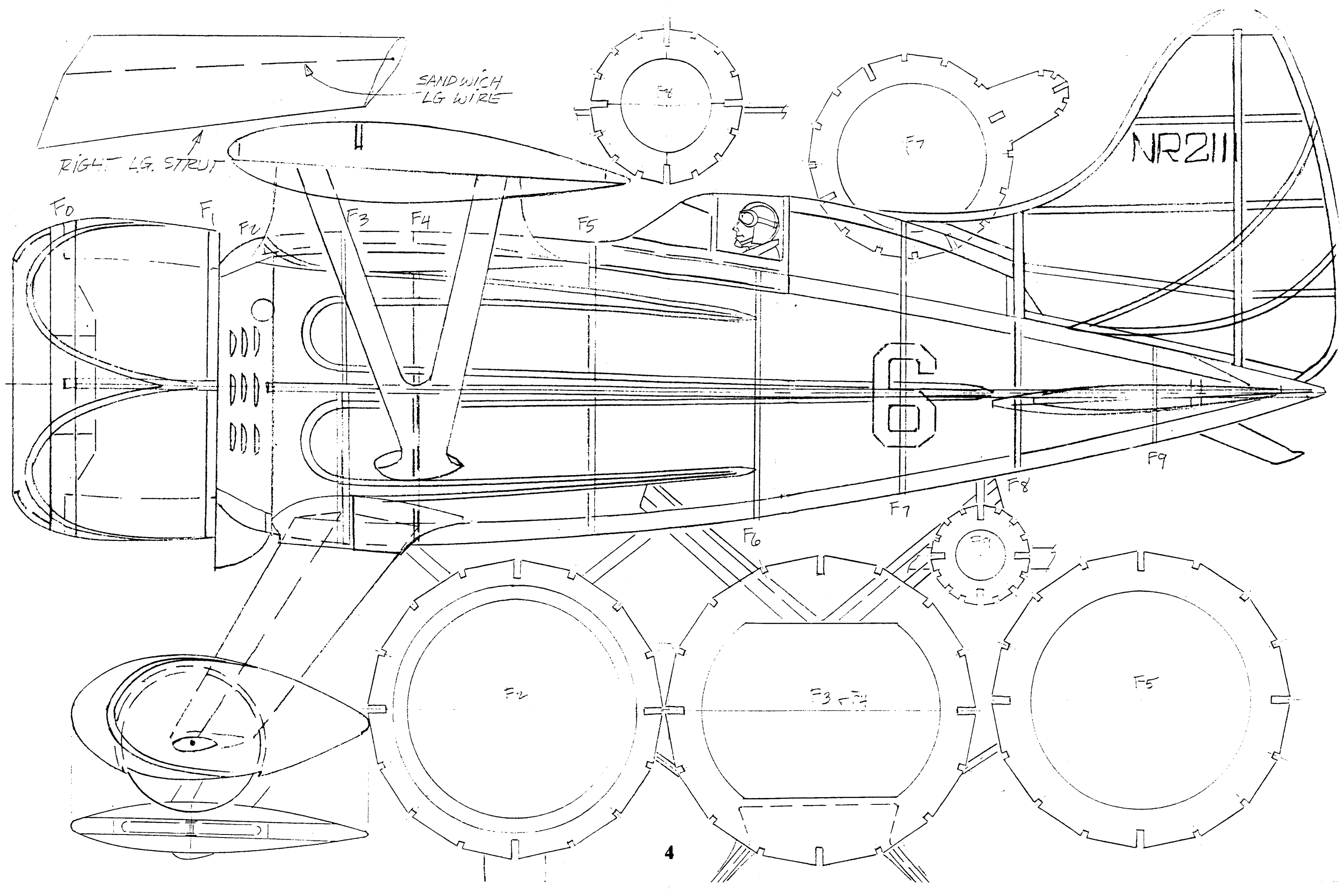


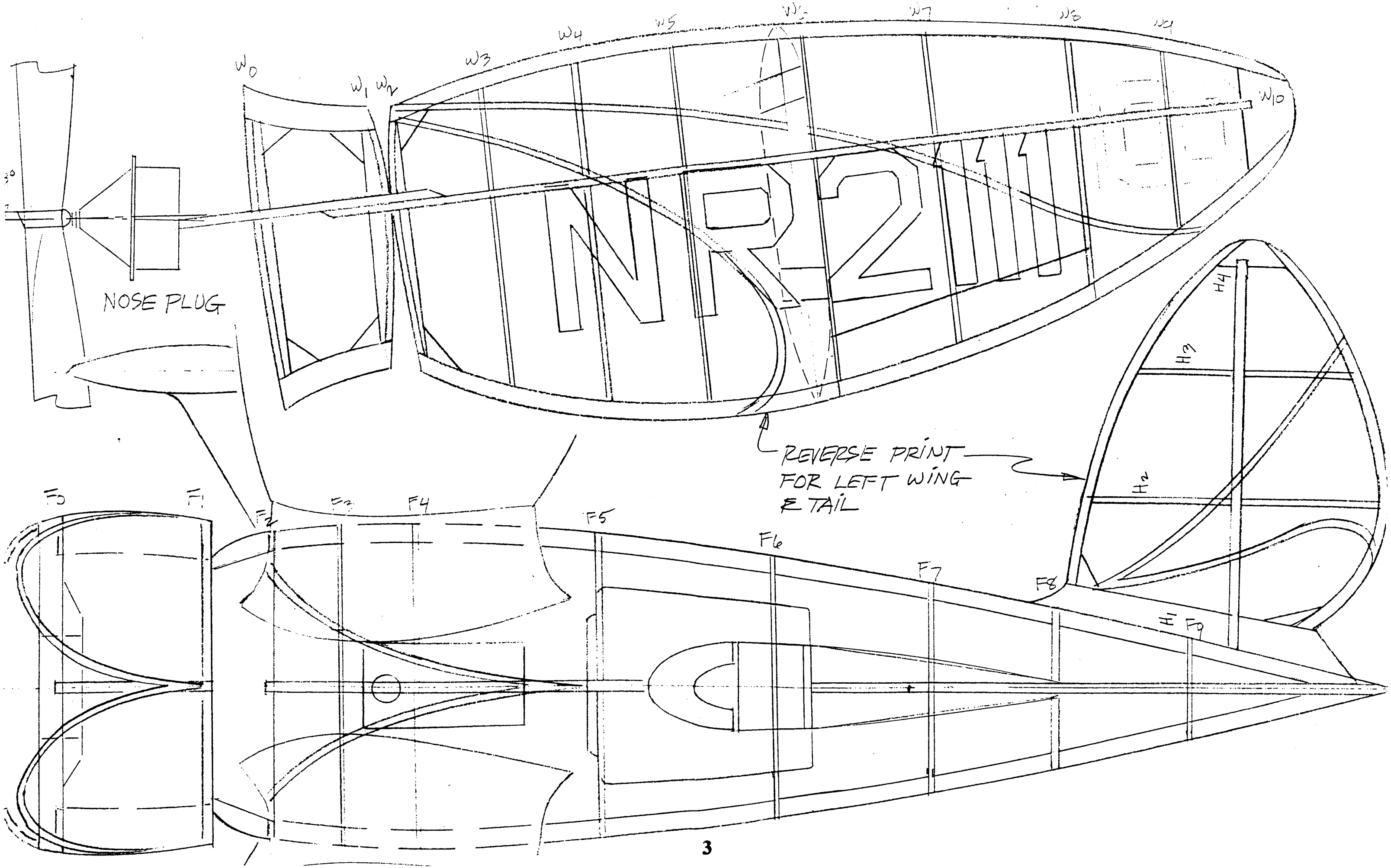
FORMERS



COLOR SCHEME –

Body + Struts – Khaki.
Wing + Tail Surfaces – Yellow.


SANDWICH
LG WIRE
RIGHT LG. STRUT
NR211
F0
F1
F2
F3
F4
F5
F6
F7
F8
F9


W0
W1 W2
W3
W4
W5
W6
W7
W8
W9
W10
NR211
NOSE PLUG
REVERSE PRINT
FOR LEFT WING
& TAIL
H1
H2
H3
H4
F0
F1
F2
F3
F4
F5
F6
F7
F8
F9

LANDING GEAR STRUT FILLET (BOND PAPER)

FOLD

W0

W1 W2

W3

W4

W5

W6

W7

W8

W9

W10

H1

H2

H3

TIP DIH. 1/2"

W1

W7

W0

W8

W5

W4

W3

W2

W6

F0

F1

F6

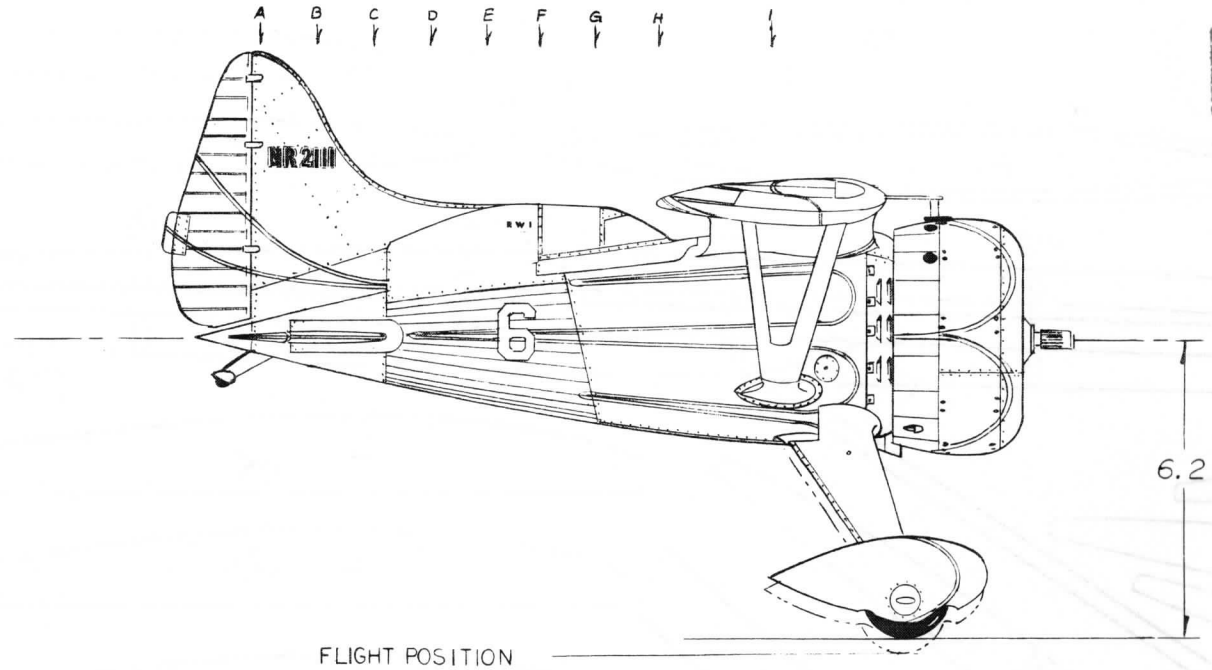
REF: RACING PLANES BY REED KINERT VOL III SERIES 1, PP. 18-20

1/16" SHEET COWL BETWEEN F0 & F1

L.G. WIRE PATTERN

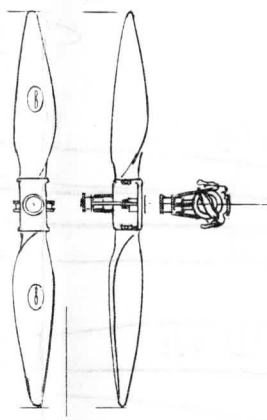
COLOR SCHEME:
RED W. BLACK TRIM EDGED IN WHITE
WHITE NOS. & REGISTRATION

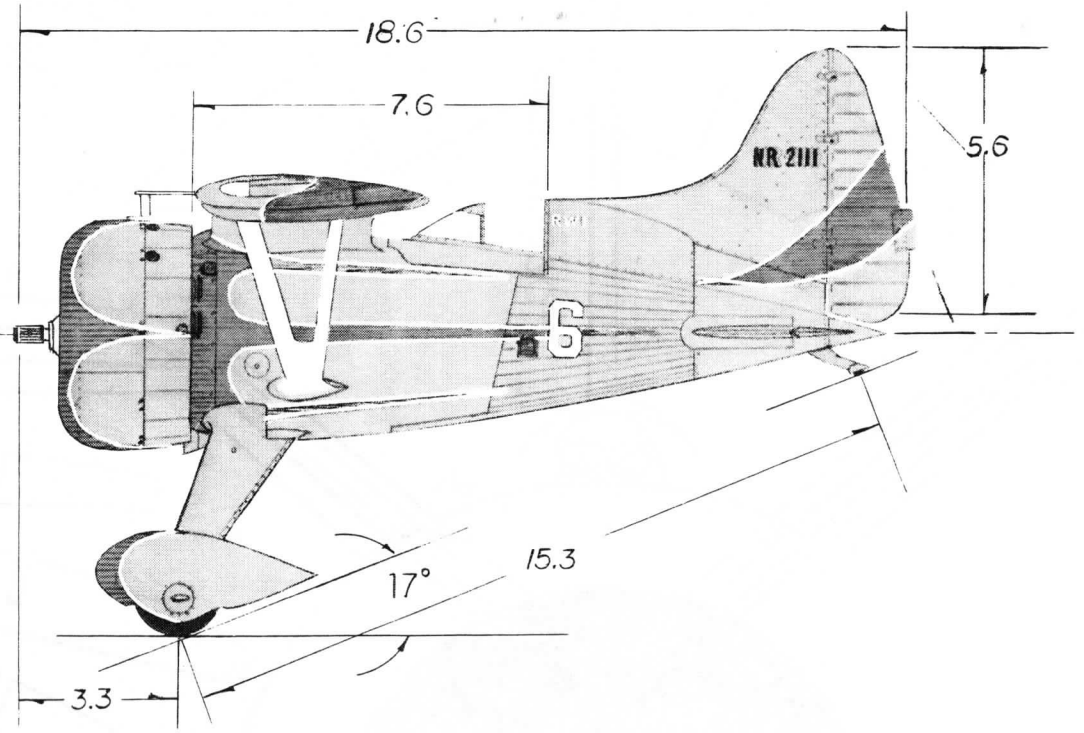
HALL-SPRINGFIELD "BULLDOG" RACER
BY PRES BRUNING
11 SEPT 2001

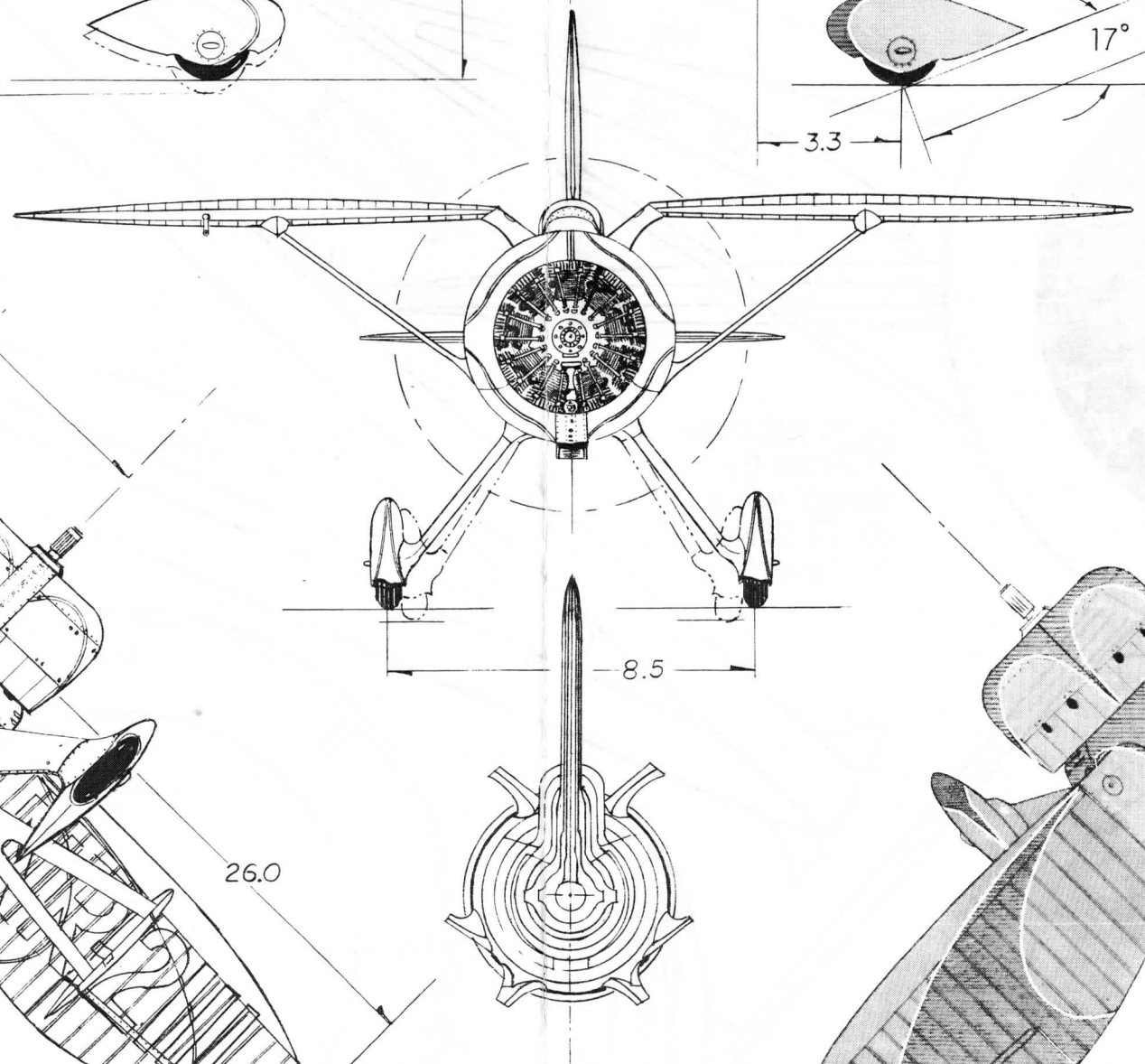


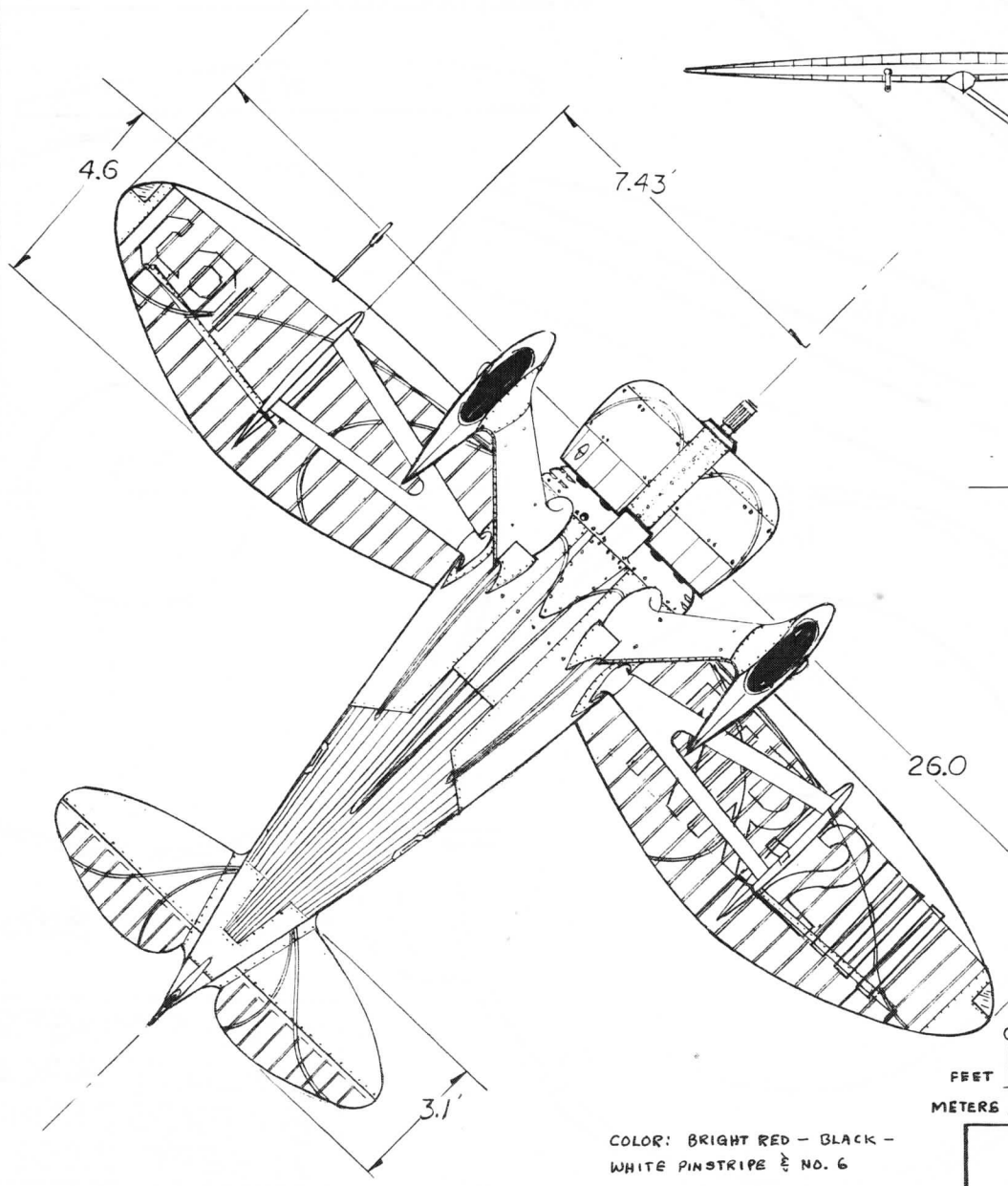
FLIGHT POSITION

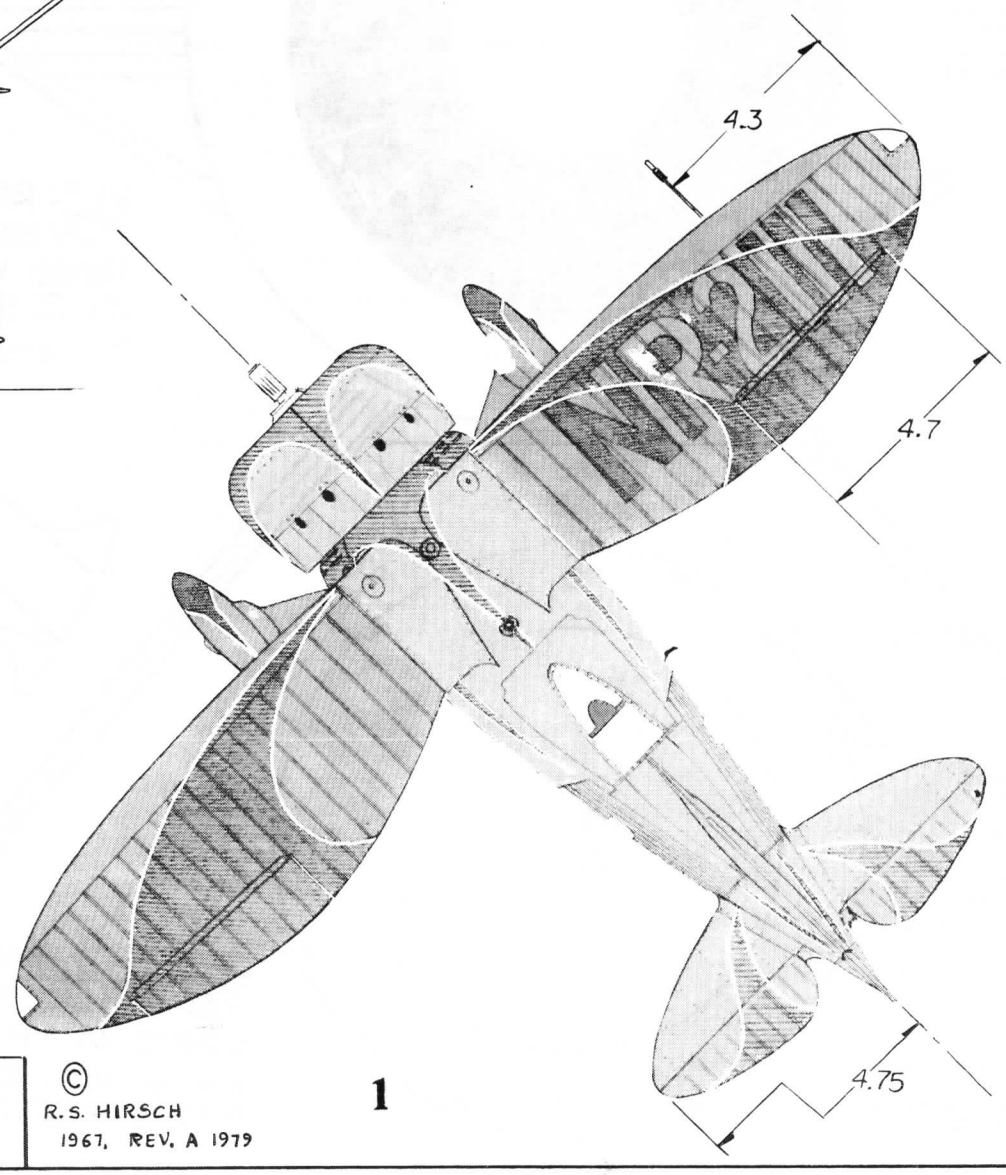
6.2











1932

0 5 10

FEET

METERS

COLOR: BRIGHT RED – BLACK – WHITE PINSTRIPE & NO. 6

HALL'S SPRINGFIELD BULLDOG P&W WASP SR.