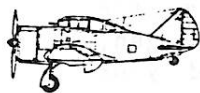
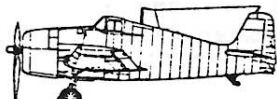


Northrop F2T-1



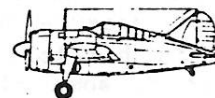
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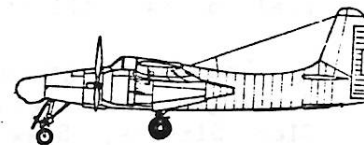
Grumman F6F-5



MAXECUTERS



Brewster F2A-3



Grumman F7F-3N



Ryan FR-1

# MAX - FAX

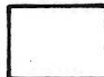
THE NEWSLETTER OF THE D.C. MAXECUTERS

SEPT/OCT 1984

## MEMBERSHIP

Dues for membership in the D.C. Maxecuters is \$10.00 per year for residents of the U.S.A., Canada, and Mexico, and \$11.00 for all other countries. Your mailing label indicates the year and month of the last issue of MAX-FAX for your current membership. A red mark in the box below is a reminder that your current membership is nearing its end. Send a check, payable to D.C. Maxecuters, to the Treasurer.

DUES REMINDER



## MEETINGS

The D.C. Maxecuters hold meetings on the first Wednesday of every month at the College Park Airport, the oldest continuously operating airport in the world.

## PRESIDENT

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2000 S. Eads St., #301  
Arlington, VA 22202

## SECRETARY

TOM SCHMITT  
11014 Marcliff Road  
Rockville, MD 20852

## TREASURER AND NEWSLETTER EDITOR

ALLAN SCHANZLE  
20008 Spur Hill Dr.  
Gaithersburg, MD 20879

## UPCOMING EVENTS

SEPT 8

D.C. MAXECUTERS SUMMER FUN FLY

NOV 17

POSSIBLE INDOOR CONTEST AT PATUXENT NAVAL AIR STATION

## CLUB NEWS ALLAN SCHANZLE

THIS ISSUE is being put together much earlier than usual due to travel requirements for the editor. Since I have been out of town for a while, many of you who have sent in your dues in the last three weeks may still see the "dreaded red X" above. That's because it hasn't been accounted for, so don't panic - just ignore the bloody fool thing.

A FEW NOTES on the FAC NATS are necessary, and the number one item has to be congratulations to our local MAXECUTER, Don Srull, who once again was the Grand National Champion. This makes three out of four times Don has won this honor, and every time it's with a new set of aircraft - not the same ole stuff year after year. If I'm not mistaken, Don entered eight events, and won five first places. Not too shabby, hey what?

Let's also give credit to local member, Dudley Prisel, who took 2nd to Don in the WW-I event. And the rest of the winners, .....well, anyone who was there was a winner, not because we saw Dennis Norman get 30 seconds with his four engined Lancaster in horrible wind, but because of the camaraderie of fellow modelers. Unfortunately, some of you were there and I didn't get to say hello, so to some extent, I was a loser. But in reality, only those who missed this event were the real losers. All of us owe Ralph Kuenz a hardy "thanks" for being CD.

The local group was well represented. In addition to Don and Dudley, the Washington contingent had entries by Tom Schmitt, Dan Driscoll, Paul Spreiregen, Glen Simperts, Stew Meyers, Ray Rakow, Claude Powell, Paul Gaertner, and your editor. That adds up to eleven - a formidable percentage of the total entry.

WHILE ON THE subject of contests, notice in the upcoming events that we have a "possible" repeat of the Patuxent Naval Air Station indoor event on November 17th. Details will be given in the next issue.

I also want to let you know that the FAC POWER event at our September 8th FUN FLY will be run under a set of experimental rules. Just about everyone agrees that the current rules need revision. So here's what we're going to try on September 8th.

1. Static evaluation as per FAC scale.
2. Bonus points limited to multi-engined aircraft. Five (5) bonus points for tandem engines on the fuselage centerline, and seven (7) points for each engine offcentered. Example - B-25 gets 14 bonus points, B-17 gets 28, Dornier 335 gets 5.
3. Flight points cannot exceed static points, excluding bonus points.

And don't forget. A.H. Zed Aircraft has supplied some Brown CO<sub>2</sub> engines and accessories which will be awarded to encourage the building and flying of CO<sub>2</sub> model aircraft. Winners are NOT guaranteed an engine, and the prizes may be awarded to anyone who enters the contest.

IN THE MAY/JUNE issue of MAX-FAX, we had a photo of Frank Renaut winding a model that is held by a most interesting "stooge". Only one individual wrote to inquire about this "model holding mechanism", and that was Dean McGinnes in Lakeland, Florida. When he requested a 3-view of this interesting design, Tom Schmitt contacted Frank for further details. As usual, Frank came through with sparkling results - a side view, a 3-quarter rear view, and a highly detailed front view. These were gorgeous black and white photos which revealed every possible detail of the stooge. They were forwarded to Dean, who responded with the following:

"I must, reluctantly, return the documentation that you and Frank were so kind to send me. After much careful and intense study of the material, I have concluded that with my poor skill, I could not come close to reproducing in model form anything which resembles the prototype, or any reasonable copy thereof. Therefore, I must (wistfully) return the documentation.

To you, I give my thanks for responding to my request in the highest traditions of the FAC. To Frank, please transmit my thanks and also my envy. Some guys get all the breaks!"

Now, if all this appears a little esoteric and confusing, I suggest you go back and review the photo, ....., carefully. Then it may all make some sense. And we're sorry, folks, but the documentation is no longer available for dissemination. Perhaps some of you will be enticed into a more careful reading of MAX-FAX in the future. Tee Hee, Tee Hee!!

A NOTE WAS also received from Bill Hannan announcing Volume 2 of SCRAPBOOK OF SCALE. This interesting collection of information offers plans and 3-views of rather obscure aircraft, and will be a welcomed addition to your book collection. An order form is included in this issue.

THIS ISSUE features a peanut plan by Kevin Sharbonda of the Thomas Morse MB-3, which was also denoted as the Boeing MB-3A. An extensive description of this aircraft is given in the Historical Aviation Album No. 1. The colors are noted on the corresponding 3-view. In addition to his plan, we have included the first of a three part series entitled, "IS A HORIZONTAL TAIL NECESSARY?" which was taken from the April 1984 issue of SPORT AVIATION. An interesting 3-view was sent in by Dave Stott, and you'll find four fantastic pages of photos by Tom Schmitt of aircraft seen at the FAC NATS.

Don't miss our Summer Fun Fly on September 8th. We've been very lucky with the weather at this annual event for the past six years, and we're hoping for another fine day for Hung to digest several of our models. See ya there.

D.C. MAXECUTER'S '84 SUMMER  
FUN FLY Sept 8  
9<sup>00</sup>  
to  
6<sup>00</sup>



AMA SANCTION  
1050

CONTEST DIRECTOR  
Allan Schanzle  
20008 Spur Hill Dr.  
Gaithersburg Md. 20879  
301 840-5884

#### EVENTS

##### FAC SCALE:

Judging starts at 11:30 AM. Qualifying flight must be made by this time.

##### FAC POWER SCALE:

For electric, CO<sub>2</sub>, and gas power.  
No tank restrictions. Qualifying flight by 11:30 AM.

##### MASS LAUNCH:

THE RACES 1:00 PM. A single launch for all racers.  
WW I 1:30 PM. Multiwings only.  
WW II 2:30 PM. Combat WW II aircraft only.  
GOLDEN AGE 3:30 PM. Any aircraft built from 1920 to 1935 and any plane not designed for military use from 1935 to 1940. Planes eligible for the races excluded.  
MODERN 4:30 PM. Post WW II aircraft only.

##### EMBRYO:

FAC RULES.

##### TRANS-COMSAT SPEED AND NAVIGATION RACE:

Two events for a single mass launch. For all scale models with at least 40 FAC points, excluding bonus points.

##### H.L. GLIDER:

Per AMA

##### CATAPULT GLIDER:

Must use MAXECUTER launching pole. AMA H.L. scoring.

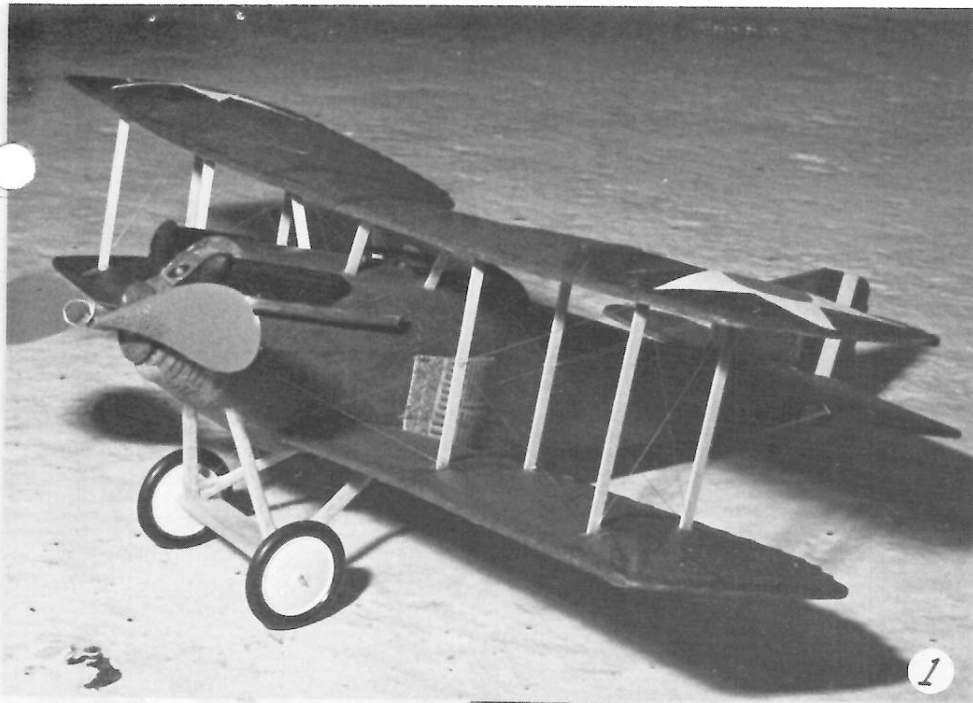
PHOTO PAGES

Tom Schmitt

1. The featured plan of this issue, a Boeing MB-3A by Kevin Sharbonda.

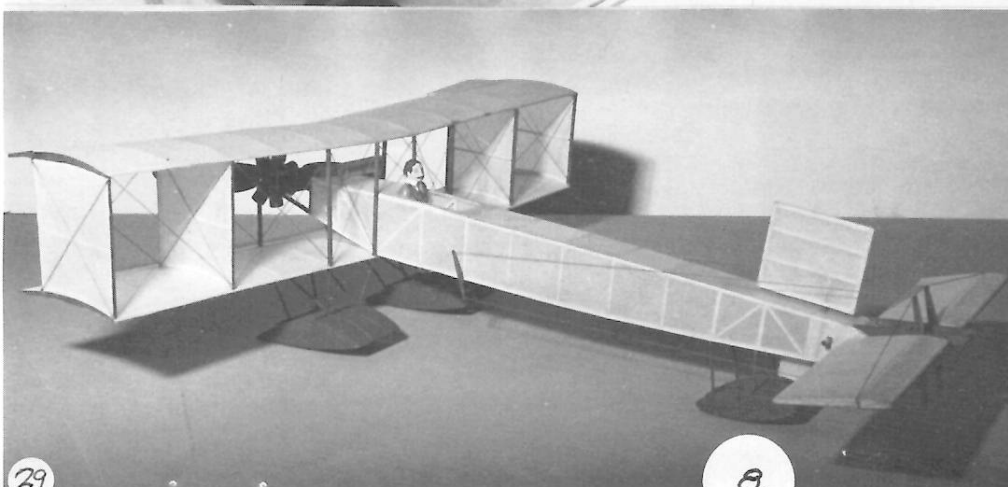
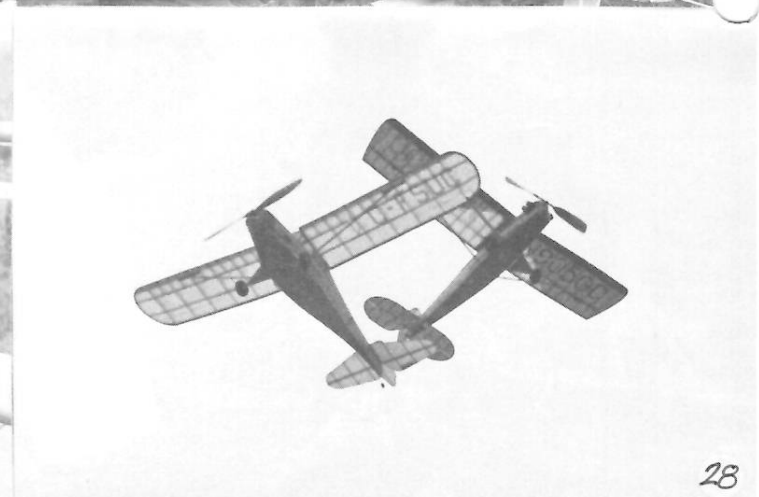
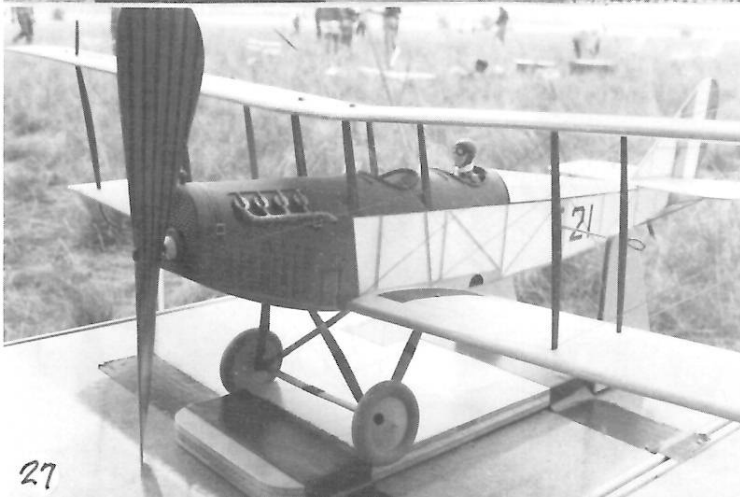
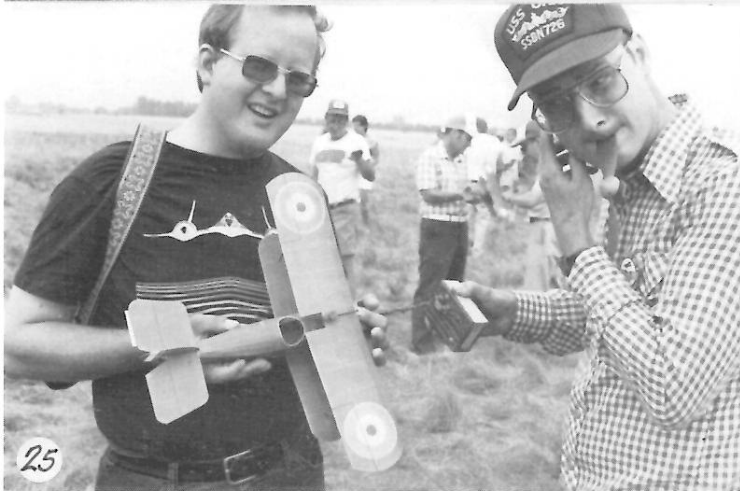
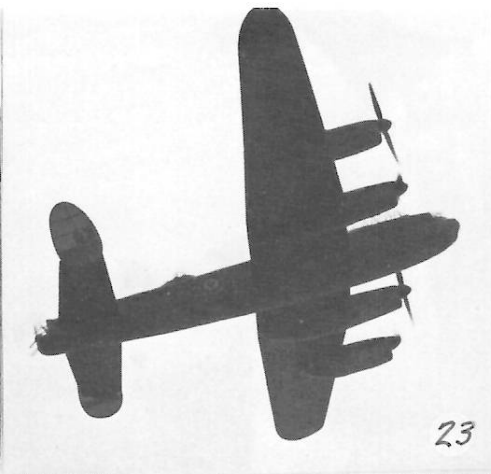
FLYING ACES NATS IV

2. This is what it is all about; Paul Gaertner having 'fun' with his twin CO2 Dornier Do 18L flying boat.
3. Pres Bruning releases his very pretty Albatross with a great lozenge job.
4. The winner of the EARL STAHL Perpetual Trophy. Pres Bruning's beautiful C.R. 42 "Falco". His plans were in the Jan-Feb 1984 Flying Aces Club News.
5. Earl Stahl giving the eagle eye to Don Srull's P-13 entry in Perpetual Trophy contest, and also winner of the F.A.C. Scale event.
6. Fernando Ramos' great flying Arrow Active. Diesel powered with pendulum ailerons and a beautiful aluminum finish; competition was tough for the EARL STAHL trophy.
7. Ralph (Rottensox) Kuenz, our able Contest Director and judge for the Perpetual Trophy, examining Mike Midkiff's "Grace".
8. Dennis has done it again with his high flying Lancaster, complete with live crew.
9. Mike Midkiff's Sopwith 1 1/2 Strutter.
10. Tom Arnold with his twin rubber powered Arado; twins seemed to be everywhere.
11. A magnificent Fokker by Bill Noonan; jumbo rubber with single motor and active propeller.
12. Scaled up 200% from MAX-FAX peanut plan, Bill Mitchell's ambitious rubber powered Gotha Go. 147b.
13. Don Srull flexes his biceps as he receives Grand Champion trophy from our FAC Commander Lin Reichel.
14. Jack Moses, another prime mover behind the FAC Nats, readies his Fokker for WWI.
15. They are off; Jack and his Fokker are in the foreground.
16. A beautiful jumbo P-40 by Jack Moses.
17. Dave Rees and his Crosby racer for the Greve event.
18. Bob Clemens lends a hand to Bill Noonan winding his Halberstadt with another great lozenge job.
19. MODEL AVIATION's flamboyant scale columnist, Bill Warner, with his pretty Parnell 'Elf'. Watch for his color coverage in a future column.
20. John Stott and Mark Fineman watch the action. Mark is holding his great flying Nikitin-Shevchenko. His peanut plan was in the July-Aug '83 FAC News.
21. WWII mass launch; Mike Midkiff's Grace in the foreground.
22. The Glue Guru, Leon Bennett, with his aluminum Micafilm covered P-39; nice job GG. But why Afganistan?
23. Dennis Norman's Lancaster overhead on one of its great flights.
24. Henry Komp with his jumbo Ryan from a Megow plan.
25. WWI second place winner, Dudley Prisel, with his version of Don Srull's Grain Kitten; Glen Simpers holding. Dudley, that scratched ear probably cost you first place won by Don with his Kitten. See Jan-Feb '84 MAX-FAX for Don's Plan.
26. Jack McGillivray winding his twin rubber powered jumbo DH Sea Hornet; another great flying twin.
27. Phil Cox did a beautiful job on his Jenny.
28. You go this way and I'll go that way; one of the few near misses over Utica. Two jumbos, a T-Craft and a MI Ace.
29. Don Srull's winning peanut, a Voisin seaplane racer.
30. Tom McCoy treated the FAC Nats attendees to many spectacular flights of his compressed air powered King Air (King Burd).











# IS A HORIZONTAL TAIL NECESSARY?

*Beginning a digest of the elementary and basic functions of a tail whether it is positioned at the front or rear or even hiding somewhere disguised as something else.*

## Part 1

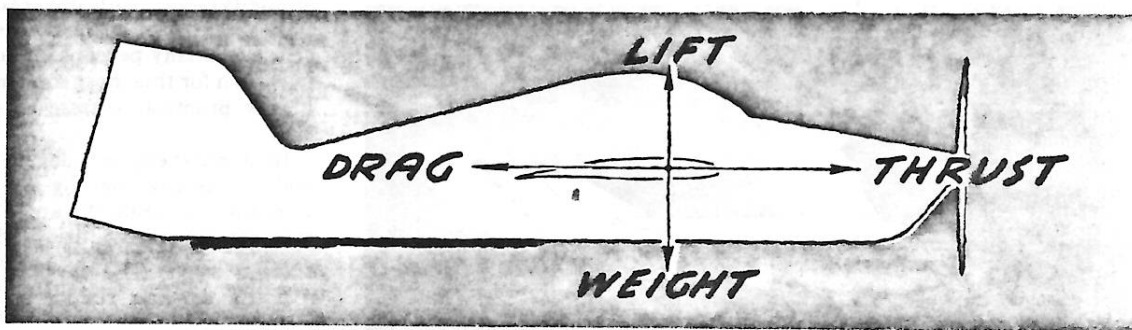


Figure 1-1 — Equilibrium

*By George B. Collinge  
(EAA 67, Lifetime)  
5037 Marlin Way  
Oxnard, CA 93030*

*Illustrations by the Author*

**I**T IS ANTICIPATED that even the most knowledgeable will give assent to a review of some fundamental aspects of why there are tails, how they work and don't work, especially as so many different shapes of airplanes are now coming onto the aeronautical scene.

As with all explanations in this

series, they may not be the only ones around but these are in plain English and will mesh readily with observations of other related aerodynamic phenomena without revamping theories midstream.

The business of a tail is in large part, concerned with longitudinal stability which conventionally is examined in itself, separate from both lateral and directional stability.

To start, if an airplane's four principal forces were hypothetically balanced through a single point at a steady speed, there would be no need for a tailplane (Figure 1-1). Of course, this condition, if ever achieved, could not remain long. For if the speed should change just a little bit, the

wing lift would change and the exactly counterpoised vectors would be disarranged.

If the angle of attack alters, the center of lift (cp) begins to move forward or backward (more on this later). So unless somehow constrained, a runaway cp could completely topple the airplane. A rear tail prevents this from happening and does it in an extremely simple and elegant fashion, which might help explain why it has been with us for so long.

An airplane is conventionally made stable by the use of "aerodynamic decalage" (Ref. 1) or "Longitudinal dihedral" (Ref. 2) shown exaggerated in Figure 1-2. On certain machines the

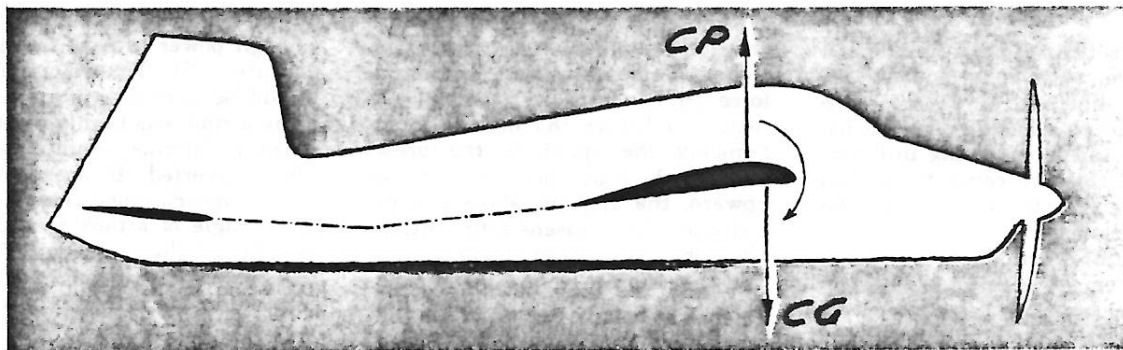


Figure 1-2 — Most Airplanes

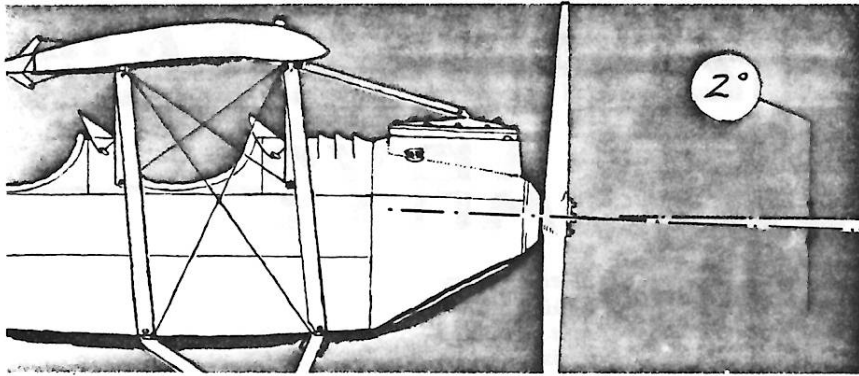


Figure 1-3 — Pietenpol Air Camper 1932

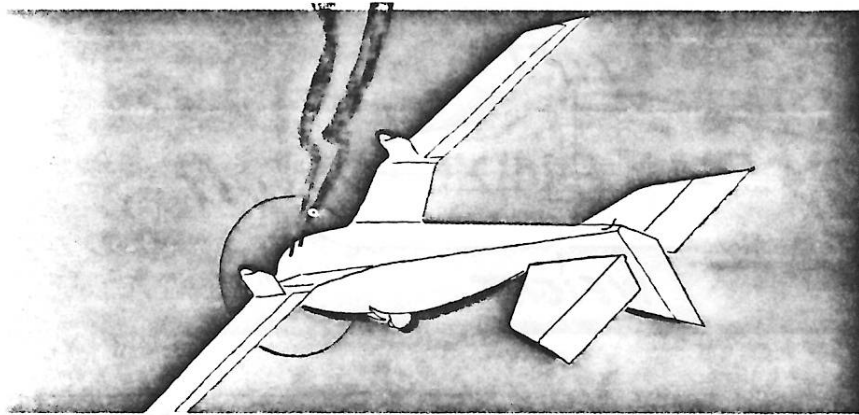


Figure 1-4 — Arrow Stability Going To Work

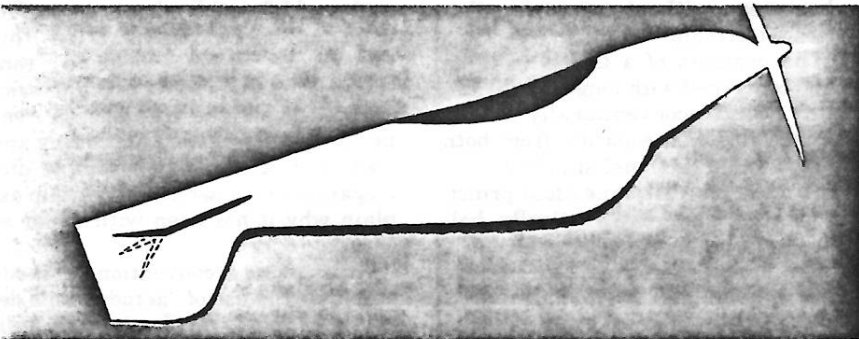


Figure 1-5 — A Pitts it ain't.

incidence setting of the tailplane will be positive, with no geometric longitudinal dihedral. However, there should still be effective dihedral because the tail is operating in downwash and this can cause the actual angle of attack to be less than the angle of incidence.

A rear tail functions in the following manner. At a selected speed, a deliberate nose-down couple, comprised of the cp and weight (CG) is equalized by a small download on the stabilizer. This arrangement performs automatically. If the nose low-

ers (for some reason) the speed increases. This creates a stronger downforce on the stabilizer, which consequently brings the nose back up, reducing the speed to the preset value. If the nose should be displaced upward, the airplane slows and the stab down-force lessens sufficiently to allow the CG to lower the nose.

If the engine stops, the airplane slows and the stab down-force diminishes as before. But this time the nose lowers and stays down. Speed increases until countered by the originally established stab down-force.

The airplane is again balanced, but in a glide.

To climb, the throttle is opened and the slipstream and downwash increase the stab down-force to cause a nose-up condition. Thus, longitudinal dihedral makes an airplane seek to fly at an initially programmed angle of attack. If opening the throttle causes too much or too abrupt a nose-up movement, a possible alleviating remedy is a slight down-thrust built into the motor mount (Figure 1-3).

It is distressing to a few that this conventional airplane has to carry an induced tail-down-load, however small. Yet, a look at the whole picture shows that the commonly used "unstable-type" airfoil generates quite high values of lift and can very easily sacrifice a tiny percentage to the tail in return for this most convenient and highly practical system of stabilization.

In a nutshell, the degree of pitch stability is governed by the CG location, the stab area, the angle at which it is set, its aspect ratio and the distance from the CG. Tails also function in other ways. The tailplane along with the fin and rudder serve like feathers on an arrow, to quickly point the airplane in the direction it is actually going, after a large disturbance such as a lomcevak or tail slide (Figure 1-4). The tail's chord is often large, to benefit from as high a Reynolds number as possible. Additionally, low-aspect ratio helps the tail to resist separation (stalling) and to remain effective at high angles, especially after the main wing is stalled or malpositioned. Tail cross-sections are of symmetric proportions if they are to operate equally well, negatively or positively.

On most airplanes, more up than down elevator is provided, to be able to raise the nose adequately during a flare for landing when the CG is at the full-forward limit and the speed is low. Elevator down-travel is based on safe stall recovery when at full-aft CG limit. If "normal" airplanes were made to do aerobatics and inverted flight, their elevators might not have enough power to hold the nose "up" (Figure 1-5). This lack of control would be particularly evident if the wing airfoil was highly cambered, as this type becomes inordinately stable when inverted. It doesn't lift well either, upside down, necessitating a high angle of attack to support the weight of the airplane. Therefore, greater elevator power may be needed just when there might not be any more.

On the other hand, inverted flight would be no problem if the airplane was expressly designed, with a sym-

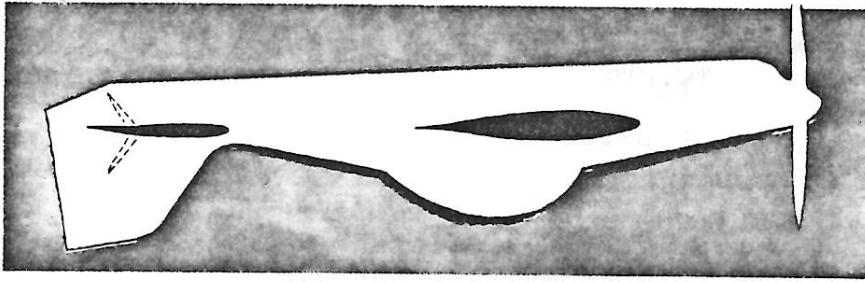


Figure 1-6 — Much better.

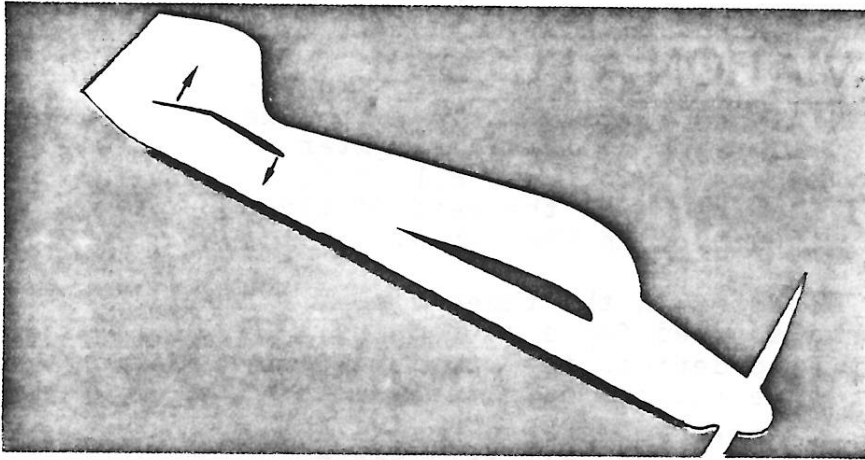


Figure 1-7 — Tail plane at cross purposes . . . in a dive.

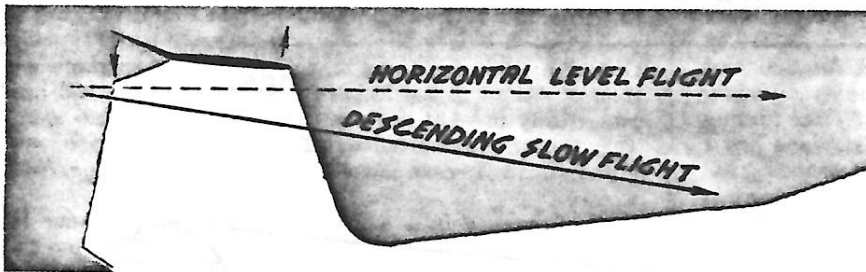


Figure 1-8 — On an approach.

metrical main-wing airfoil and with elevators of ample travel, both up and down. Wing and tail would be set at zero degrees incidence. Longitudinal dihedral would pertain no matter which was up, due to downwash from the front wing flowing over the tail (Figure 1-6). And there should be little trim change, if any, when switching from upright to inverted and vice versa.

Because a pilot must change an aircraft's attitude in order to climb, zoom, descent or dive, he will, understandably at these times, override the basic stabilizing function of the tail. For example, in a dive, the speed and longitudinal dihedral act to increase the tail down-load forcing the rear end downward bringing the nose back up and the airplane out of the dive.

Accordingly, if a pilot wishes to dive he must provide an opposite force and push into it and continue pushing to hold it in (Figure 1-7). Stick force should naturally increase with speed. If he releases the pressure, the nose immediately rises.

Normal use of trimming devices in no way alters the inherent stabilizing mechanism. However, its employment is avoided in this review in order to hold explanations to a minimum. Be that as it may, when a trimmer is operated, the sense should be the same as the primary controls; that is, forward to relieve a stick push-force, and backward to ease a pull-force.

As already described, to dive or to increase speed should necessitate a push on the stick. A climb or speed

reduction correspondingly demands a pull force. And this elevator displacement can again result in part of the tail pushing down and part pushing up. For example: during an approach, the speed is decreased by applying a gradually stronger pull, deflecting the elevator up. Initially, the up-elevator combines with the longitudinal dihedral to intensify the dwindling tail-down force. At low speeds, the aft end is down so far that the normal stab down-load diminishes to zero. In fact, the stab can start lifting, trying to move the nose downward, to dutifully recover the original angle of attack and airspeed. In opposing the stab with up-elevator the pilot once more sets up contrary reactions over the tail (Figure 1-8).

A high-positioned tailplane cannot benefit greatly from downwash. Therefore, a one-piece design may be appreciably more efficient in this case, presenting a single, uninterrupted surface and a single reaction.

Next month . . . more on pitch stability.

#### References:

1. Aerodynamic Decalage, Aerodynamics of the Airplane by Clark B. Milikan, John Wiley & Sons, Inc., New York, 1941, page 145.
2. Longitudinal Dihedral, Mechanics of Flight by A. C. Kermode, Sir Isaac Pitman & Sons, Ltd., London, 1942, page 152.

#### ABOUT THE AUTHOR

George Collinge (EAA 67) is one of the earliest EAA members . . . early enough that he was the designer of the EAA logo. A native of Canada, he enlisted in the RCAF in 1940, learned to fly in the system, then became an instructor and eventually attained one of the top military flight instructional (a-1) certificates. Most types of aircraft in the inventory were flown regularly, from Tiger Moths to Lancasters. Also during World War II, he lectured on aerodynamics, engine handling and range/endurance at CFS Trenton and ECFS Hullavington.

From 1947 to 1951 George was a jet fighter pilot with the Canadian 400 Squadron, after which he and his family emigrated to the U.S. where he has subsequently worked for the computer and aircraft equipment industries in Southern California. He was a Charter member of both the San Fernando and Santa Paula EAA Chapters. Throughout EAA's existence, George has been a frequent contributor of both articles and artwork for *SPORT AVIATION*.

## RUMANIAN SKY ROAMER

by

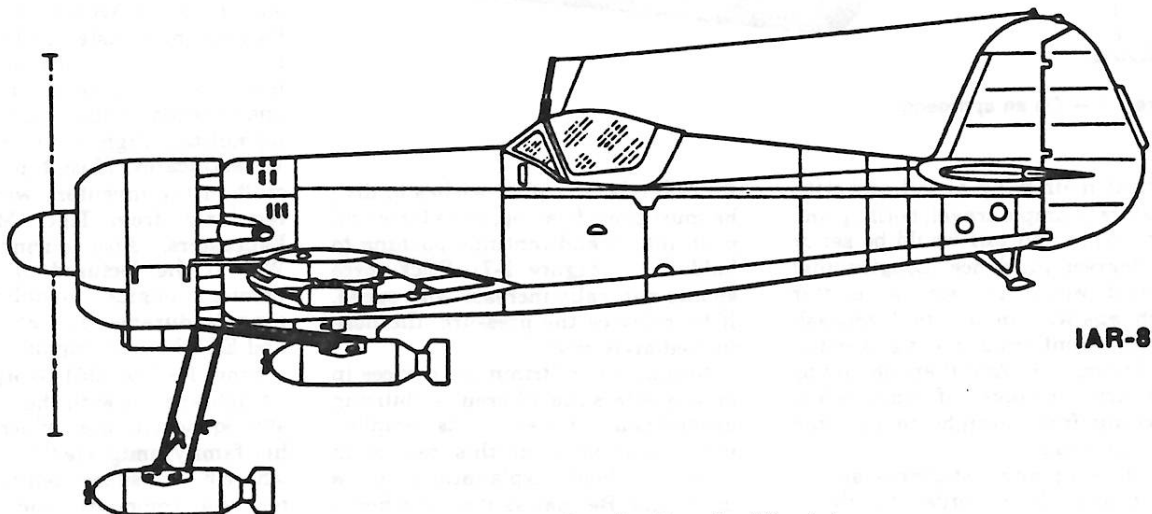
Inescu Zabul

Industria Aeronautica Romana (IAR) was formed December 1, 1925, and was in full swing by February, 1927 building Morane-Saulnier MS-35, & Potez 25 biplanes under license. Even the venerable Fleet model 10 was produced, as well as IZL P-11 and P-24 fighters.

IAR began designing and building their own design fighters about 1930, culminating with the IAR-80 in 1940. This racey looking fighter was powered by a home grown 1,000 H.P. radial and could hold it's own with the rest of the sky slicers of it's type in the world.

The model 81C depicted in the three view was a late version also used for dive bombing. The three view also depicts the standard camouflage pattern. The roundel coloring was an insignia blue center, orange-yellow ring next, and a red outer ring. The tail skid was a steel grey color. The company logo, and numeral "397" on the fin were white. The rest of the color and marking is noted on the three view drawing.

So there she is, Skysters, no golden ear rings, but a beauty nonethe less. Who will be the first of us to build one of these Liberator lacerators????



Bomb Installation.

Second in the **Scrapbook of Scale** series, this volume contains selections gathered from the work of Bill Hannan, dating from 1966 through 1984. Much of it originally appeared in the following publications: **Aeromodeler** (England), **American Aircraft Modeler**, **American Modeler**, **Model Aviation**, **Model Airplane News**, **Model Builder**, **R/C Sportsman**, and **Le fanatique de L'AVIATION** (France). Other material was created especially for this book and has not been published elsewhere.

Featured are eight model construction plans plus five 3-view drawings suitable for scale modeling use. The unique mixture comprises a simple catapult glider, three rubber-powered profiles, three all-balsa built-up models and a Peanut.

Additionally there is a history of CO<sub>2</sub> engines, a tiny field/kit transportation box for Peanut aircraft, travel and research tips for model builders, and even a dash of humor...well, at least we think so!



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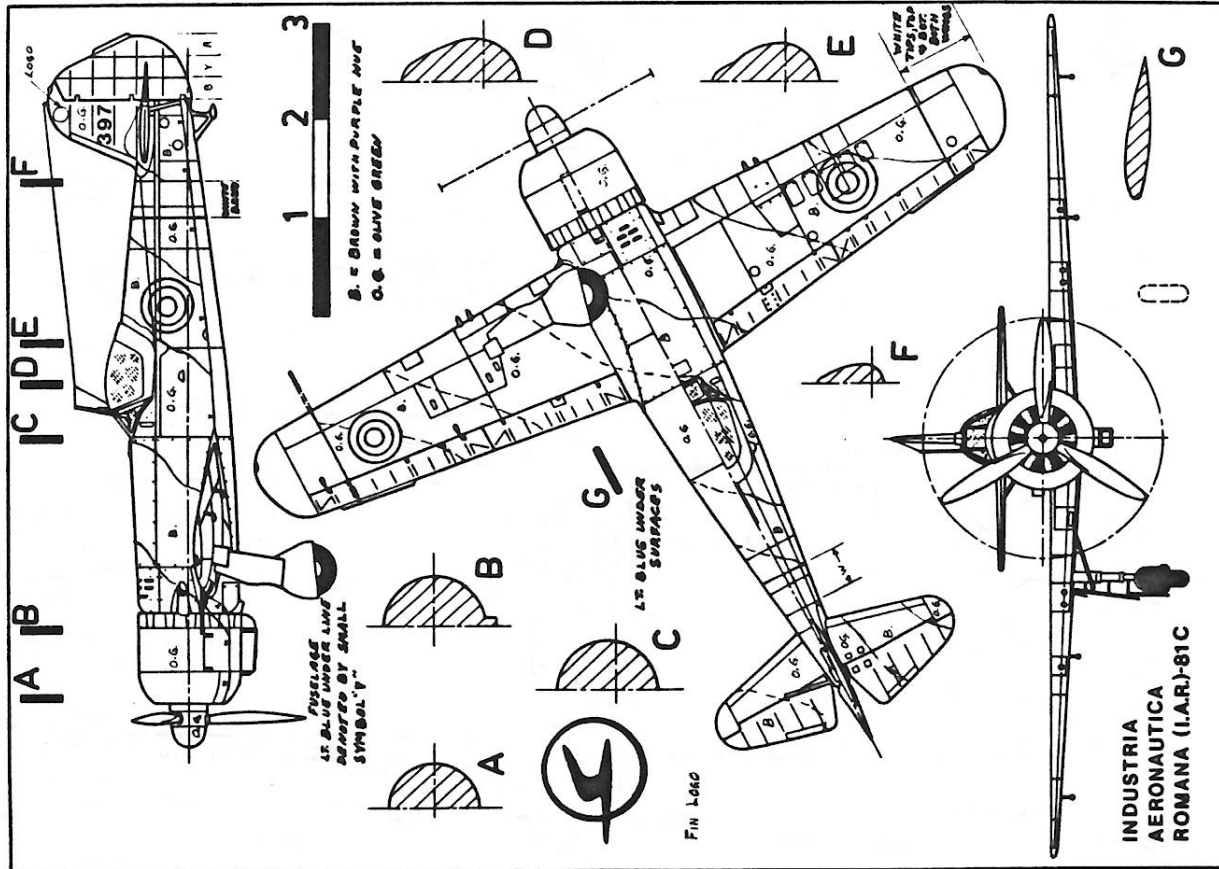
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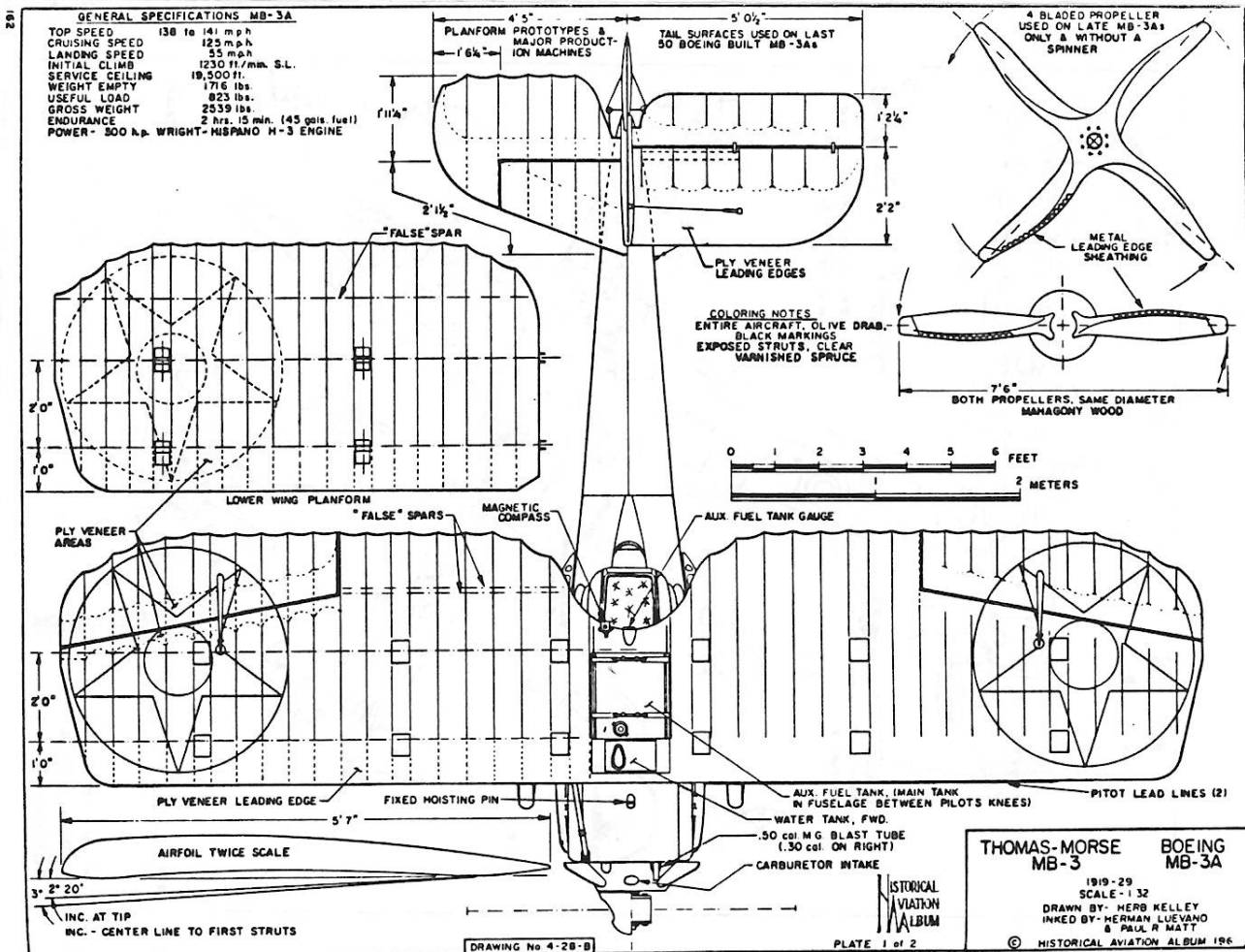
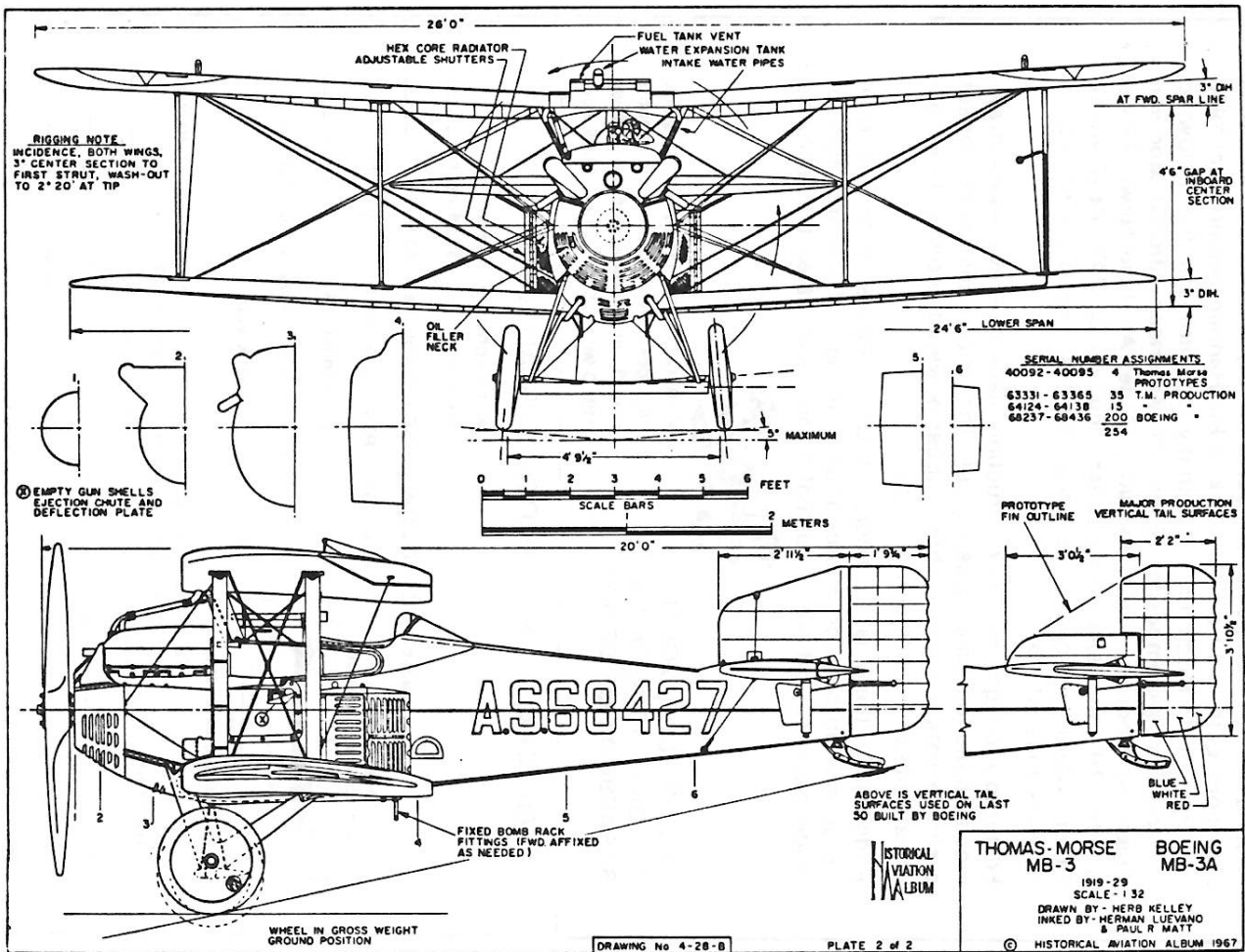
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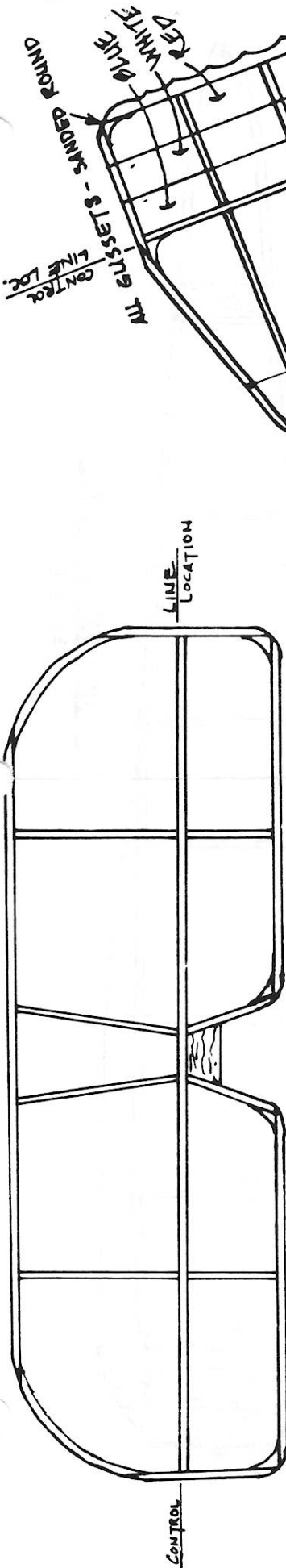
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COUNTRY \_\_\_\_\_ ZIP \_\_\_\_\_

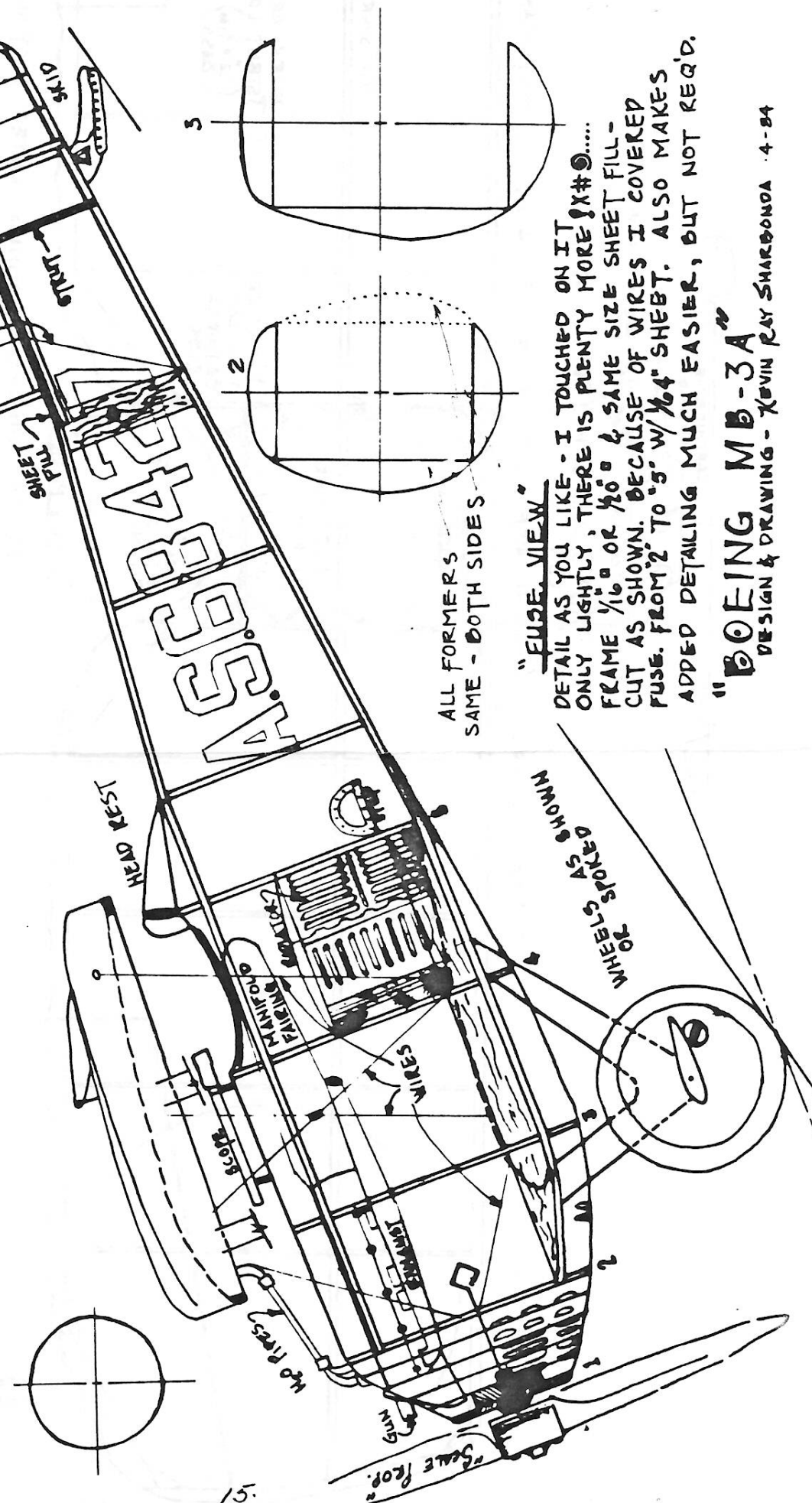
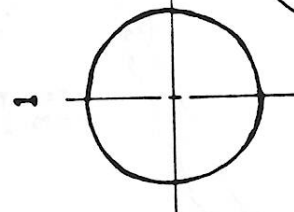
Foreign customers please pay in U.S. funds or by International Money Order.







"STAB. PLAN"



ALL FORMERS  
SAME - BOTH SIDES

"FUSE. VIEW"

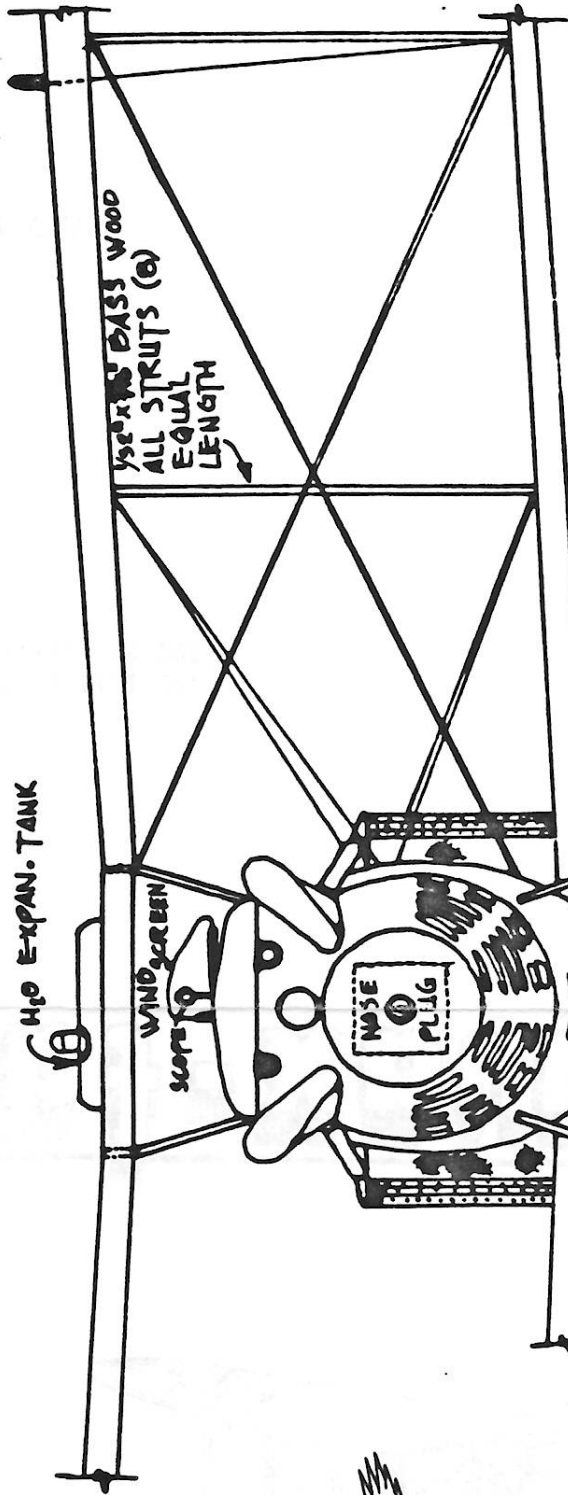
DETAIL AS YOU LIKE - I TOUCHED ON IT ONLY LIGHTLY, THERE IS PLENTY MORE (X#).... FRAME  $\frac{1}{16}$ " OR  $\frac{1}{32}$ " & SAME SIZE SHEET FILL - CUT AS SHOWN. BECAUSE OF WIRES I COVERED FUSE. FROM 2" TO 5" W/  $\frac{1}{16}$ " SHEET. ALSO MAKES ADDED DETAILING MUCH EASIER, BUT NOT REQ'D.

"BOEING MB-3A"

DESIGN & DRAWING - KEVIN RAY SHARBONDA 4-84



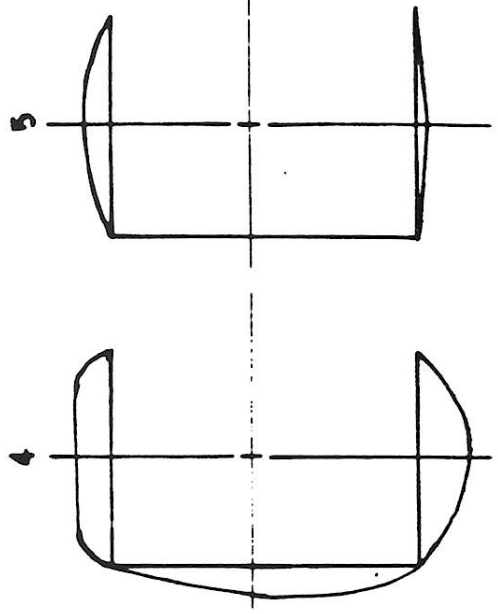




1/16 x 3/16 BALSAM SAND TO SHAPE

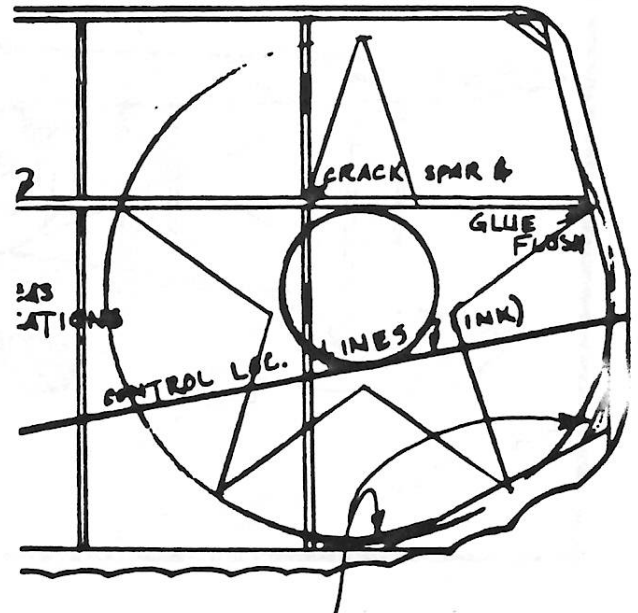
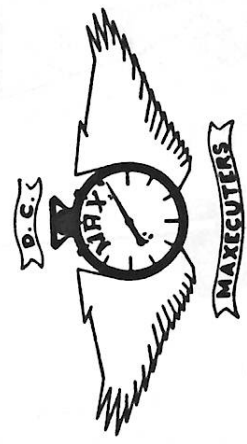
WIRES TO GEAR STRUTS 1/4 x 3/8 (SAND TO SHAPE)

12 RIBS, & TRAILING EDGE 1/16"



FRONT VIEW & DETAILS

COLOR - ALL OLIVE DRAB, BLACK MARKINGS, STRUTS CLEAR VARNISHED SPRUCE



FIRST CLASS

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Cathetersburg MD 20879

SEPT '84  
OCT

# max-fax

