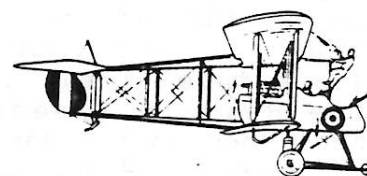
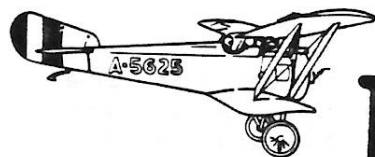


Single-Seat Fighter's Ancestor - 1913



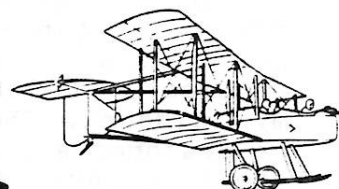
Two-Seat Fighter - 1914



Earliest U. S. Navy Fighter

# MAX - FAX

THE NEWSLETTER OF THE D. C. MAXECUTERS  
MARCH/APRIL 1989



Aerial Cannon - 1916

## MEMBERSHIP

Dues for membership in the D.C. MAXECUTERS is \$10 per year for residents of the USA, Canada, & Mexico, and \$11 for all other countries. Your mailing label indicates the last year and month for your current membership. A red X next to the label is a reminder that your current membership has ended. Send a check, payable to the D.C. MAXECUTERS, to the Treasurer.

## MEETINGS

The D.C. MAXECUTERS hold meetings on the first Wednesday of every month at the College Park Airport.

## PRESIDENT

Bert Phillips  
1709 Crofton Parkway  
Crofton MD 21114

## SECRETARY

Ernie Greene  
8103 Falstaff Rd.  
McLean Va 22102

## TREASURER

Allan Schanzle  
20008 Spur Hill Dr.  
Gaithersburg MD 20879

## UPCOMING EVENTS

- March 4 1989 : Sherwood H. S., 4:00 - 7:00 PM, Indoor Towline Glider contest, (sheet balsa, foam, or tissue covered frame).  
March 25 1989 : PAX RIVER Indoor contest. The new hanger location is given in this issue.  
June 3,4 1989 : SAM F/F Contest. See Club News.  
Sept 9 1989 : Tentative date for MAXECUTER'S SUMMER FUN FLY.

## CLUB NEWS

ALLAN SCHANZLE

First things first. As we noted in the last issue, we will be using a new hanger for the PAX River affair this month. I'm told that the new hanger is number VX-1, and that you will find it by again taking the main entrance and then take a left at the light past the unmistakable landmark, Mc Donalds. You might also ask the guard at the gate, but there is no guarantee that he will have any knowledge of

the contest. I'm told that there will also be a concession stand, but the goodies have not been specified.

.....

Get the balsa chips a-flying, folks, because even though this is being written in late January, we're planning a special occasion for this year's SUMMER FUN FLY. Someone mentioned at a recent meet-

ing that 1989 will be the 50<sup>th</sup> anniversary of the *design* of Earl Stahl's first published rubber scale model. Yea, I know, it was the Rearwin Speedster, and was published in the January 1940 issue of MODEL AIRPLANE NEWS. Earl was mighty quick with the pen, glue, and knife, but not quick enough to design, build, and get published in one month, since even in those days the January issue came out in December, at least so I'm told by my "elders". Therefore, it had to be designed and built in 1939. How 'bout it Earl, am I right, or have I again made a fool of myself by forgetting something relevant, like you actually did the design in '38, but the depression dictated that you had to work for a year to save enough money to pay the postage for mailing the article to MAN?

Now, if all this seems about as mysterious as our economy and the selection of the last two presidential candidates, let me say that the real justification of all this B.S. is simply to give a little more recognition to Earl, who drives 4 hours one way every year to attend our September contest. Earl, is it possible that this year we could convince you to bring your lovely wife and make the trip a weekend excursion to the Washington area? I know of someone who would be glad to escort Lil on a shopping tour that will drain the checking account beyond your wildest fears. Then, you could stay long enough to make the presentation of the awards. Look at this way....., it's all in the interest of modeling.

But alas. I digress. Under any conditions, we're going to have a repeat of our 1982 Earl Stahl Commemorative Event. But "Hark", I hear you cry, "I don't know what he published or where I can get the plans". Relax, MAX-FAX again comes to your rescue. You'll find a list of his models in this issue, and you can order plans from:

OLD TIMER MODEL SUPPLY  
P.O. Box 7334  
Van Nuys, CA 91409

or

ALLEN HUNT PLANS SERVICE  
Box 726  
Dunbar, WV 25064

You'll have to write to get prices, but they are very reasonable compared to some of the others who charge two arms, a leg, and your left you-know-what for postage and handling of an item that costs \$0.45 to mail.

Here are the rules for the event. It will be run as a sub-event of FAC Scale. All entries for the Earl Stahl event must be entered in FAC Scale, they must be built to the original intended size, and all *MUST* have the landing gear in the down position, as originally published. The highest ranking entry in FAC SCALE of a model designed by Earl wins the event.

If you want to build a WW-II plane that had a retractable gear and also fly it in the WW-II mass launch event, swell. Do it, but if you're smart, make the gear removable. Then send the technique you used for gear removal (plug-in or whatever) to us at MAX-FAX, and we'll publish it. I have never seen a really good idea for this ticklish problem, so let's get you clever lads to show us the way.

.....

The next item on the agenda is sort of a dirty trick, but what the heck, we're a fun loving group, right? One of our Texas subscribers (I'll not reveal his name for reasons that will become obvious) wrote to ask if we were indeed going to publish Vance Gilbert's plan of the Northrop flying wing, as we noted on the photo caption page in one of our issues a year or so ago. My response to the Texan was that I have asked, begged, and even threatened Vance with violent actions toward his future manlyhood, but all of this has fallen on the deaf ears of Vance. I'd love to publish those plans, but the FAC's self proclaimed "minority leader and Court Jester" has yet to produce the drawing. Soooo.....oh, Vance, 'ole boy, it's time to hit below the belt. Folks out there in FAC-land. would you like to see the

Northrop plan appear in these pages? If so, send Vance a note and tell him "Da Schanz" said to "git his rear in gear, git 'ta drawin', and mail dat saaaaaaah-ka to MAY-X FAY-X".

VANCE GILBERT  
90 Cypress #1  
Brookline MA 02146

Now you know why I didn't want to reveal the name of our Texan, 'cause Vance would no doubt contact a relative to "dispose" of one of our subscribers. I'm kidding, of course, but Vance, we DO want you to complete the drawing and forward it for publication in this bimonthly trash-wrapper. If this doesn't work, then it appears that my next option is to get one of my relatives (and believe it or not, I've got one in your area) to do "untimely injustice to your person". If that fails, I'm going to make a personal trip to 90 Cypress #1 and force-feed the contents of sufficient containers of plain Yogurt to give you a lifetime supply of propeller blades and get you into the Guinness Book Of Records.

.....

The "Dreaded Red X" has become famous throughout MAX-FAX Land. Some of you lads are getting bloody clever with renewals. Allen Williams sent his check in an envelop which had a big "Red X" scribed in a box on the front of the envelop. That's the old "don't get back, ... get even" approach. Someone else must of been PO'ed for some reason, because I got an envelop with no return address and no check, just a piece of paper with a "Red X" and a brief note to the effect that as far as he (she?) was concerned, the enclosed marking need never again see the light of day. And then, there is our local fellow Glen Simpers, who wrote the following note with his check.

"I have recently been diagnosed as having the dreaded 'Red X' disease and the salesman at the traveling show stated that the only cure, known to man, was to send money to the mysterious MAXECUTER

club. I rushed home, with trembling hand, willing to pay any amount (not to exceed \$ 10) to rid myself of this dread disease. I beg of you to accept this token of my esteem and send a year's supply of 'Red X' cure."

.....

Bob Haight, from out there in "Gamblin' City" USA, included a note as follows:

"I don't know if you're familiar with Modelaid International Publications out of Malta, but they put out a great little book called CAMOUFLAGE AND MARKINGS, ITALIAN AIR FORCES, 1935 - 1945. It's \$8.00 + \$3.00 for postage and handling and it's well worth the money. I sent a personal check and it went through OK. Send to:"

Modelaid International Publications  
17 Old Windmill Street  
Valletta, Malta

My goodness. I'll bet the mortgage that if Pat Daily doesn't have this one, the old checkbook will be \$11.00 lower in about 34 seconds. No, I take that back. Pat will no doubt simply put in a call to Malta, ..... why waste time.

.....

We got a note from,

Jack Bolton  
3433 Lyrac St.  
Oakton VA 22124  
(703) 620 - 1138.

The Capital Area Antique Modelers Association, SAM Chapter 10, will sponsor a Fun Contest on June 3, 4 1989. The site will be a large farmers field near Culpepper VA. There will be numerous SAM F/F events, SAM Rubber Scale, and SAM Rubber Fuselage Stick. Contact Jack for details.

.....

Well, I think that brings us up to date with the club activities. This issue features a most unusual model that was seen at the 1988 FAC NATS, a Gourdou-Leseurre 482. The model was designed and built by Bob Anderson in Rochester

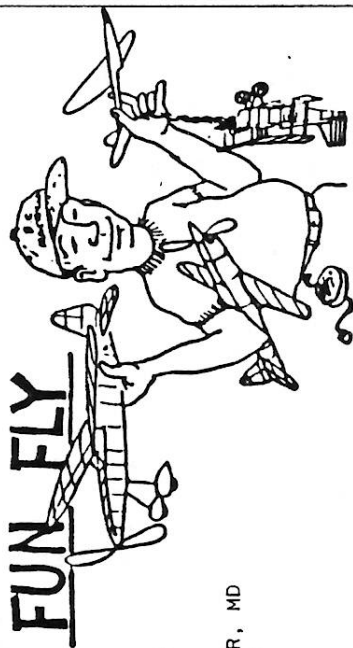
NY. When I asked him to draw the plans for MAX-FAX, we talked about the format for a full size fold-out, but somewhere, we got our wires crossed and Bob drew up the plans for a scale of 1 inch to the foot on TWO (2) pages of 17x33, rather than the normal one page of 17x22. This produced a wingspan of 32 inches, and I tried everything I could think of to publish the pages in their original size, but the expense was just too great. I even gave thought to making them a "two-issue" special, but that just didn't seem to be appropriate. So our editorial committee (?) decided to do the next best thing, which was to reduce the plan by 33% and combine everything onto one page with our normal dimensions. However, if you wish to obtain a copy of Bob's original plans with a 32 inch span, send a check for \$2.50, payable to the D.C. MAXECUTERS, to:

Tom Schmitt  
11014 Marcliff Rd.  
Rockville MD 20852.

Did you get that price, \$2.50 for TWO pages, each 17x33. That includes postage, and the MAXECUTERS will not lose a penny on the deal. No, we don't have a printing machine in my basement. We have them printed commercially. Kinda makes you wonder about the fees some folks out there are charging for plans, doesn't it?

.....

The rest of this issue is composed of a portion of an article from AIR ENTHUSIAST QUARTERLY about French aircraft during the time period of our feature plan. This was sent along by Bob Anderson as part of the documentation for the Gourdou-Lesieur. As mentioned earlier, we've also included a list of Earl Stahl rubber Scale plans, some contest results, and a reduced plan for Joe Ott's Sky Speedster. Of course, there are two pages of photos from "good 'ole Mr. reliable", Tom Schmitt.



MARCH 25 1989

9:00 AM - 5:30 PM

HANGAR VX-1,  
NAS/NATC PATUXENT RIVER, MD  
LEXINGTON PARK, MD

#### MASS LAUNCH

WW-I

12:00 NOON

NAVY SCALE

1:00 PM

PEANUT SCALE

2:00 PM

MILITARY GOLDEN  
AGE (1920 - 1934)

3:00 PM

#### OTHER EVENTS

FAC SCALE

NO CAL: 7 GM. MIN., SINGLE BEST  
FLIGHT.

BOSTONIAN: ROG, 14 GM. MIN. W/O  
RUBBER, SINGLE BEST FLIGHT.

COCONUT SCALE: 1 OZ. MIN. W/O  
RUBBER, MIN. WINGSPAN = 30 IN.  
FOR MULTI-WINGS, 36 IN. FOR  
MONOPLANES. MODIFIED MOONEY  
JUDGING.

#### SPECIAL EVENTS (NO TROPHIES)

FAC POWER SCALE: 4 OZ. MAXIMUM.  
NOVICE PENNYPLANE: AMA RULES

AWARDS: 5:10 - 5:30

FAC JUDGING STARTS AT 11:00 AM. NO QUALIFYING FLIGHT REQUIRED.  
NO FLIGHT SCORES RECORDED AFTER 4:30 PM.

#### LOCAL RULE:

ONE MASS LAUNCH EVENT PER MODEL.

#### INFORMATION:

COORDINATORS: CLAUDE POWELL (301) 872-4105  
TOM SCHMITT (301) 530-0327  
CONTEST DIRECTOR: ALLAN SCHANZLE (301) 840-5884

#### SPONSORED BY:

NAVAL AIR STATION/NAVAL AIR TEST CENTER, PATUXENT RIVER,  
MD AND ST MARY'S COUNTY RECREATION AND PARKS.

NOTE: THERE WILL BE NO TABLES OR CHAIRS AVAILABLE IN THE NEW HANGER.



## GOURDOU-LESEURRE 482

Bob Anderson

The following items will help in the construction of this model.

### A. Engine Exhaust

1. Cut 3/16" x 1/2" x 6" balsa and shape to profile of exhaust given on plan.
2. a) Cut a section of wax paper 5" wide and length to cover one complete revolution around balsa form.  
b) Secure wax paper to balsa with tape 1/2" from each end of form.
3. a) Cut a section of bond paper 5" wide and 6" long. The length will give approximately 8 revolutions over the wax paper covered form.  
b) Apply 50% diluted white glue to the entire surface of the 5 x 6 bond paper and wrap around form. Allow 24 hrs. drying time.
4. a) With razor saw cut individual exhaust at angle to give 1/4" front to 3/16" rear  
b) Final shaping of each piece was done by using various grade sanding blocks.  
c) Push out balsa form, remove wax paper and cement to fuselage.  
Note: Sheet balsa fill should be used in fuselage within exhaust area - not shown on plan.

### B. Tricolor Roundels

1. With SIG white decal sheets, spray individual sheets with Testors Plastic red, white and blue. When dry spray with Testors Dull-Cote.
2. With new razor knife blade secured in a compass, cut out solid roundels: red 3-5/8", white 2-1/4" and blue 3/4".
3. Apply solid red decal in appropriate position and let dry overnight.
4. a) Cut two acetate sheets approximately 5" x 6".  
b) On one sheet scribe or mark 3-5/8" wide for alignment over red roundel, then with same center position cut out 2-1/4" circle for white decal.  
c) Carefully aligning the acetate sheet over the red roundel, tape down to leading and trailing edge of wing.  
d) Now apply the wet white decal within the cut out area of the acetate. Remove acetate, wipe etc. and let dry.  
e) With second acetate sheet, scribe or mark 2-1/4" circle, cut out 3/4" circle for blue decal and follow same procedure as in c) and d).

## PHOTO PAGES

Tom Schmitt

1. This issue's featured plan, the Gourdou-Leseurre 482 by Bob Anderson. It's a 1933 French fighter design .
2. Ah, spring and Shangri-la are just around the corner. Paul Spreiregen is seen having some fun with his "old-timer" last year.
3. Scott Paisley, with an assist from mom, readies his high-flying Bostonian for a trip around the Sherwood gym.
4. Kevin Sharbonda is ready for our 10-incher contest with his nifty good flying Contestor.
5. Believe it or not, last year's Pres, Bill Ceresa, finished his Bostonian which is going to be a hot competitor at Pax River in March.
6. Allan Schanzle with his 10-incher, an obscure but pretty aircraft named the "Swallow".
7. These Maxecuters do love to eat. Doug Buchanan takes a healthy bite from his 10-incher Bonzo!

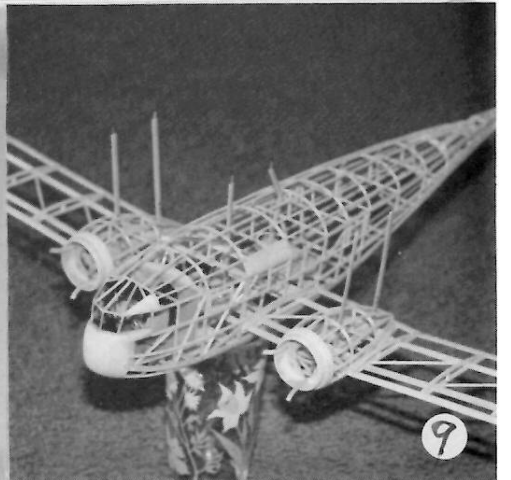
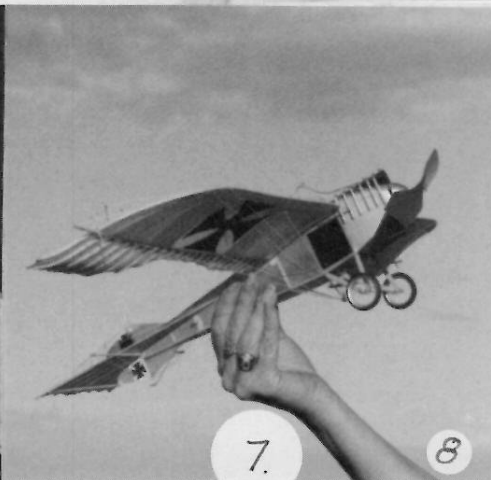
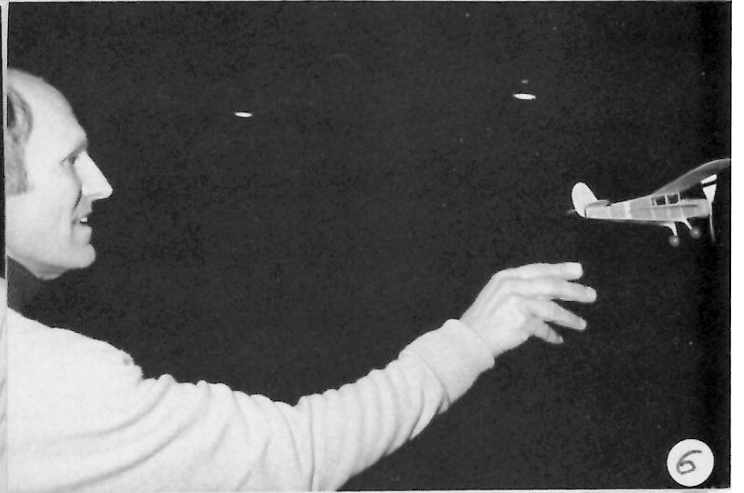
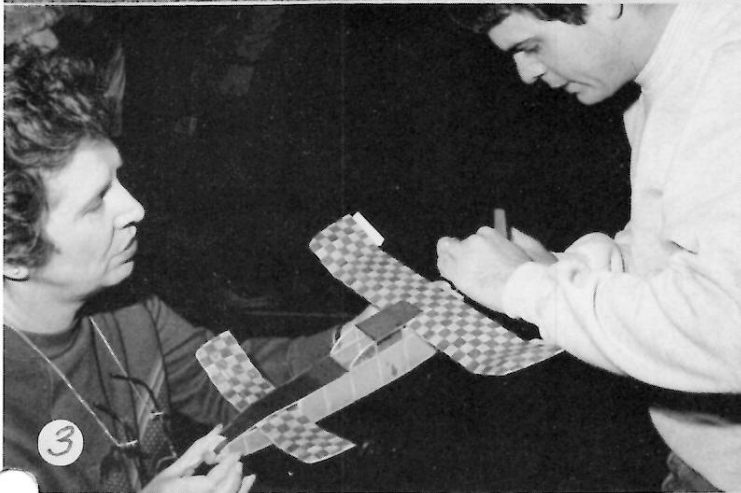
## Our Readers' Photos

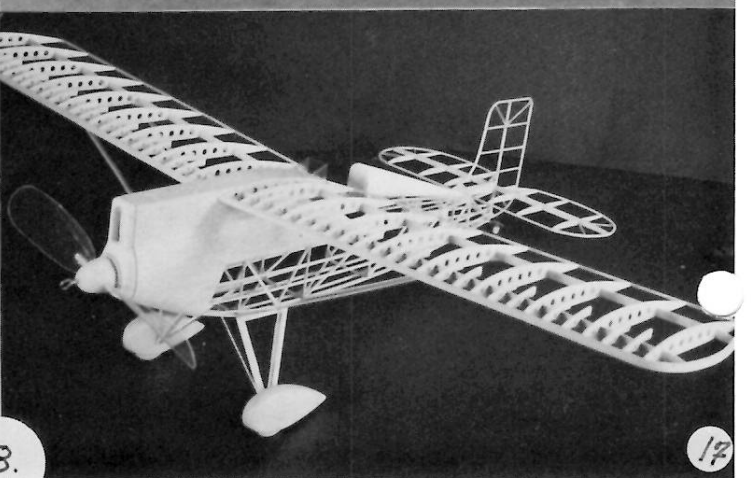
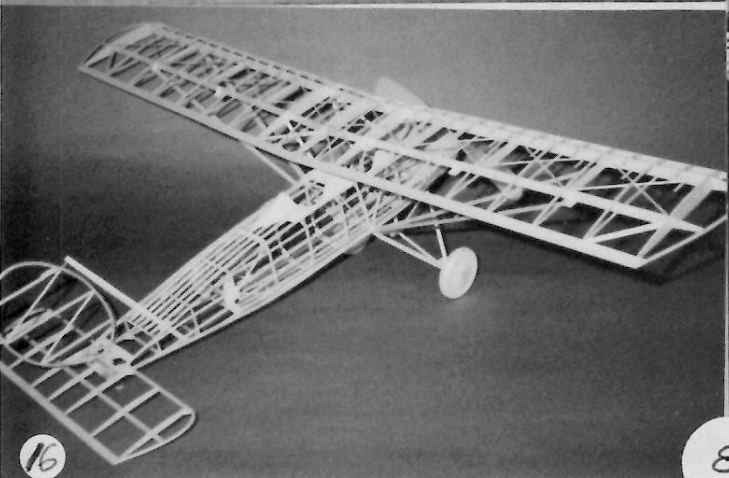
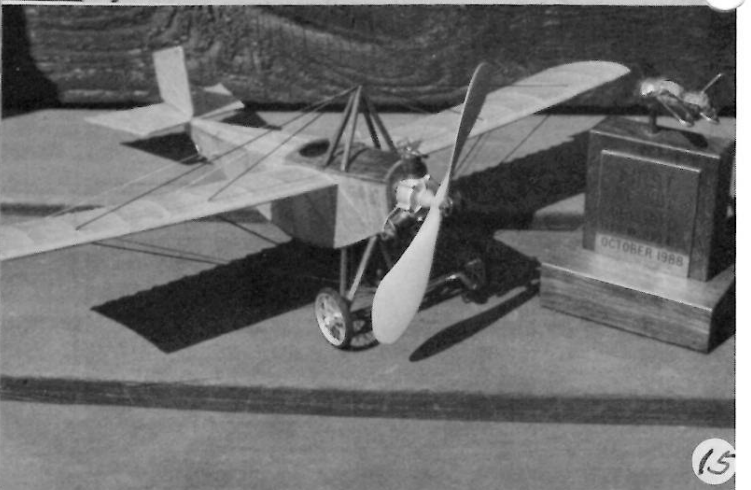
8. Larrie Schaeffer, way out in Wyoming, holds up his very pretty Taube.
9. Remember Walt Eggert's twin electric Condor in the last Max-FAX? Here are some of the terrific bones. Now look at the next photo, also from Walt, to see how he makes that lightweight but strong structure.
10. Walt hot-bends the balsa over a soldering iron. Look at the intricate shapes one can form with this technique. Next time you see Walt, ask him for some more information.
11. Alain Parmentier sent this photo from Montreuil, France of his delightful Elias Airacoupe PEANUT constructed from MAX-FAX plans.
12. Another great photo from H.A. Thomas in Little Rock showing Steve Staples holding his CO2 powered Waterman.
13. Bob Schlosberg sends this photo of his Earl Stahl Skyfarer. Bring it to our "Earl Stahl" Commemorative this September Bob, it looks like a winner.
14. Phil Cox, a master builder in Indiana, gave us this photo of his scratch-built Franklin Sport which he flew at the FAC Nats in Dayton. How about the plans for MAX-FAX Phil?
15. Ramon Juncal in Los Angeles built this PEANUT Caudron and won the nifty first place trophy in a Blacksheep Squadron contest.
16. From New York, John Morrow sends this photo of his Mercury Chic, a somewhat unknown aircraft. The bones of the full-size aircraft reside at the Curtiss museum in Hammondsport.
17. Another set of gorgeous bones, a Corben Super Ace from Curt Upshaw in Louisiana. Curt is one of the partners behind Flying Scale Inc. which produces terrific 3/4" and 1" scale plans, this Corben being one of many. Write for their price list at 1905 Colony Rd., Metairie, Louisiana 70003 and prepare to be pleasantly surprised.

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## FAC BELT BUCKLES AND STEARMAN PLAN

Sorry all you faithful MAX-FAX readers, the great FAC belt buckles have all been snapped up! However you can still get the terrific Stearman plans mentioned in the last issue, since there are a few remaining at the bargain postpaid price of \$2.00. Just make out your check or money-order to the D.C. MAXECUTERS and send it to Tom Schmitt, 11014 Marcliff Road, Rockville, Maryland 20852.







CONTESTANT	AIRCRAFT	BEST FLIGHT	PLACE
Dan Driscoll	Pacific Ace	48	-
Bill Bell	Found	21	-
Randy Kleinert	Great Expectations II	80	1
Kevin Sharbonda	Kev-1-1	54	3
Tom Schmitt	Harvard Square	47	-
Bill Chisholm	Helio Courier	34	-
Mike Hostage	Defender	34	-
Allan Schanzle	Boston Defender	42	-
Allan Schanzle	Boston Pup	47	-
Bill Ceresa	????	38	-
Scott Paisley	Avenger	60	2
Doug Buchanan	Beancraft	45	-
Paul Spreiregen	Found	25	-

NO-CAL CONTEST SHERWOOD HIGH SCHOOL 14 JANUARY 1989

CONTESTANT	AIRCRAFT	BEST FLIGHT	PLACE
Bill Bell	Citabria	36	-
Dan Driscoll	Luscombe Phantom	45	-
Doug Buchanan	Farman F-130	68	3
Tom Schmitt	XFL-1 Airabonita	67	-
Kevin Sharbonda	Me 100	106	2
Claude Powell	Farman	68	3
John Murphy	F2G	30	-
Eric Murphy	L-5	15	-
Bert Phillips	Curtiss O-52	20	-
Randy Kleinert	Lacey	137	1

REFERENCE\*

WINGSPAN  
(in.)

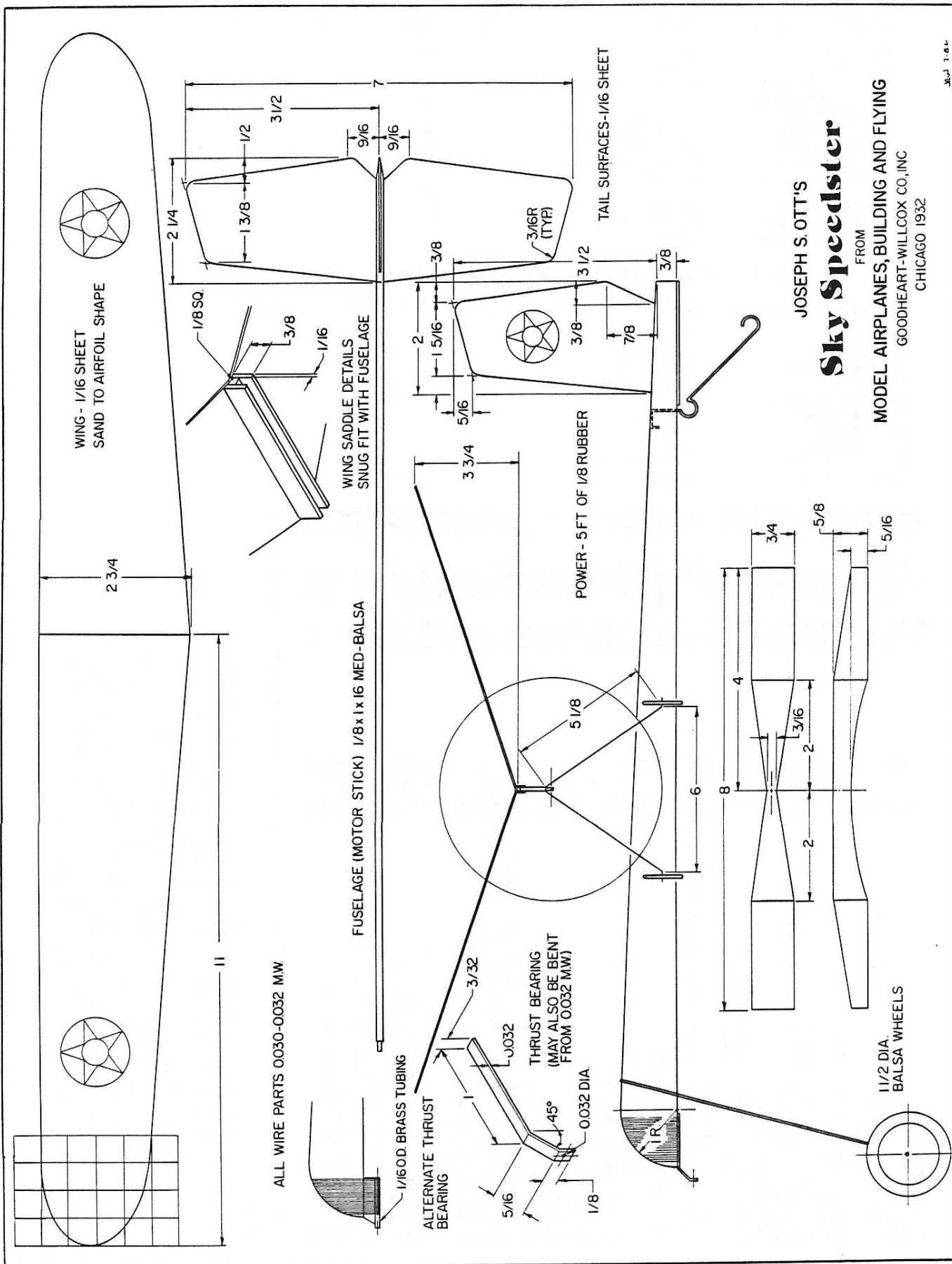
AIRCRAFT

Albatros D5	17 1/2	MAN FEB	.45
Bell Aircoobra	21 3/4	MAN JUNE	.41
Blackburn Skua	24 7/8	MAN JUNE	.42
Boulton Paul Defiant (See note 7)	36	AT JULY	.42
Caudron C 371	22	MAN APRIL	.40
Cessna 195 (See note 1)	32 3/4	MAN APRIL	.50
Curtiss P40	24 1/4	MAN OCT	.42
Curtiss Seagull SO3C-1	23 1/2	MAN DEC	.41
Curtiss Ascender XP-55 (See note 2)	22 1/8	MAN JULY	.45
Fairchild PT-19	23 1/4	AT DEC	.40
Fairchild 24 K	29	MAN FEB	.40
Fairy Barricuda (See note 3)	20	MAN OCT	.44
Fleet Canuck (See note 4)	26 1/2	MAN MARCH	.48
General Skyfarer	28 7/8	MAN NOV	.41
General Skyfarer (Full size plans from MB)	31 1/2	MB JUNE	.75
Globe Swift	20	MAN JAN	.47
Grunman F4F Wildcat	19 1/4	AT ANNUAL	.43
Hawker Hurricane	26 1/4	MAN SEPT	.41
Howard GH 1 (Navy Mr. Mulligan)	24 3/8	MAN AUG	.42
Interstate Cadet	30	MAN JAN	.41
Luscombe 10	22 3/4	MAN SEPT	.46
Messerschmitt 109	20 5/8	MAN NOV	.40
Mikoyan Mig 3	22 1/2	MAN JAN	.43
Miles Magister	27	MAN FEB	.42
North American P-51B Mustang	23	MAN MAY	.44
North American P-51 Mustang (Semi scale)	32	AT MARCH	.42
North American P-51 Mustang (See note 8)	25 1/2	AT JUNE	.46
North American Navion (See note 9)	30 1/4	AT AUG	.47
Rearwin Speedster	28	MAN JAN	.40
Stinson O-49	31 3/8	MAN JULY	.41
Stinson Voyager (See note 5)	30 1/2	MAN JUNE	.48
Stinson 125 (See note 10)	30 3/4	AT ANNUAL	.46
Taylorcraft O-57 Grasshopper	32 1/2	MAN APRIL	.42
Vickers Supermarine Spitfire	27	MAN AUG	.40
Vickers Supermarine Spitfire IX (Note 11)	17 1/2	AW NOV	.46
Vultee Vanguard	23 1/2	MAN OCT	.40
Vultee XP-54 (See note 6)	18 3/8	MAN MAY	.45
Waco Cabin E	20 3/4	MAN JULY	.40

\* MAN=Model Airplane News, AT=Air Trails, MB=Model Builder, AW=Air World

NOTES:

1. Plans were reduced to give a span of 16 3/8 inches.
2. Plans were reduced to give a span of 17 5/8 inches.
3. Plans were reduced to give a span of 15 inches.
4. Plans were reduced to give a span of 13 1/4 inches.
5. Plans were reduced to give a span of 15 1/4 inches.
6. Plans were reduced to give a span of 15 inches.
7. Plans were reduced to give a span of 12 inches.
8. Plans were reduced to give a span of 12 3/4 inches.
9. Plans were reduced to give a span of 15 1/8 inches.
10. Plans were reduced to give a span of 15 3/8 inches.
11. Not available from the Smithsonian.



# FIGHTERS A LA FRANCAISE

Veteran aircraft designer Georges Bruner, a graduate of the Warsaw Polytechnic, former member of the Bernard, Gourdou and Breguet design staffs and now 80 years of age, surveys the development of fighter aircraft in France between the World Wars — Part Two

AE QUARTERLY/FOUR

THE EARLY 'THIRTIES witnessed as dramatic advances in fighter design, relatively speaking, as has any subsequent period in the annals of military aviation: developments that were not simply the results of natural progression but also a corollary to some rethinking of the rôle of fighter aviation in warfare. The domination of World War One over official thinking had begun to diminish with the recession of that conflict into history; the possibility of any repetition in a future conflict of the large-scale pitched aerial battles involving substantial numbers of fighters locked in close high-g manoeuvring combat such as were seen over the Western Front seemed increasingly remote.

As there were many still convinced of the place for cavalry in modern warfare, so there were many retaining a belief in World War One fighter values: the traditionalists clinging to the view that manoeuvrability had perforce to be the first and foremost consideration in the design of a single-seat fighter. But there were also the visionaries who foresaw that speed and firepower would usurp manoeuvrability as paramount demands in fighter design, and fortunately for their cause, officialdom was at this time becoming more receptive to innovation and less ready to join the conventionalists in adjudging any innovatory design a product of caprice.

Few fields of aeronautical design endeavour offered greater scope for creativity and ingenuity than the fighter and the scene was thus set for major advances in the state of the art. Advances in engine technology placed more power at the disposal of the fighter designer who took maximum advantage of this by placing increased emphasis on aerodynamic efficiency. The fact that the higher performances thus achieved imposed some penalties on manoeuvrability and tractability was considered by the fighter creator — if not initially by the pilot that was to fly it — a necessary accompaniment to progress; speed had finally taken precedence over manoeuvrability and the genealogical process that was to result in the fighters fielded in World War II had begun.

Many French designers had, throughout the 'twenties, displayed a predilection for monoplane or sesquiplane configurations for their fighters, whereas in most other countries the biplane had dominated the fighter scene. It has been said that creativity is inherent in the French character and if creativity can be equated with originality, then French fighter designers of the period certainly ranked among the most creative. It was perhaps to be expected, therefore, that when, in 1930, the *Service Technique de l'Aéronautique* (STAé), having conceded that its "Jockey" lightweight fighter programme had been a failure, sought new proposals to meet the future fighter requirements of the *Forces Aériennes* — later to be restyled as the *Armée de l'Air* — the results would be of considerable interest.

In fact, the C1 (*monoplace de chasse*) requirement circulated by the STAé was singularly unimaginative in most respects. It called for maximum speeds of not less than 202 mph (325 km/h) at 11,485 ft (3 500 m) and 186 mph (300 km/h) at 21,325 ft (6 500 m), and although not specified, a supercharged engine was mandatory — speeds of 15.5 mph (25 km/h) lower would, it was stated, be acceptable if an unsupercharged engine was installed but purely during the initial evaluation stage. Other performance parameters included a cruise of not less than 143 mph (230 km/h), an endurance of not less than 3.25 hours, a ceiling of at least 32,810 ft (10 000 m) and a landing speed not in excess of 62 mph (100 km/h). Provision was to be made for the installation of radio equipment, self-sealing tanks, oleo-pneumatic undercarriage suspension with

differential braking and an armament of two synchronised 7.7-mm Vickers machine guns with 300 rpg. An all-metal structure had to be employed but a measure of fabric skinning was acceptable.

On 26 January 1931, a supplement to the specification issued by the STAé called for an increase in maximum speeds to at least 186 mph (300 km/h) at sea level, 217 mph at 11,485 ft (3 500 m) and 202 mph (325 km/h) at 21,325 ft (6 500 m), although endurance was reduced to 2.25 hours, and a year later, yet another supplement definitely stipulated the use of a supercharged engine, raised the required endurance once more to 3.0 hours at 11,485 ft (3 500 m) and requested provision for substantially heavier armament, this comprising four machine guns (two synchronised) with 300 rpg, one engine-mounted 20-mm cannon with 60 rounds plus two machine guns with 300 rpg, or two wing-mounted 20-mm cannon with 60 rpg.

## A surfeit of competitors

The interest of the STAé specification aroused throughout the industry may be gauged from the fact that no fewer than 10 designs were awarded prototype contracts from a substantially larger number of submissions, while five others proceeded to prototype stage without official contracts. The official contenders consisted of one biplane (Blériot SPAD 510); four low-wing cantilever monoplanes (Bernard 260, Dewoitine 500, Hanriot 110 and Wibault 313); one braced low-wing monoplane (Morane-Saulnier 325); one parasol monoplane (Nieuport-Delage 122) and three gull-winged monoplanes (Loire 43, ANF-Mureaux 170 and Gourdou-Leseurre 482). The unofficial participants comprised two gull-winged monoplanes (Dewoitine 560 and Loire 45) and three parasol monoplanes (Nieuport-Delage 121, Morane-Saulnier 275 and Dewoitine 37).

This extraordinary collection, embracing virtually every conceivable single-seat fighter configuration, with the exception of the sesquiplane, ranged the entire gamut, from the ultra conservative to the truly innovatory of concept. From some aspects, the outcome of this 1930 STAé specification was equally extraordinary, with "something of everything" being ordered in the event. One of the true epoch-markers among the official contenders, the Dewoitine 500, was to receive the accolade of a production order, but so was the sole contending biplane, the Blériot SPAD 510, the selection being rounded out by the addition of two of the unofficial participants in developed form, the gull-winged Loire 45 monoplane and the Dewoitine 37 parasol monoplane.

Thus, every principal configuration represented by this fantastic array of competing designs was in fact to achieve production status for the *Armée de l'Air*, leading inevitably to the conclusion that the authorities of the day were hedging their bets: that enthusiasm for the most advanced formula was being tempered by ensuring the availability of progressively more conservative back-up designs!

All the contenders employed metal airframe structures in accordance with the requirements of the specification and, with but one exception, those for which official prototype contracts had been awarded were powered by the Hispano-Suiza 12Xbrs 12-cylinder liquid-cooled 60-deg Vee engine, which, with a mechanically-driven supercharger and a 15/22 reduction gear, was to be certified at 650 hp at 11,485 ft (3 500 m). The exception was the Wibault 313 which used the supercharged Gnôme-Rhône 9Kbrs air-cooled radial rated at 500 hp at 13,125 ft (4 000 m), this power plant also being employed by one of the unofficial competitors, the Morane-Saulnier 275, while the other unofficial entries were powered by the 14-cylinder two-row Gnôme-Rhône 14K (Loire 45 and Dewoitine 37), the Lorraine Petrel (Nieuport-Delage 121) and the HS 12Xbrs (Dewoitine 560).

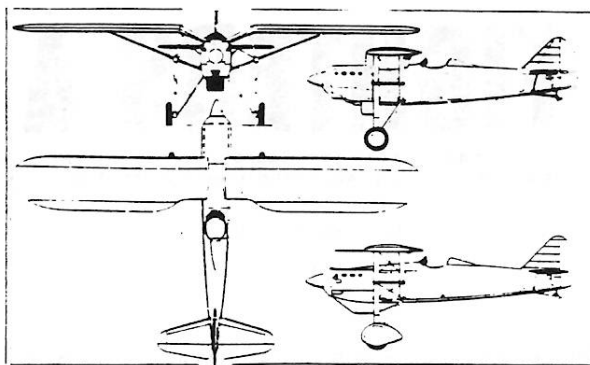
The fact that no fewer than five gull-winged fighter prototypes were entered for this contest was accounted for by the influence of Zygmunt Pulawski, a Polish designer whose fighter prototypes embodying this wing configuration and built by the State Aviation Works (PZL) in Poland were demonstrating considerable success at the time the STAE specification was being circulated. The elimination of the cabane normally featured by high-wing monoplanes and the gulling of a reduced-thickness wing centre section into the fuselage resulted in a virtually unobstructed forward field of vision — the specification had stressed the need for good visibility for the pilot — but demanded a somewhat complex structure. In the event, all the competing gull-winged fighters were adjudged to offer inadequate visibility in combat and only the Loire design was to be persisted with (in radically modified form) and to which reference will be made later.

The Gnome-Rhône-engined Loire 45 was essentially a replacement for the HS 12Xbrs-powered Loire 43, which was the official contender from the aircraft division of the Ateliers et Chantiers de la Loire. The Loire 43 had flown on 17 October 1932, but 13 weeks later, on 14 January 1933, and before it could undergo official evaluation, it spun in when its pilot apparently lost consciousness at altitude. However, there is no reason to suppose that, had it participated in the official trials, it would have enjoyed any more success than the other competing fighters of "gull" configuration as it offered no better field of vision for its pilot. Of the other "gulls", the Dewoitine 560 proved somewhat unstable and, eventually rebuilt to classic parasol arrangement as the D 570, crashed after suffering aileron flutter; the Gourdon-Lescaur 482 proffered excessive drag and an unacceptably low performance as a result, and the ANF-Mureaux 170, although possessing exceptional manoeuvrability, suffered the drawback of its configuration — insufficient pilot visibility.

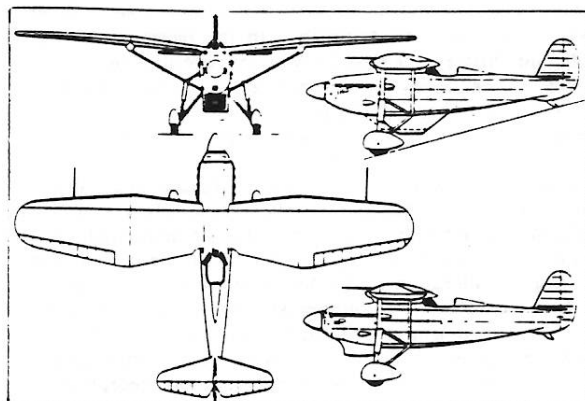
The classic parasol monoplanes, as represented by the Nieuport-Delage 121 and 122, the Morane-Saulnier 275 and the Dewoitine 37, found little favour owing to their dated concept. The Nieuport-Delage team endeavoured to gain the supposed advantages of the "gull" configuration with a parasol by adopting an extremely shallow cabane so that the pilot's windscreen and head could protrude through a circular cut-out in the wing, but the wing leading-edge radiators featured by the design were adjudged vulnerable, landing speeds were excessive and the undercarriage proved weak. The MS 275 likewise fell by the wayside, but the Dewoitine was to see some limited production for the *Armée de l'Air* (D 371), for export (D 372) and for the *Aéronavale* (D 373 and D 376).

The sole competing biplane, the Blériot SPAD 510, was viewed favourably by the traditionalists owing to its wing loading being the lowest of all but one of the types evaluated and its all-round performance was acceptable, although during the course of prototype trials it was found necessary to rectify some longitudinal instability by lengthening the forward fuselage and improve yaw stability by enlarging the vertical tail surfaces. After protracted evaluation, a batch of 60 fighter biplanes of this type was to be ordered for the *Armée de l'Air*, although by the time these were to begin to enter the inventory in 1936, they were to be already obsolescent.

One aberration among the contending prototypes was undoubtedly the Hanriot 110 which was an extraordinary single-seat pusher with pilot and engine occupying a central nacelle and two parallel booms attached to the extremities of the wing centre section carrying the tail surfaces. A ring-type radiator was mounted on the extreme nose of the nacelle, this nose taking the form of an adjustable cone for regulating the amount of air passing through the radiator. Flown in April 1933, this curiosity was found, not surprisingly, to be slower and somewhat less manoeuvrable than most other competitors. Nevertheless, with some redesign of the fuselage nacelle, a more powerful HS 12Y engine and a 33-mm APX cannon in a ventral bulge, the prototype was to reappear as the Hanriot 115 in a later contest.

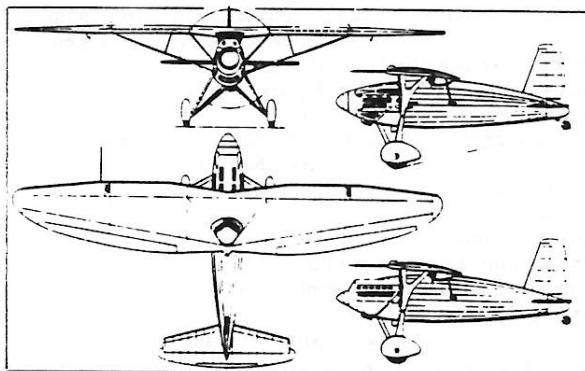


The general arrangement drawing above depicts the Dewoitine 560, the lower side profile and the photograph immediately below illustrating the aircraft after modification to parasol configuration as the D 570.

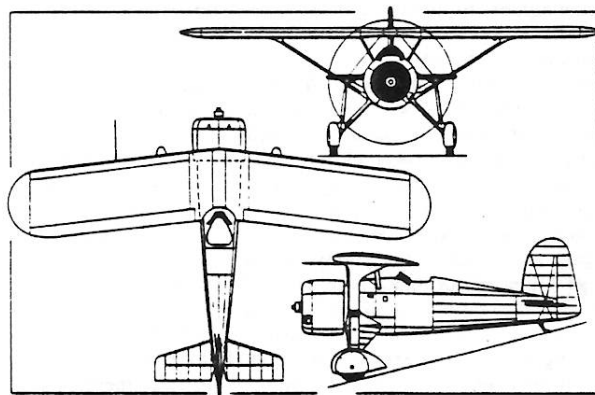


The ANF-Mureaux 170 suffered cooling problems which dictated several changes to the radiator bath, three variations of which are seen in the side profile drawings above. The first prototype is illustrated below.

The general arrangement drawing illustrates the Nieuport-Delage 122, the lower side profile depicting the N-D 121 with the Lorraine Petrel engine.



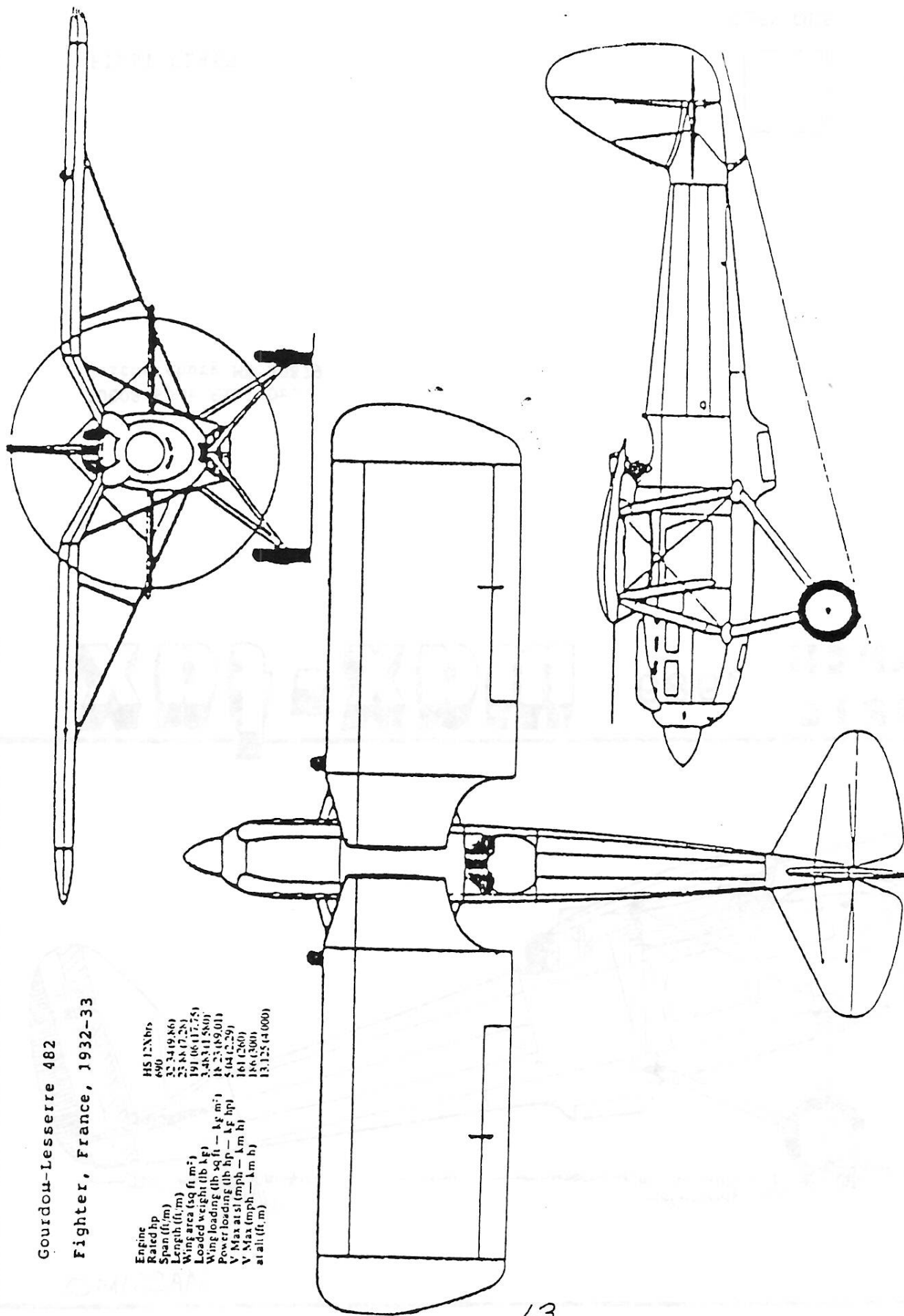
The Morane-Saulnier 275 offered a good performance and excellent manoeuvrability, but this definitive development of the long-lived MS 221-227 family failed to find favour.



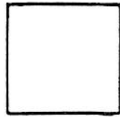


Gourdou-Lesserre 482  
Fighter, France, 1932-33

Engine	HS 12Nbrs
Rated hp	440
Span (ft./m)	32.34 (9.86)
Length (ft./m)	25.34 (7.72)
Wing area (sq ft./m <sup>2</sup> )	191 (60.15)
Loaded weight (lb./kg)	3,433 (1,556)
Wing loading (lb./sq ft. — kg./m <sup>2</sup> )	18.25 (18.01)
Power loading (lb./hp — kg./hp)	4.62 (2.29)
V Max at sl (mph — km/h)	161 (260)
V Max (mph — km/h)	183 (290)
at alt. (ft./m)	13,125 (4,000)



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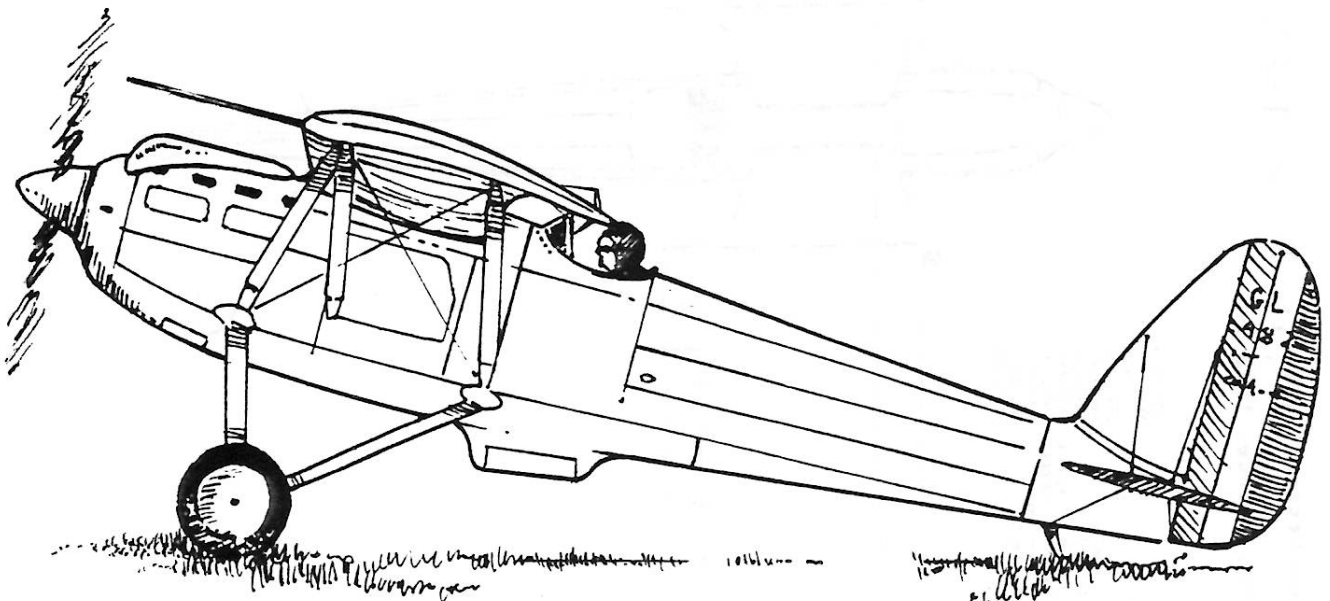
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