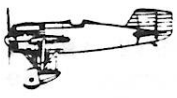
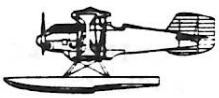

Wright NW-1

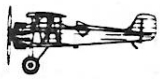

Vought FU-1


Curtiss-Hall F4C-1


Atlantic XFA-1


Wright NW-2


Curtiss F8C-4


Eberhart XFG-1


Grumman FF-1

MAX-FAX

THE NEWSLETTER OF THE D. C. MAXECUTERS

MARCH/APRIL 1990

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

Mar 3: Farquhar indoor flying, 4:00-7:00 PM.
Mar 10: PAX River Indoor Contest.

CLUB NEWS

ALLAN SCHANZLE

A TRIP THROUGH NOSTALGIA-LAND OR AN ISSUE WITH A THEME

I don't remember the last time we put out a "theme" issue. Perhaps never. It seemed like a good idea, so here we go.

The basic theme is "history". But because some of you folks recently sent in some contemporary material, and I like to use whatever is appropriate from you lads and lassies out there, the entire issue does not fall into the "theme regime". Actually, it is next to impossible to collect theme material that will fit every nook and corner of these pages. So there will be a mixture, but with the bulk of material dealing with aviation history.

To get into the spirit of the theme, I begin by noting that the friendly postperson delivered an envelope which had a copy of the

FLYING ACES CLUB NEWS from the January 1939 issue of FLYING ACES magazine. This feature was usually written by Clint Randall, National Adjutant of the then ever-so-popular Flying Aces Club. A portion of the text was hi-lited, and is repeated here.

> "And now, fellows, listen to this bit of business about one of our Clubsters who's dubbed himself the *Phantom Ace!* The *P.A.* is a lad who lives in **Erie, Pa.** So we really ought to call him the *Eerie Phantom Ace!*
>
> Anyhoo, this lad doesn't want us to tell his name or give you his address—for he hankers to be real phantomish. Even his Squadron members won't recognize him, sez he, when they see him without his mask! And for trips to airports and similar places, he plans on wearing a costume that'll completely cover him, face and all.
>
> Now whaddya think of that?
>
> As for Clint Randall, he sorta feels that in the grand old aviation game, there's no need for hidin' one's pan *a la* K.K.K. Huh? Or huh! What do you say, gang?"

Hey, is it possible most of us know the identity of this 1939 mystery-man? But get this. The envelope that delivered this bit of nostalgia had no return address, and the postmark was unreadable!! So we have a double whammy... an article about an unknown Phantom Ace from another era and another Phantom. Could it be the same individual?? Will either one allow himself to be identified? Will this become a bi-monthly soap opera? Wow!! Such excitement!

The remainder of our historical theme includes part 1 of an article from the October 1932 issue of MODEL AIRPLANE NEWS about the inventor of the autogiro, Cierva. Also check around the pages of this trashwrapper and you'll find an advertisement from the February 1935 issue of MAN for Paulownia props. When you stop drooling, check the prices, then get the tissues out to wipe the tears.

The next item of a historical nature is one in a series of stories that appeared in MAN in the early 1930's about WW-I heroes. We've had a few of these stories in past issues several years ago. This particular one is about Frank Luke, "The Balloon Terror".

To go along with our historical theme, the feature plan is a Macchi M 16, complements of Lindsey Smith in England. While looking through some old magazines recently, I found a photo and a few specifications about this plane. These are also included in this issue, somewhere.

For the non-theme items, we have a compilation of articles appearing in AIR ENTHUSIAST QUARTERLY, a British publication. This material comes to us from Paul Gaertner, who just recently returned to this area after a sojourn to Georgia. Next is a construction hint from Bud Carson, and finally, some contest results of our recent indoor events. Don't forget the PAX RIVER affair on March 10.

FARQUHAR HIGH SCHOOL

BOGUS BOSTONIAN TOWLINE GLIDER

	NAME	AIRCRAFT	BEST TIME
1.	SCHANZLE, ALLAN	SKYFARAR	36
2.	DAILY, PAT	ARISTOCRAF	34
3.	MEYERS, STEW	CESSNA	32
4.	PHILLIPS, BERT	BEDE 4	30
5.	CARSON, BUD	CORBIN	20

INDOOR MODEL AIRPLANE CONTEST

NAS/NATC PATUXENT RIVER - LEXINGTON PARK, MARYLAND
HANGAR VX-1
MARCH 10, 1990
9:00 AM - 5:30 PM

NO ENTRY FEE BUT DONATIONS TO THE NAVY RELIEF SOCIETY ARE WELCOMED

MAJOR EVENTS (FAC Rules & Trophies awarded)

MASS LAUNCH			OTHER EVENTS
1-	OLD TIME SCALE*	11:00 AM	6- FAC RUBBER SCALE
2-	WW-I	12:00 PM	7- COCONUT SCALE**
3-	NAVY SCALE	1:00 PM	8- BOGUS SCALE BOSTONIAN 14 GRAMS MINIMUM WGT.*** (See rules in Nov-Dec MAX-FAX)
4-	PEANUT SCALE	2:00 PM	
5-	MILITARY GOLDEN AGE	3:00 PM	

SPECIAL EVENTS (Buttons awarded)
1- FAC INDOOR POWER SCALE (CO_2 and MINI ELECTRIC)
2- NOVICE PENNYPLANE (AMA Rules)***

* OLD TIME SCALE RULES - Any old time kit plan; vintage before December 31, 1942 with 20 inch wingspan or less.
** COCONUT Rules - 1 oz minimum weight w/o motor
Mimimum wingspan - monoplanes 36 ins.- multiwings 30 ins.
Judging - 30 point maximum scale points added to flight time in seconds for total score.
*** Single best flight time determines winner in these events.

PROVISIONAL EVENTS (Buttons Awarded)
1- NOCAL (6.2 gram minimum weight)****
2- 7 Gram BOSTONIAN****

**** Bill Clarke is Event Judge for these events; see rules in this edition of MAX-FAX.

AIRCRAFT FOR SCALE JUDGING MUST BE TURNED IN BY 11:00 AM
NO QUALIFYING FLIGHT IS REQUIRED
ALL FLIGHT TIMES MUST BE SUBMITTED BY 4:30 PM DEADLINE
AWARDS: 5:10 - 5:30

LOCAL RULE: ONLY ONE MASS LAUNCH EVENT PER AIRCRAFT

CONTEST INFORMATION: CLAUDE POWELL 1 (301) 872-4105
ALLAN SCHANZLE 1 (301) 840-5884
TOM SCHMITT 1 (301) 530-0327

IMPORTANT NOTICES:

FOOD AND BEVERAGES WILL BE AVAILBLE IN THE HANGAR AT NOMINAL PRICES
PLEASE SUPPORT THIS EFFORT BY THE LOCAL FOLKS
ALSO PLEASE NOTE THERE WILL BE NO TABLES OR CHAIRS AVAILABLE IN THE HANGAR SO BE SURE TO BRING YOUR OWN.

SPONSORED BY: NAVAL AIR STATION/NAVAL AIR TEST CENTER, PATUXENT RIVER, MARYAND AND ST. MARY'S COUNTY RECREATION AND PARKS.

PHOTO PAGES

Tom Schmitt

1. Ada Barrett, a delightful lady and friend of the Maxecuters has left us and is flying high with her Angels in the Heavens. Ada, seen here with Claude Powell at one of the Patuxent River contests, was a pioneer aviatrix and member of the 99's. Claude was instrumental in inviting Ada to join us at the contests and present the prizes, much to the delight of all. We will truly miss her!

Our Reader's Photos

2. Lindsey Smith, who presented us with the Macchi seaplane plans for this issue, also built this neat little Martin submarine scout.
3. Ken Makepeace down in Arkansas now flies this nifty Pacific Ace with an electric motor, a great flier either way. Photo by H. A. Thomas.
4. A neat little Volksplane PEANUT by Mr. Gloeckner in West Germany. Photo via Bill Hannan.
5. How is this for a beautiful twin and a terrific flier to boot? Jane Schlosberg's OV-10 Bronco from Dick Howard's plans.
6. Jane's husband Bob also builds a model now and then. This is his Fairchild 22. Both of the above models should be seen in their colors. Black and white does not do them justice.
7. Bill Warner picks a quaint subject for the Lympne event, the H.P. Sayers Monoplane. See the book "Ultralights", which is available from Hannan's Hangar, for more info on this and other interesting aircraft.
8. Bobby Haight from way out in Las Vegas sends this photo of his Fiat G-55 built from Dave Smith's MAX-FAX plans. A great shot Bob!
9. Dick Howard (of twin-rubber fame) built this Albatros D-III from Capt. Pat Daily's plans in MAX-FAX.
10. Dick Howard is also a prolific EMBRYO designer and builder. Look at his racy V-12 powered aircraft.
11. A beautiful rendition of Hurst Bower's Cunningham-Hall by Dave Stott up in Connecticut. This aircraft is also a great flier.
12. A photogenic Udet Flamingo from Bill Winter's plans by Michael Zand out in Cleveland. Photo by way of Bill Hannan.
13. Jiro Sugimoto is not only a meticulous craftsman but a great photographer. Just look at his Colibri PEANUT, which I believe was constructed from Dave Rees' plans in MAX-FAX.
14. Another of Jiro's masterpieces. From his PEANUT hangar in Japan comes this photo of his Mitsubishi Karigane I "Kamikaze".
15. Walt Eggert has devised rules to make NO-CAL a more scale-like event. This pretty little SE5 of his is a good example of what can be done.
16. Another photo of Al Lidberg's latest aircraft, the Monocoupe Racer, held gently by his pretty daughter and accomplished modeler herself. See notice below concerning catalog of his available plans.

A. A. LIDBERG MODEL PLAN SERVICE

Send $1.00 to A. A. Lidberg, Model Plan Service, 614 E. Fordham, Tempe, Arizona 85283 to receive an illustrated catalog of terrific flying scale aircraft plans. Plan for the Monocoupe shown above is $6.00 postpaid and well worth it. Your photo editor has one and it is one of Al's best.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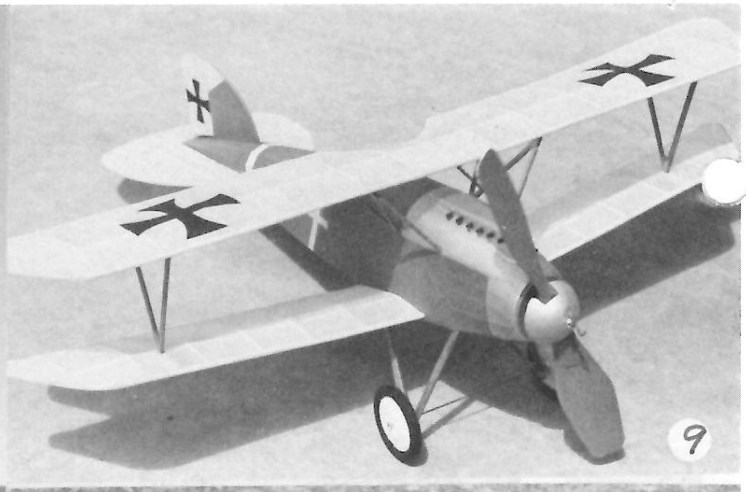
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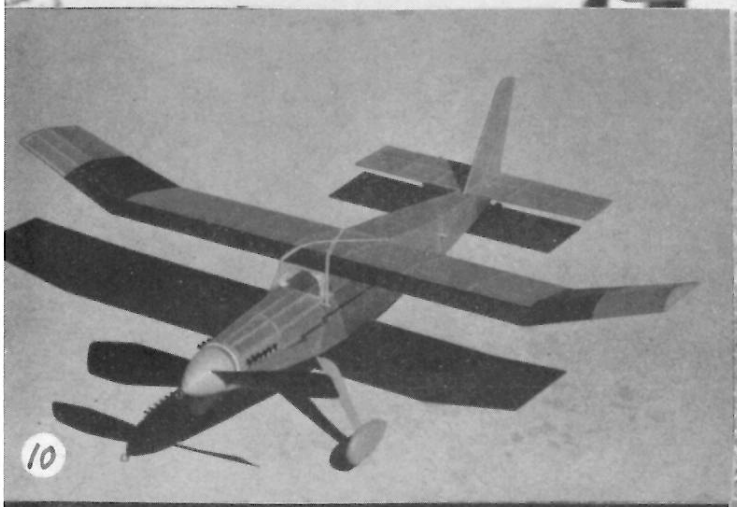
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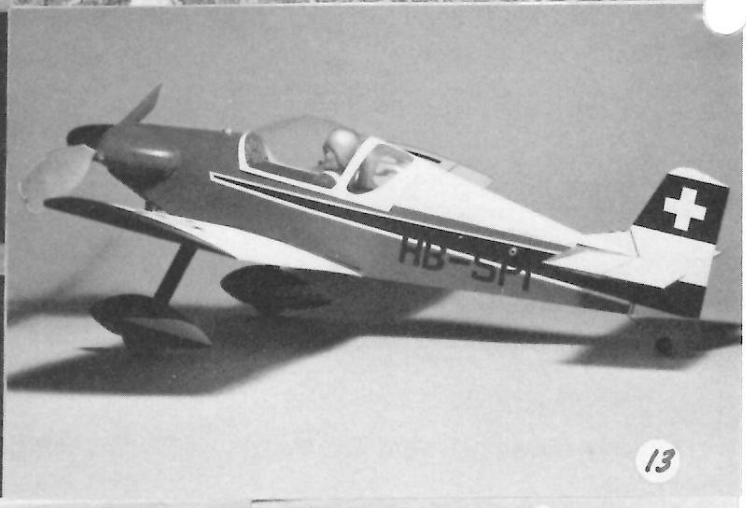

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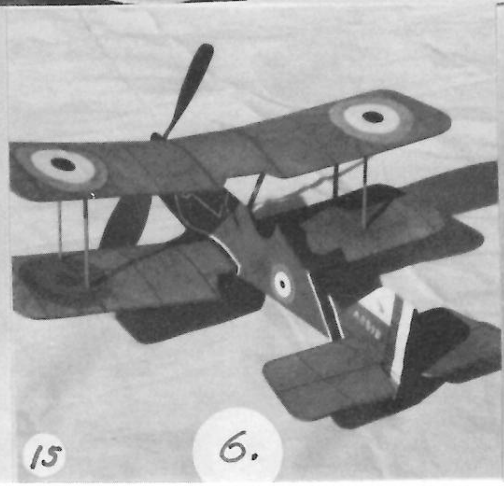
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M.A.N. FEB '32

Frank Luke, Jr.

"The Balloon Terror"

The Miner of Arizona Who Became America's Second War Ace

By J. Noble

HAVE you ever wondered what would happen if the famous "bad men" of the Wild West had lived at the time of the Great War? Here is the story of a modern Jesse James and Buffalo Bill rolled into one death-defying airman.

Frank Luke, Jr., born in Prescott, Arizona, went almost directly from the football gridiron to the battle fields of France. Three months after he landed at Brest as a rookie pilot in the A. E. F., he died, far behind the German lines, in the riddled cock-pit of his bullet-shattered plane.

Yet thrilling as are the adventures of this modern "Bad Man" of the West, who rode a Spad instead of a broncho, the history of his boyhood and early youth in the wild desert regions of Arizona and Texas is almost equally exciting. Luke's German parents emigrated to Arizona shortly after the Civil War, and there, among the wild scenes of mining boom towns, in the last flaring days of the Open Range, Frank Luke spent his earlier years. Straddling a horse almost as soon as he could walk, Luke found in his favorite diversion of hunting, the gun practice which was later to enable him to shoot down 14 balloons and 4 planes in the space of only 17 days.

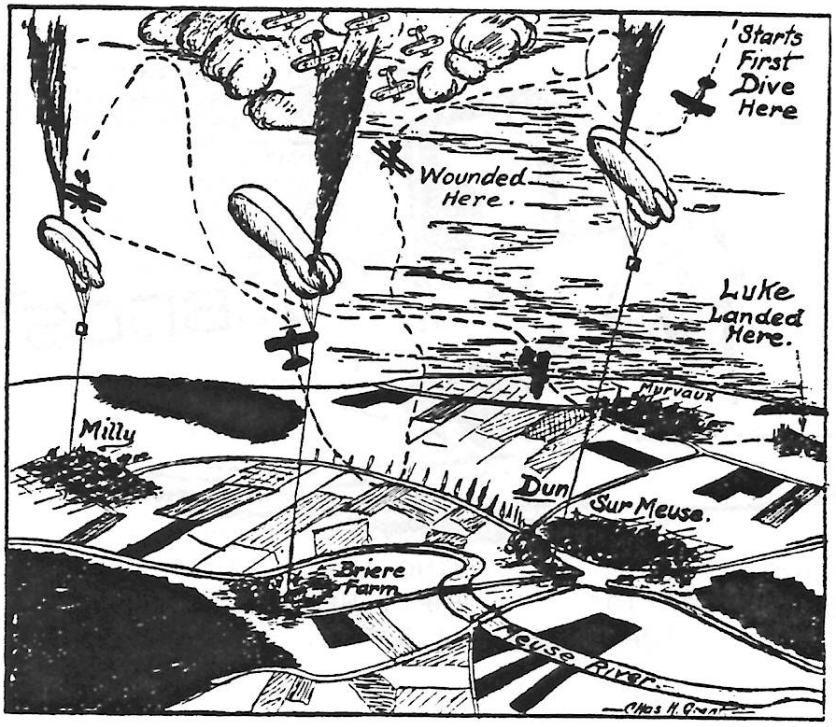
From earliest childhood this future ace carried the hearty respect of both friends and foes, and even among the hard-boiled denizens of the Arizona Bad Lands he was early known for the quality of his unflinching bravery and blazing independence. At the age of 16, Luke's fighting fame had already spread throughout his own town of Prescott. Soon it was to cover the entire state of Arizona, when as "the copper mining kid" he knocked out the professional pugilist, Battling Haney, in the first round of an exhibition fight. Only a few weeks after this exploit he won further praise for his Indian-like grit, by playing through the last quarter of a high school football game with collar bone broken, and right arm dangling helplessly at his side.

THOUGH Frank Luke was to become America's second greatest War Ace and the only flier in the war to receive the Congressional Medal of Valor, he showed no interest in aviation up to the time of America's entry into the World War. In fact, so little did Luke know of, or care for, the principles of aeronautics that once he tried to jump from the cupola of his high school building, using only a wagon umbrella for a parachute.

It is easy to see that a man of Luke's restless, battle-loving character would be among the first to enlist in those stirring days of September, 1917, when the first call for volunteers went out from Washington. Following his enlistment Luke received an immediate assignment for active duty at the Ground School in Austin, Texas. Joining his class late, he nevertheless graduated with the others, and was ordered to Rockwell Field in San Diego, Calif., for actual flight instruction. Yet, three months of army discipline had done little to break Luke's spirit of independence, for, upon being sent up for his first solo flight, Luke was seen to execute a "Falling leaf" and "double loop." His success with these maneuvers did not soften his instructor's anger, and he was grounded for three days. Luckily, he was forgiven in time to sail for France with his unit as a Second Lieutenant, on March 18th, 1918.

As though fate were following his every footstep, the eager Luke was again balked in his desire to get into immediate action. From the time of landing in early April, until his assignment to the First Pursuit Squadron in July, Luke was either kept on the ground, or used for such tame, but to him tantalizing, service as ferrying planes to the battle front and leading practice formations far behind the lines.

Once he found himself within hearing of German guns, Luke lost little time in distinguishing himself as a fighter. On his first flight with the 27th Aero Squadron, of which he was a part, Luke deserted his formation and reconnoitered alone. The following day, despite the stern warning of his commander he deserted again, and sped far afield over the German lines. This time upon returning to the official reprimand which he knew awaited (*Continued on page 41*)



him, Luke had his reply ready. Interrupting the stinging words of his superior, he said calmly, "At any rate I got a Boche." The laughter which this statement brought from his more experienced comrades was silenced to shamed admiration when his confirmation arrived from an American Balloon observer.

Astounding as Luke's ability at downing enemy planes proved to be, this was not the branch of aerial combat which won him the lasting fame which is his today. Enemy balloons anchored to trucks and filled with inflammable gases were this Arizona airman's target. Few were the fliers who cared to tackle these defenseless-looking monsters of the air. To approach within a radius of 100 yards of German observation balloons was considered, even by such fliers as Rickenbacker, Lufberry, and Ball, almost certain death. What pilot was skillful enough even in those days of heroes to brave a blimp's massed defenses of anti-aircraft artillery, long range machine guns and bomb throwing cannons? What ace, even of the days of 1914-18 dared try to pass the hovering flight of German war birds which constantly guarded each of these precious "eyes of the artillery," the German observation balloons? The answer is Frank Luke, Jr.

On September 12th, 1918, Luke, cheated of his prey, namely three enemy airplanes, which he had lost sight of in the sun, turned toward the village Marieulles, behind the German lines. Almost before he saw the balloon which was anchored there, his plane was sighted by its enemy aircraft guns or "Archies." Rookie though he was, Luke knew what to do. Climbing to a height of 5,000 feet he threw his Spad into a power dive. At the rate of 160 miles an hour he hurtled himself straight at the balloon below. Swooping to within yards of the belching Archies below the blimp he sent burst of phosphorous bullets at its thick side. This taking no effect, he spiraled quickly, and looked down again to send a second burst. Again with no result. Before he could return for a third onslaught, Luke's machine guns jammed. While the winch crews on the anchoring trucks frantically pulled the machine to earth, Luke calmly withdrew. With shells, bombs and machine gun bullets whirring around him, he carefully put into condition one of his machine guns. With a turn and swoop he was back again, to find the balloon only a few feet from the ground. Wheels almost touching the balloon, he raked its entire length with incendiary bullets. His reward was a hot belch of blue flame and a smothering cloudy black smoke from the exploding balloon.

But, even in this moment of triumph, the jeering laughter of his comrades still rang in his ears. With the fusilage covering of his Spad flying in tatters and his wing fabric in shreds, Luke refused to turn his nose toward the home aerodrome. Sighting an American observation balloon he landed in the pasture lot below it, and obtained confirmation from its two observation officers. Confirmation in hand he climbed then into the cockpit of his shattered Spad and attempted to fly home. So badly damaged was the plane, however, that he could not take off, and reluctantly he was forced to return to his head-quarters by a lowly motorcyle.

So began the last two and one half weeks of life for this desert-bred American Eagle. Two days later Luke escaped from a flight of eight Fokkers to bring down a second German blimp. A third victory followed next day. But this time, Luke, aflame with the brave man's joy in defying death, not only brought down the balloon, but swooped within 100 feet of the belching Archies below and scattered their crew with his last seventy rounds of ammunition.

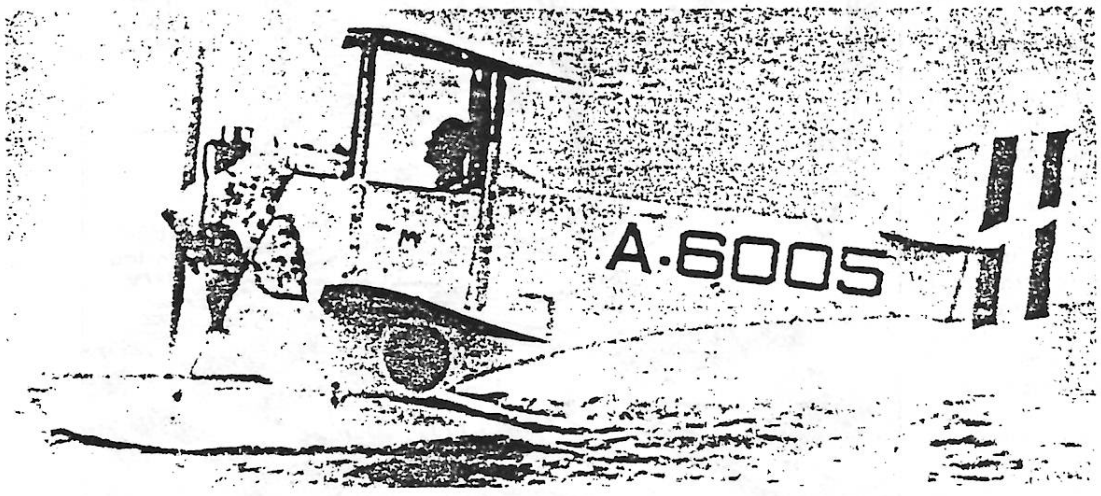
Yet this unheard of feat, must, in the light of Luke's later triumphs be counted only as "shadow boxing" for this greatest of all "Balloon Busters." On September 15th Luke brought down two well-protected German balloons in the morning, only to fly out again in the afternoon and get the third.

Morning patrol on Sept. 16th, and Luke searching the skies for his monster victims, found his prey grown wary. Upon the very approach of his fast flying Spad the blimps' crews invariably pulled down their charges, and Luke, daring as he was, found it impossible to penetrate the hail of shells, bombs and machine gun bullets which crowded the air above the balloons.

It was, therefore, with a new and daring plan that this Arizona miner approached his superior after luncheon that day. To his commander's amazement Luke asked permission to make a night raid, and stated that it would be possible for him to bring down at least three "drachens" in the period between the setting of the sun and complete darkness. That this feat would mean a return in the dark, his plane a target for American Archies as well as German, did not deter this most daring of all aviators. And daring alone Luke knew would not be enough. The landing speed of a Spad is 75 miles an hour, and landing even in daylight on a rough army field, was a feat many a pilot shrank from. Yet if Luke was to be successful in his night raid, a landing would be necessary on a darkened field without a guiding light of any kind.

But in the days of the St. Michel push, the knockout blow which was to crush the last defenses of the Fatherland, commanding officers were little concerned about the personal safety of their men. Yet because of Luke's value to the American Air Corps, he was given permission to make this unheard of attempt only if he would consent to the protective presence of a second plane, to be piloted by a Lt. Wehner.

TO BE CONTINUED



Navy bought three Italian Macchi M-16 ultra-lights in 1922 for evaluation as seaplane scouts. Landplane version had bicycle wheels attached directly to longerons at bottom of unusually deep belly; arrangement was needed to keep large-diameter wheels below wing. This also made a handy float-attach point. Italy experimented extensively with flying motorcycle concept from end of WW-1 into early 1920's without notable success.

SPAN: 19' 8" WING AREA: 121.5 SQ FT. GROSS WEIGHT: 572 LBS.
LENGTH: 13' 10" EMPTY WEIGHT: 352 LBS. ENGINE: 30 HP ANZANI.
TOP SPEED: 82.5 MPH. CLIMB: 3500 FT IN 10 MIN.

A PARTIAL LISTING OF ARTICLES IN AIR ENTHUSIAST QUARTERLY

Paul Gaertner

Here is a partial list of articles appearing in issues of the British magazine AIR ENTHUSIAST QUARTERLY. The y's and n's to the right of the aircraft name show whether or not the article includes a cutaway drawing and/or there are color side views similar to those in PROFILE publications. I don't have issues 3, 7, 9, 12, or 24. The connection between the listed aircraft and these issues was made through information in the Letters to the Editor columns.

Issue	Aircraft	Skel	Color
28	Aerospatiale Caravelle	y	y
23	Airspeed Ambassador	y	n
20	American Moth restoration	n	n
34	Amioy 354 twin-engined bomber	y	n
17	Armstrong Whitworth A.W.52	y	n
09	Armstrong Whitworth Whitley	y	y
11	Auster (Taylorcraft) utility	y	n
21	Aviatik D 1	y	y
26	Avro Shackleton	y	y
22	Avro type 555 Bison	n	y
19	Avro Vulcan	y	y
14	BAC TSR 2 prototype	y	n
30	Bell UH-1	y	y
26	Bell UH-1B	y	y
38	Boeing B-47 Stratojet	y	y
09	Boeing 247	y	n
22	Boeing Model 80A trimotor	y	n
09	Boeing P-12/F-4B series	n	n
14	Boeing P-26	y	y
18	Boeing Stratocruiser	y	n
07	Breguet 19		
16	Brisatol Blenheim	y	y
28	Bristol Blenheim	y	y
18	Bristol Bombay	y	n
27	Bristol Brabazon	y	n
20	Bristol Brittania	y	n
35	Bristol F.2B fighter	y	y
32	Bristol Scout	y	y
38	Consolidated PBY series	y	y
34	Convair B-58 Hustler	y	y
37	Convair F-106A	y	n
34	Curtiss C-46 Commando	y	y
23	Curtiss Hawk 75A-4 fighter	y	n
26	Curtiss Hawk biplanes	y	y

Issue	Aircraft	Skel	Color
16	Curtiss-Wright CW-21	y	n
37	Dassault Ouragan	y	y
30	de Havilland D.H.95 Flamingo	y	n
30	Dornier Do 17	y	y
21	Dornier Do 24	y	y
36	Douglas A-1H Skyraider	y	y
36	Douglas A-20	y	y
35	Douglas A-3B Skywarrior	y	y
07	Douglas B-26 Invader		
19	Douglas DC-2	y	y
15	Douglas DC-4	y	n
16	Douglas DC-6 & DC-7	n	n
27	Douglas P-70 night fighter	n	n
31	Engl. Electric Canberra	y	y
37	Fairey Flycatcher	y	n
22	Fiat CR.32 biplane	y	y
20	Fiat CR.42 Falcon biplane	y	y
36	Fiat G.91 (Portugal)	n	y
37	Focke-Wulf Fw 189A	y	y
27	Focke-Wulf Fw-190	y	y
38	Fokker D VII	y	y
17	Fokker D VIII	y	y
20	Fokker T VIII floatplane	y	y
25	Gloster Meteor night fighter	y	y
21	GlosterGamecock	y	n
23	Grumman JF series	y	y
09	Grumman FF-1 biplane	y	y
21	Grumman TBM as sprayplane	n	n
11	HA-300 Egyptian mfg	n	n
14	Halberstadt WW1 biplane D-type	n	n
14	Handley Page Hampden	y	y
03	Hawker Fury		
15	Hawker Halifax	y	y
15	Hawker P.1052	y	n

Issue	Aircraft	Skel	Color
36	Heinkel He 51-B	y	y
38	Heinkele 100	n	y
32	Howard DGA	n	n
12	Ilyushin IL-2 & followon		
36	Ilyushin Il-28	y	y
16	Junkers F 13	y	n
12	Junkers F VII trimoter		
25	Junkers D 1	y	n
12	Junkers first fighters		
09	Junkers Ju 290 series		
20	Junkers Ju 86	y	y
29	Junkers Ju 88	y	y
14	Lockheed Constellation	y	n
21	Lockheed F-80	n	n
11	Lockheed P-80	y	y
22	Martin 139 for Netherlands	y	y
18	MIG-3	y	y
33	Miles Magister	n	n
19	Mitsubishi A5M2	y	y
31	Mitsubishi A6M2 Rufe	y	y
09	Morane-Saulnier Parasol	y	n
23	Myrsky MY-47 (Finland)	y	y
29	Noorduyn Norseman	y	y
26	North American B-25	y	y
30	Northrop F-15 Reporter	n	n
32	Northrup XP-56	y	n
28	P.Z.L. P.11 fighter	y	y
11	Polikarpov I-15 biplane	y	y
19	Republic F-84G	y	n
31	Republic F-84G (Portugal)	n	y
33	Ryan NPN "Spirit of St.Louis"	n	n
33	Saab 29A , Saab 35-F & AJ 37	y	y
22	Saab A 21 fighter	y	y
23	Saab J 21 jet fighter	y	y
18	Seversky SEV-3	n	n
11	Short C-class flying boat	y	n
15	Short C-class with RAAF	n	n
15	SPAD 7	y	y
15	Supermarine 510	y	n
17	Supermarine S.6B floatplane	y	n
16	Supermarine Spitfire w. USAAF	n	y
17	Supermarine Walrus	y	y
24	Thomas Morse MB-3		
27	Tupelov SB-2 bomber	y	n
35	Tupolev ANT-6	y	n
32	Tupolev SB-2M bomber	y	y
20	various: USN helicopters	n	n
27	Vickers Valparaiso biplane	n	y
21	Vickers Viking transport	y	n

29	Vickers Vimy	y	y
31	Vickers Virginia	y	n
25	Vickers Viscount	y	y
33	Vickers Wellington	y	y
31	Vought XF8U-3	n	n

MAN
OCT 1932

A Pioneer Makes Good

The Little Known Facts of Cierva's Struggle to Produce a Safe Flying Machine and How These Resulted in the Birth of the Autogiro

By Orville H. Kneen

IMAGINE ourselves in neutral Spain during the last hectic summer of the great war—A queer place to pick up new ideas on airplanes, if that's what we're here for. Why? Because the army has almost no planes. Finally, being unable to buy any from the fighting nations, its chiefs have decided on a grand competition.

Big prizes are offered for the best design of fighting, scouting and heavy bombing planes. Keen young aeronautical designers make their entries for the fighters and scouts, but the 50,000 *pesetas* offered for a heavy bomber has no takers. No one in Spain has even *seen* one, much less tried to design and build such a huge war-bird. It must carry deadly "eggs" weighing hundreds of pounds, and a crew as well.

Just in time a young student of the Civil Engineering School slides in his entry for the bomber. What would a civil engineer know about airplanes? More than you might think. During his six-year grind he had studied everything he could lay his eyes on that dealt with aircraft. And he knew how to design light structures to carry heavy loads and sudden stresses.

More important still, this 22-year-old burner of midnight oil knew how to "sell" an idea. He induced some friends to "pungle up" (French for "shell out") enough good Spanish *pesetas* to supplement his own and build the big ship he rapidly drew up on paper. He must have been a good salesman, for he had no ready-made, build-your-own plans, not even a picture of a bomber. No such ship as he designed had been built. He had to figure out every part—then convince his friends it would do the business, and hardest of all,—wait for the test.

(Photograph by Bachrach)
Cierva, inventor of the Autogiro

Months of secrecy and whispering. The big day arrives. The bomber is ready to fly—maybe. The crowd gasps — what's a crowd without a gasp or two?—as the hangar doors swing wide open and a huge biplane is trundled out, an excited young engineer giving a trundle or two himself.

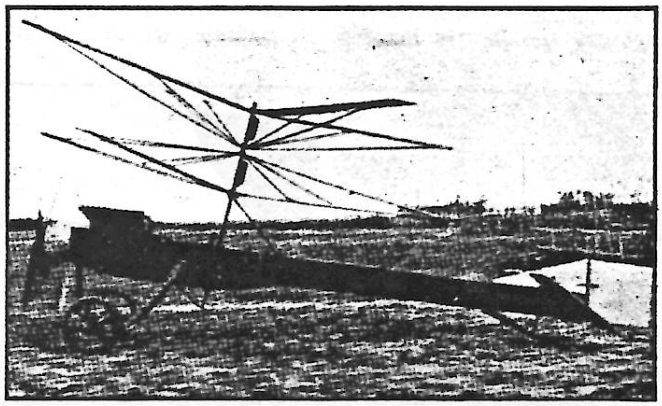
The three big motors warm up in their usual turnover. Set as tractors, they aim to get up in the world with a pull instead of a push (a novel idea then, and one that works better with planes than with jobs). The crowd gets an eyeful as well as a couple of earfuls.

The motors spin, the great wings vibrate gently to the tips of their eighty-foot span. The designer likewise vibrates from stem to stern. His "rep" is at stake. The bomber is built to carry fourteen passengers, but there is no grand rush for places. "After you, my dear Alphonse," and they all decide politely to let the pilot launch 'er. The inventor is requested to keep *both* feet on the ground, but finds it difficult.

TO MAKE the rest of this long story into a short-"short" with a sad ending, the pilot took 'er up and she responded nobly. She flew like a bird and a half. Soon the pilot was sure he had her eating out of his hand, though he'd never steered such a big one before. Finding her docile, he started getting familiar. With the usual result.

Flying low one day, he started to make a sharp turn in high, as many another low, reckless driver has tried. The ground came up and smacked him down. They fished the pilot out—the only thing left in one piece—but Cierva was pretty badly shaken.

No, he wasn't in the plane; they wouldn't let him go up, yet. But who wouldn't feel shaken, with his career smashed into kindling?

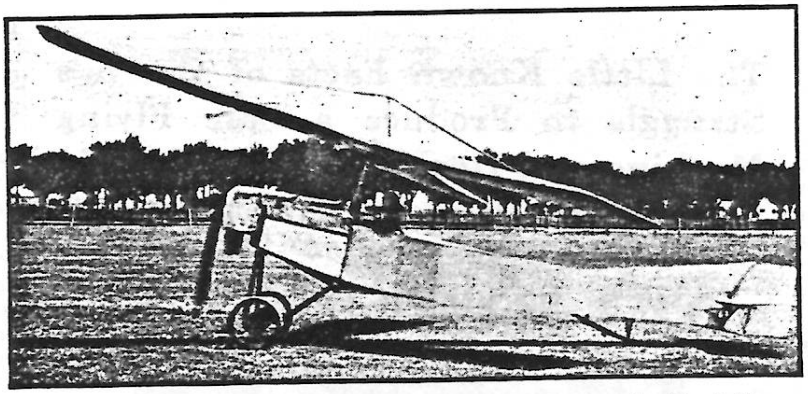


Cierva's first experimental machine, in which rigid rotor vanes were mounted on an old Deperdussin fuselage. This proved to be failure number one. It "cracked up"

He did get the equivalent of $10,000 as the prize winner. But unluckily he and his friends had already dug up $32,000 to win it! It took no slide-rule to figure out how long the family pile would last at that rate. Evidently those stories about "riches taking wings" were no fairy tales. Designing airplanes which could smash up even before you could collect the first instalment

looked like no royal road to riches. More like the rocky road to Dublin!

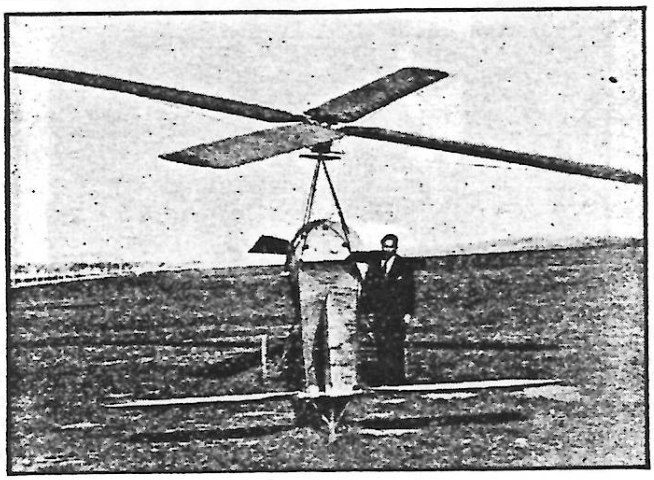
The young engineer took the pieces of that desiccated bomber and made them into an Autogiro, did he not? Yes, he did not. But the wreck yielded him dozens of plain and fancy assorted ideas. It started him on a year of mulling, with a large turnover of mulls per day, and destined to have mighty important results.



Here is the second machine which also was equipped with rigid vanes and proved unsuccessful

The point was that he had designed and built a good ship—efficient, balanced, powerful. A good pilot had flown it all over the sky. All was well as long as he flew high, wide and fast.

It looked all wrong to Cierva. Speed's all right when you're putting salt on birds' tails. But you've gotta come down sometime, if only for gas and chow. Now if you had a ship that could fly *low and slowly*, keep an even keel and live controls, let you pick a vacant lot with a gas pump alongside a hot-dog stand, and finally let you land and take off without injuring scenery or ship — *then* you'd have an aircraft that would be a regular flying motorcar!



Cierva's fourth unsuccessful attempt. Here he incorporated means to change the angle of attack of the rotor blades, as desired, while in flight

His friends — he had many—patted him on his broad back and laughed at his pipe dreams. But Cierva had several jumps on aviating dreamers in general. He'd lived with planes since he was twelve. He was paper-gliding when the Wrights were putting cricks in people's necks and in world records, by flying ninety miles in two and a third hours. He knew why little helicopters, with rubber-band motor, could bore their way straight up but big machines couldn't carry enough power to do the same.

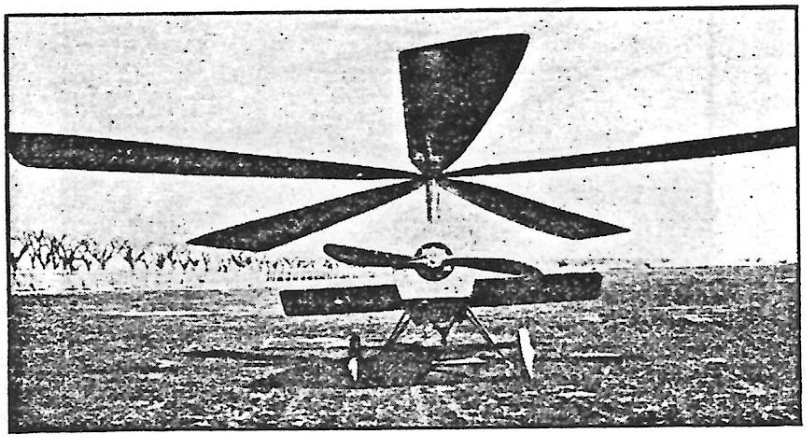
He knew, too, why all planes stay up — speed of air under and above the wings. No forward speed and you don't fly. Forty miles an hour—fast ships up to ninety — just to keep aloft! And that's pretty fast when you're trying for a landing, maybe in fog, haze or darkness!

Cierva had been gliding through all the books on flying. He'd hopped, in fancy, with keep-at-it Lilienthal, test-'em-out Maxim, figger-'em-out Chanute, the American professor who knew how to build light, strong, box-like gliders. He knew why the Wrights had been first to keep on flying, once in the air. And he knew that fixed-wing flying was (and is) a neat trick of balancing your wings as you slide swiftly along the air waves. When those waves cease going past your wings, you're sunk. He knew all that.

And he had had lots of bumps. To test their book-learning, he and two other young aviators had built gliders. Cierva had flown them. Then they had bought a fine airplane, that is, all that remained of one after the pilot had tried to land without killing the crowd that dashed onto the field. The kindly aeronaut had shown the boys how to build it anew, even to a prop whittled out of an old wine-soaked counter. Canvas, doped with glue, dyed red, made rattling good wings.

In fact, whenever she flew, the whole thing rattled and flapped like an ancient windmill. But fly she did, the aeronaut at the controls, and young Cierva perched in front, so thrilled he couldn't speak. Thus he got some early rides, until the rains came and the glue washed out!

Cierva and company had less luck with a fast monoplane they designed and built. It refused to rise to the occasion Too little lift at take-off speed. The landing gear got weak in the knees. *Pesetas* ceased when parents padlocked their purses. Cierva went to the engineering school, kept up his aeronautics on the side — and after his brother had been laid away to rest, got ready to try out any new idea that popped into his large and well-oiled brain.



The third experiment. In this machine Cierva tested the effect of five rotor blades without success

Luckily, there were no flying sharks around, to

argue him into sticking to the "regular" way of designing airplanes. As he explained years later, in his "Wings of Tomorrow":

"It would have been virtually impossible to have achieved any success with the idea of the Autogiro unless I had been able to calculate its basic design by mathematics before I began to build it. Success by mere experiment would have been as unlikely as the successful construction of a cantilever bridge without any previous engineering experience. More so, indeed, for the problem was far more complex and the risks of error far greater. Without a litttle certainty of science on my side, I might have spent my energies in a dozen different directions, all of them wrong, and never found the secret of the Autogiro."

THE long story of these calculations will never be told, and a story in figures and formulas would not be quite in keeping anyway. But as time went on Cierva got to rotating a hazy idea in his mind. Keeping an airplane up takes speed—but if you could get the air rushing past the wings *without* rushing your whole machine through the air, you'd have the whole problem solved!

The top helicopter seemed to prove that it could be done. When its rubber-band power was gone it would slowly descend, the whirligig vanes rotating in the air. Thus the "free-wheeling" rotor acted as a sort of air-brake, letting the toy down slowly and easily. Maybe you couldn't go straight up with a man-size machine like that because your motor would be too heavy. But couldn't you climb, descend, or fly level?

Telling no one of his fool idea, he went to work and figured out the size of a whirligig able to support a man-carrying machine. It would be like a big windmill turned flat, its blades sweeping over the pilot's head. Would the blades keep on turning—even when you turned the motor off? Could they be made strong enough? Could such a crazy rig be controlled? There were many such questions to be answered. In his new fish-pond, he didn't know whether he would catch a whale of a new idea or just minnows.

He figured his way up steep graphs and down the other side. He took sharp curves on high, crashed his way through bristling equations and wicked formulas. He used up reams of scratch paper and bales of pencils (he could afford plenty of those at least). He studied helicopters and wing-flappers, and finally shook his head at both.

His engineering training helped him immensely. He could make fifty models on paper for one in the shop. He saved months, perhaps years of valuable time, while he tried to grab out of thin air a brand-new idea. Eventually he evolved as "goofy" a rig as one could imagine; a windmill turned flat, attached to a fuselage, all the weight to be suspended from the windmill vanes. These were to be rotated by the air itself, just as moving air turns an ordinary windmill. What a freak!

He had to have something to make his rig go forward. Birds, with strong muscles to the very tips of their wings, fly by flapping, and fish swim just as successfully by wriggling their tails. But men have found no way—perhaps never will—to make machines of similar strength with extreme lightness. Man and machine weigh far more than the greatest birds of today—whether nature *ever* made a true flying creature weighing tons, or whether those great winged beasts merely glided—science is not prepared to say.

So Cierva finally settled on the good old propeller, driven by regulation motor, to pull his theoretical machine along.

But a real difficulty had arisen during this building of an airplane on paper. As the rotor rotated like a windmill on its back, each blade as it advanced into the oncoming air would naturally have more lift than the blade retreating at the same instant. The other blades would be acting similarly, in lesser degree. The total result would be that the side of the windmill with greatest lift would always be trying to "hump itself," and the whole machine would tilt toward the side with least lift. That is the sort of thing the engineer finds out even before he *builds* his brain children.

Cierva thought it over for a long time. One day a brilliant solution popped into his head. Why not *two* rotors, one above the other, turning in opposite directions? Then the lopsided lift of one would (theoretically) balance the other.

IT WAS a weird and complicated machine which he finally began to put together. There was a lot of work to be done before the first whirligig aircraft was erected, with its funny wings carried on a mast braced to the top of an ordinary fuselage. Those first wings were stiff and rigid, solidly fastened to bearing and hub. There was no aeronautical reason that anyone knew, why stiff wings, rigidly fastened, would not work. It was some twelve years ago that this strange bird was finally hatched.

They pushed the contraption out of the shop, warmed up the motor, and got the two rotors turning in opposite directions (it made you dizzy to watch it). A regular pilot climbed in and tried to taxi for a take-off.

The machine trembled. Then, before anyone could do anything, it laid down weakly. Its vanes hit the ground and broke off with loud cracks. They had exhibited no more lift than if they had been made of stone. The bottom rotor, in the slip-stream, had turned much faster than the upper one, working in undisturbed air. All this was very discouraging, or would have been to a weak-kneed inventor.

But Cierva, being an engineer, went back to his aerodynamics and lift tables and stress calculations. The rules, including his well-oiled slide-rule, said those rotating vanes should have lifted his machine easily.

BUT the weakness he had tried to correct with the double rotor still remained. The tendency to tip over on the side of least lift was to plague him a long time and cause his hair to grow thin in places.

At length, with the help of capable, if sceptical mechanics, he had a new full-sized model ready to fly. This one had only one rotor, but the blades were rigidly fastened. He still did not know whether it was possible to keep the machine right-side up.

The rather nervous pilot took it out and taxied. A few yards of run, with the rotor up to a fair speed—and the whole thing just turned over and fainted, like a very sick cow. The blades snapped short. There were snickers. Perhaps Cierva said something—an old Spanish custom at such times. Many inventors would have had more than enough—going on two years—and this the best he could do!

But he went back to drawing board and slide-rule, scratching his massive head for new ideas.

His final No. 3 machine had five blades in the rotor, and he had on this an ingenious device whereby the pilot could change their angle of incidence at any time, thus varying their lift to right or left. "That should work," he told himself, to prevent tilting from side to side. But he was not so optimistic now. Was the test to fail—prove a regular "three times and out?"

(To be continued.)

FARQUHAR HIGH SCHOOL
NO-CAL

NAME	AIRCRAFT	FLIGHT TIMES 1st	2nd	3rd	BEST
1. FLESHER, AL	CESSNA 195	42	73	112	112
2. CLARKE, BILL	BRONCO	54	106	--	106
3. ROWSOME, FRANK	ERCOUPE	25	--	--	25

Oh No! Another of Those "How to Do It" Articles!

Bud Carson

Over the years, I have gotten so many great building tips from the Club that it is only fair that I should take a moment or two and answer some questions that surfaced at the recent Pax river meeting, regarding my Coconut Wright Air Sedan. Actually, I have no choice in the matter, since I was personally asked to write this by none other than der Schanze himself, which, of course, we will all recognize as a direct order from headquarters. When der Fuherer schpeaks, ve lizzen!

The first item has to do with the new Pactra acrylic paint I used to trim the model. I should begin by saying, lazy cuss that I am, that I am not overly fond of airbrushing either the oil based paints or dope, because the airbrush gets gummed up so easily, and requires meticulous and immediate cleaning after each use with lots of expensive solvent. This left only acrylics, which I had tried in the past, with, quite literally, spotty results. The problem there was that the paint slackened the tissue and when it dried, the wrinkles appeared "painted in" even though the tissue had retightened.

Then about a year ago, along came Pactra with its new series of acrylics, solving all these problems at one fell swoop. The paint comes in Badger-compatable jars and is at just the right consistency for spraying - thinning is neither required nor even recommended. You just screw the jar on and spray. If thinning is a must, you are advised to use only water- truly welcome news to cost-conscious modelers (read cheap SOB's). It sprays evenly with good one-time coverage and adheres well even to plastic, which, I suppose, it was mostly intended for to begin with, and comes in a wide choice of glosses and flats, including clear.

When sprayed lightly, tissue sag is minimal and after about six hours, the original taughtness will be restored with no tendency to overshrink. I say this because the paint will dry very quickly, but the sag will remain for a few hours. When this happens, don't panic. The tissue will eventually shrink back to whatever conditions you started with, warts and all, if they were there originally. In other words, don't depend on the paint to take out those small wrinkles as you may be used to doing with dope. Of course, for minimum weight buildup, you can employ the old trick of using colored tissue for starters and then fogging the paint over it, merely enhancing the base color. When finished with spraying, a few quick blasts of plain water through the airbrush and it's clean as a whistle.

The paint can be applied directly to raw tissue with satisfactory results, but where masking is involved, the tissue should be prepped with some sort of dope or lacquer. I have been using Krylon clear or Matte acrylic (available in spray cans at art stores) to seal the tissue-just one coat seems enough. Without this sealing, the paint will tend to seep under the masking line, following the natural capillary action of the paper fibers.

Which brings me to the next subject, masking. If masking has ever been an extra-strength headache to you, as it has been to yours truly, the cure has finally arrived, thanks to 3M and Dave Rees. I thought I had tried everything - different tapes, which either (a) wouldn't stay stuck after the paint was sprayed, with just awful results, or (b) stuck so well that when I peeled it off, the the tissue underneath it came off along with it, which is enough to make a grown man cry. Ok, you say, put a layer of clear over the tape line to seal it. But with some tapes, dope seepage glues the tape on so well that when you try to peel it off, the gummy part stays behind, again, driving heretofore perfectly sane modelers over the edge and into the waiting arms of the stamp-collecting crowd.

But help has finally arrived for hackers like me. As those of you who have been following Dave Rees' excellent construction articles in recent issues of Flying Models already know, he recommends using 3M's Scotch Removable Magic tape, No. 811, which comes in a blue box. This stuff must have been made with us modelers in mind - it adheres and seals well, but peels off effortlessly, with no tendency to tear tissue or pull up the base paint, leaving a crisp, razor-sharp mask line. I was able to find some in an art store, but you can probably get it in office supply stores as well. Its removable feature also lets you use it to hold things in place while the glue dries (for example, celluloid windshields) and can be peeled off later without pain or suffering. Hats off to Dave for discovering it. So remember, folks, it's No. 811 or nothing; do not accept cheap substitutes. You know that if Dave uses it, it's not only got to be good, it's got to be perfect!

For a final item, I was asked by a number of

people about the bond paper used for the cowling on my Coconut, so here goes. Most of us have used bond paper at one time or another with good, sometimes not-so-good results for cowlings, turtledecks, wing fillets, and so forth. The problem with bond paper is that it will like as not buckle up when it's doped, and one must never, never let it get wet, lest it turn into something better suited for modern art museums than airplanes.

The paper can be made stiff as light-gauge sheet metal however, and totally impervious to moisture if it's first soaked with thin CA glue. The trick is to soak it first while it's still in sheet form, not after it's been shaped and glued in place.

Here's how to do it. Put a sheet of wax paper down on a flat surface- preferably not the living room coffee table, since there's a chance of getting CA on whatever surface you choose. Now lay a sheet of bond paper on top of the wax paper (actually, I use el cheapo computer fanfold) and squeeze out a healthy blob of thin CA in the middle. Using a straight hardwood stick about 6"long and 1/2" wide (something like a popcycle stick) squeegee the glue out from the center toward the edges. Don't try to cover the entire sheet- you'll need something to grab hold of later. When the paper is soaked, flip it over and soak up whatever has gone through to the other side, and spread the excess. Hang it up to dry for a half hour - I don't recommend using any sort of kicker - and when it's dry, the last side facing the wax paper should have a smooth, hard, even finish. Now you can make your cowlings, fillets, etc. with the pre-pregged sheet, which can be cut easily with scissors or a razor blade, sanded, painted with anything, and glued on with white glue, Ambroid, or more CA - what more can you ask?

Weight-wise, I figure it has about the same density, per square inch, as medium grade 1/20th balsa. But of course, it needs no covering or filling, and after the turtledeck or whatever has been installed, it will take paint immediately, meaning that the net result will be a surface weighing less than the balsa. This material is very strong and resists denting, buckling, and tearing far better than balsa or untreated paper. I have used odd bits of it for gussets, landing gear and dihedral reinforcements, and other places where strength is important, with considerable savings in weight and hassle.

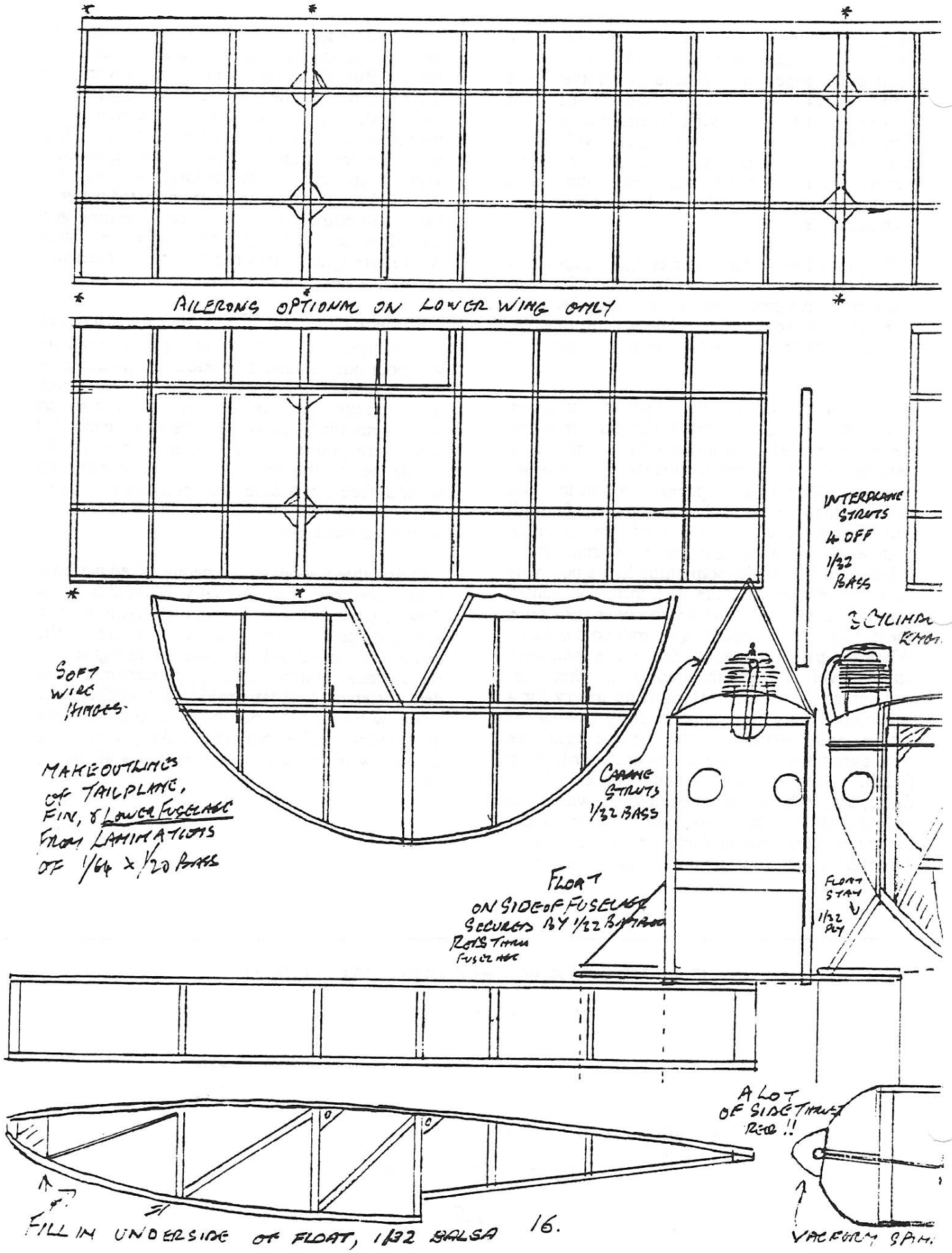
But here's the rub. CA is very corrosive and with a large area of it this size exposed to the air, will pour out volumes of noxious fumes that may cause eye and lung irritation. So use your head; work in a well-ventilated space. I use a small fan to blow the fumes away from the work area. Just make sure you're not inadvertently gassing the family pet in the process. I usually make up several sheets at a time, for open stock. Then I don't have to stop and make the mess each time I need a particular piece of it.

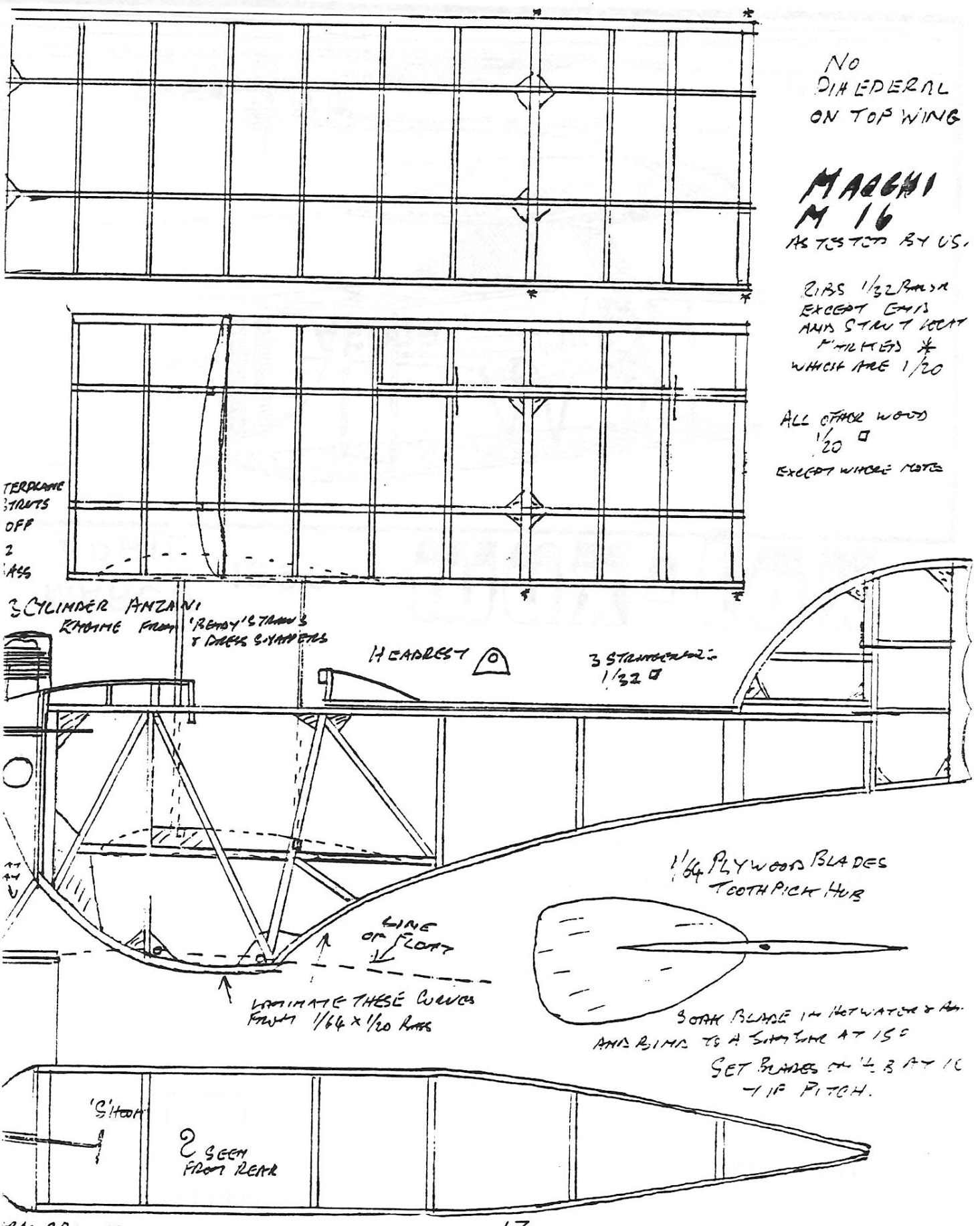
I think that's about it. Someone asked me how I made the cowl ring. Actually, I turned it out of Dow Blue styrofoam (2 lb/cu.ft) that is sold in insulation stores. This foam has very tight cells and if you rub a couple of coats of white glue into the surface, will become "case hardened" and dent-resistant, besides providing a surface that can now be sanded smooth. I made the wheels the same way. The spray Pactra Acrylic finished the job, with no further ado. So that's all folks, until next time, ado to you.

FARQUHAR HIGH SCHOOL

10 CENT'ER

	NAME	AIRCRAFT	BEST TIME
1.	BUCHANNAN, DOUG	TAYLORCRAFT	50
2.	DRISCOLL, DAN	FUNK	43
3.	PAISLEY, SCOTT	TAYLORCRAFT	15


AILERONS OPTIONAL ON LOWER WING ONLY
INTERPLANE STRUTS 4 OFF 1/32 BASS
SOFT WIRE HINGES
MAKE OUTLINES OF TAILPLANE, FIN, & LOWER FUSELAGE FROM LAMINATIONS OF 1/64 x 1/20 BASS
CRANE STRUTS 1/32 BASS
FLOAT ON SIDE OF FUSELAGE SECURED BY 1/32 BASS
FLOAT STAY 1/32 PLY
A LOT OF SIDE THRUST REQ'D !!
FILL IN UNDERSIDE OF FLOAT, 1/32 BALSA
VACFORM SPIN.


NO DIHEDERAL ON TOP WING
MARCHI M 16
AS TESTED BY US.
RIBS 1/32 BALSA EXCEPT END RIBS AND STRUT LOCATIONS WHICH ARE 1/20
ALL OTHER WOOD 1/20 □
EXCEPT WHERE NOTED
TERPLANE STRUTS OFF 2 ASS
3 CYLINDER ANZANI ENGINE FROM 'REDDY'S TRAINS & DIESEL SWAMPERS
HEADREST
3 STRINGERS 1/32 □
1/64 PLYWOOD BLADES TOOTH PICK HUB
LINE OF FLOAT
LAMINATE THESE CURVES FROM 1/64 x 1/20 BASS
SOAK BLADE IN HOT WATER & BEND AND RIVET TO A SIMILAR AT 15°
SET BLADES ON 1/4 3 AT 10 - 1 IF PITCH.
'S' HOOK
2 SEEN FROM REAR

17.

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FIRST CLASS

DUES DUE