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JULY 1950 VOL. XLIII—No. 1

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Cover Design by Jo Kotula

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By BILL WINTER

OVERHEAD hangs a radio job with dead batteries. On top of the piano is another intended for the Mirror Meet and only about 15% completed (also, one of the big air wheels is missing). We'd like to have a ship for the Wakefield Eliminations but haven't the design on paper . . . the Berkeley *Jetex Swisher* is up a tall tree in the rain . . . and it is foggy outside. So let's forget business long enough to start this column the way it ends—with a story.

Did you see those pictures of "Jim the Walker" in the science magazines? There he was, as big as life, stretched out on a canopied hammock, with an ice pitcher at his elbow, while a big lawn mower churned back and forth, solo, steered by radio control. People who know Jim claim it must have been a dummy on the hammock, for you'd never get him to stay still that long. Here's where we let you in on something—let's hope Walker doesn't read the "*Scrap Box*" this month!

Jim was putting on his usual exhibition of flying a couple of *Fireballs* at the Sport Show last winter in Chicago. The R.C. lawn mower is now part of the show deal. When the little planes come to a halt, Walker parades briskly out to the center of the circle, the tame mower following behind like a good natured Saint Bernard. Well, this time, the buckle of Walker's belt fouled the transmitter button, and the mower took off unknowing to papa. Being a jealous critter it went for the *Fireballs*. It seems one *Fireball* was red and the other yellow. In the bat of an eye lash, the mower digested both of them and spat out some orange dust.

This brought down the house. "How do you do it?" "Aren't those planes too expensive to chew up like that?" "How about painting two little airplanes on the mower?" And so on. The best crack was a page two headline in one of the local papers. "Lawnmower fails to take off, crashes airport!" (Winter fails to take off, crashes "*Scrap Box*." Where were we?)

E. C. Wilson, hews to a line and lets the chips fall where they may. He believes it's high time someone pointed out that speed is the safest of the three controline events: speed, stunt, and combat.

"Too many builders jump up to ridicule speed," says Wilson, "with the belief that the modelers with money are the only ones that win. There's an increasing tendency, also, to label speed as unsafe and to charge that this discourages the beginner.

"Do stunt and combat events have pull tests and line requirements like speed?" asks Wilson. "Usually no. The initial cost is about the same and, in the long run, a speed job outlasts three stunt models. The fact is that ingenuity pays off. The average builder plugs along with the same interior and a new paint job and calls this improvement. Not so in speed, with new sheet metal construction, radial mounting, fuel feeding problems, prop efficiency, fuel mixtures, and the real trimming of a model for flight. It is these things that make most modelers hunt up an excuse for not flying speed. It really has nothing to do with safety, but that safety beef makes a pretty good cry of 'wolf.'" So Wilson swings a haymaker at the wild and wooly combat boys. Have a listen.

"Let's beef loud and long," says he, "on the question of safety on this new so-called combat flying. In one contest I saw, one ship clipped another's lines and the free plane dived into the crowd. Another time two fliers became so excited that they wandered from the center of the circle and one of the ships flew into a group of modelers. At another contest a mid-air crash resulted in a loose engine being thrown into the windshield of a car. In that particular town the modelers lost their rights to fly inside City Limits. Combat is the bad boy, and something should be done now about cleaning it up."

Speaking of safety, what amazes us is that more people aren't speared by free flight jobs. Let's just say people. Those high-powered ships really wind-in and hit with the sound affects of a bazooka. E. C. Wilson's beef was untamed combat; it is our notion that free flight jobs need to be high powered. The science is not in the model, it is in the very basic fact that either you bend the rudder tab 1/64" too little or 1/64" too much. If you can pack in enough power with sufficient lightness, you can fly entirely on the propeller. The wing keeps the model from falling like a brick when the engine stops; this is known as the glide.

Then they wonder about free flight! What the average guy wants is a model that flies successfully, not a "contest rocket." There isn't a free flight contest job in existence that won't fly spectacularly on 50% of its present power. At a near-by city, the older crowd flies U-control exclusively though it is rumored that occasional characters with huge models are seen slinking off into the hills; ½A is something humorous. One daredevil free flighter gets out every week with the yo-yo boys who pause while he bounces his kit job off the tarmac. As yet he has failed to make a flight. This is the cause of much mirth. For all you know these men who were born and bred on U-control may wonder if free flight models are *supposed* to fly. If this chap would toss out his .074 for an .035 or, at the most, an .045 or .049, the results would be different. Then there's a kit job, a tiny pylon, cheap and cleverly prefabbed for the *Infant*. For its size it should be as hot as a .60 *Zipper*. For the kids? If the ship was 50% bigger, even double size, it would fly respectably. It flies now, of course, if you know what you are doing—the general modeling public doesn't, though.

Not long ago, a craftsman from an institution in a neighboring state wandered in with an *Infant* free flight job that was an eye opener. He had converted a Scientific *Firefly* (was that the name?). It was heavily doped and painted, with hardwood wheels and sturdy gear. It weighed a ton. Even "underpowered Willy" Winter raised an eyebrow at this one, but it proved to have a fast, flat glide and flies all over the place on its full tank of gas. Since it has been doing this for a year, it has given a lot of people much pleasure. How fortunate that this chap has never seen a contest pylon. He would be yelling that he couldn't find a field within 100 miles, or some other baloney.

We have come to the conclusion that, if we live to be one hundred, we will be lucky to know half of what there is to be known about model airplanes. Well over 20 years have evaporated since Pop began it all with a gift of an Ideal *Everyboy's Monoplane*. Incidentally, *that* was something! Way back there in the mid-twenties, and it had stamped aluminum sheet formers, properly notched, finished scale type

(*Turn to page* 44)

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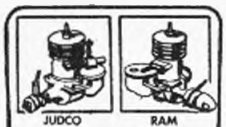

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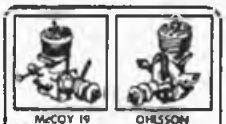

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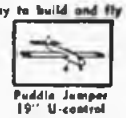

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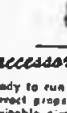

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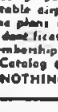

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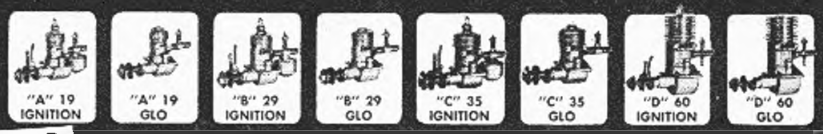

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AIR FORCE HAS finally announced its 1950 fiscal year (which ends June 30, 1950) aircraft procurement program, almost a year late. But seldom has the USAF had such a dficult time balancing its aircraft needs against available funds, and both against rapidly-changing conditions in the international field. The current Air Force program is buying: 82 Boeing B-47B swept-wing six-jet bombers for $303.6 million; 14 Boeing C-97A *Stratofreighter* cargo planes for $32.8 million; 47 Convair B-36D strategic bombers for $267.8 million; 12 Convair T-29 trainer versions of the *Liner* for $9.8 million; 36 Douglas C-124 *Globemaster II* strategic transports for $84.5 million; 53 Fairchild C-119B *Packet* troop carriers for $40.6 million; 11 Grumman SA-16 *Albatross* air-sea rescue planes for $7.8 million; 150 Lockheed F-94 (combat night-fighter version of the T-33 two-seat trainer) and 108 Lockheed F-97 (new designation for the F-94B night fighter) both for a total of $120 million; 125 Lockheed T-33 two-seat jet trainers; 111 North American F-86 *Sabre* swept-wing jet fighters for $34.4 million; 124 North American F-95 night-fighter versions of the *Sabre* for $130.9 million; 125 North American T-28 trainers for $15.6 million; 64 Northrop F-89 *Scorpion* two-seat night fighters; 120 Republic F-84 *Thunderjet* fighters for $37.4 million and 22 Piasecki H-21 helicopters for $12.5 million.

NAVY PURCHASES for the 1950 fiscal year include: 70 Douglas F3D *Skynight* two-seat night fighters for $61.7 million; 53 Douglas AD *Skyraider* single seat dive bombers for $12.1 million; 242 Grumman F9F *Panther* jet fighters for $93 million; 72 Grumman AF *Guardian* two-seat hunter-killer teams for $41.3 million; 45 Lockheed P2V *Neptune* search planes for $36.7 million; 10 Lockheed TO jet trainers for $1.3 million; 5 Martin P5M flying boats for $31.4 million; 140 McDonnell F2H *Banshee* fighters for $68.6 million; 15 North American AJ carrier bombers for $16.5 million; 60 Vought F4U-5 Corsair fighters for $9.1 million and 15 Piasecki HUP helicopters for $4.1 million.

ALL OF THESE aircraft, without exception, are planes already in production, many of them having seen service in earlier models since the end of World War II. The venerable old Vought F4U actually goes back before Pearl Harbor. All of them include certain detailed modifications, of course, that give them newer model numbers, but a study of the list proves conclusively that both services are concentrating heavily on the economy of modifying existing models rather than the incomparably more expensive job of developing entirely new types. The various Lockheed models are a case in point, all of them stemming from the trusty old "P-80" jet fighter design. By adding an additional seat the type became the T-33 trainer. Adding radar in the nose of this trainer made it the F-94 night fighter and the use of a thin wing on the night fighter produced the new F-97 model, but all still basically the P-80 jet fighter! North American has followed the same course in the swept-wing F-86, which, with a solid nose for radar and a slightly more powerful engine, comprises the F-95. Even the familiar old Republic F-84 *Thunderjet* has undergone a face-lifting and with new swept-wings it is dubbed the F-96. Boeing is replacing the six jet engines of the B-47 with four much more powerful jet engines, and the result is the new B-56. And so it goes with "modification" the key word in the procurement policies of both services.

AND THE MILITARY aren't the only ones pressing this alteration work on existing models in the interest of economy. The tried-and-true old Lockheed *Constellation* transport is undergoing a face-lifting and Eastern Air Lines has just ordered 10 of the new model L-1049, which features an 18' extension of the fuselage to make room for 92 people, believe it or not! The addition is in the central-portion of the fuselage along the wing and the result is going to be a true "sky couch" or aerial bus. To take care of the increased load, the L-1049 will weigh 116,000 lbs. and be powered by four Wright Cyclone R-3350-C18CA1 engines developing 2,750 hp each. A feature of the new model will be jet exhausts which will add about 13 mph to the cruising speed. Eastern's "Cap'n Eddie" Rickenbacker states that the new models are definitely designed to take turbo-prop engines in the future and he expects to have them converted and in service late in 1954 or early 1955.

Boeing is also taking the "transition" path to turbine power and is offering jet pods for its *Stratocruiser* transports already in service. The pods will resemble the outboard units on the B-47 bomber with single engines in each one. The added power will increase the allowable take-off weight of the *Stratocruiser* to 153-165,000 lbs. (from

(*Turn to page 62*)

REPORT FROM THE WEST

by Jim Saftig

THINGS were a bit rushed before "deadline time" of the last "*Report From The West*" column: I just had a few hours to get it out, so didn't mention that yours truly, Jim Saftig, is your new reporter. Our good friend Lew Mahieu, former writer of this column, is "snowed under" with his regular job of model building, flying and designing, and his many other business ventures. Lew, as in all of his undertakings, did an excellent job, and it is sincerely hoped that I am able to carry on as well as he did.

* * *

Out West, the contest season has swung into high gear. All types of meets have been scheduled, and several have just been run or will be under way in the very near future. We "trekked" our way to the Bakersfield Free Flight Meet held at Famosa Airport, just north of Bakersfield, on April 16. Ah yes, Bakersfield—the land of heat and thermals (thermals and downdrafts, that is). It seemed the "risers" were a bit elusive but would really take a ship for a ride when one took hold. What a flying sight—acres and acres of macadam! This type of field was a bit rough when a one-point landing was made, but it was mighty fine for those R.O.G. take-offs. Many out of sight and ten-minute flights were made. Yours truly checked six ten-minute flights in a row—my aching eyes! Francis Stewart,

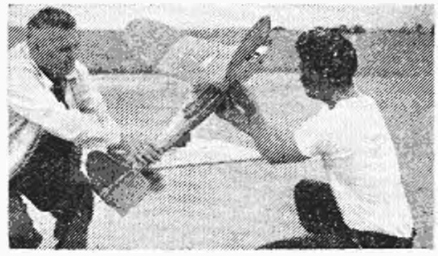
Bud and Bob Patterson (who's who?) fly Civy Boy 31's with Cub .049 power

contest director, and his many helpers deserve a round of applause for their fine work. While the bouquets are being passed out, we would like to drop a pretty one in L. O. "Butch" Corbly's lap. "Butch" turned in three perfect flights for a total of 30 mins. All flights were R.O.G. and were made with his *Super Cyclone* powered *Sailplane*. Looks like a new record; nice going, "Butch." Corbly is a member of the *San Diego Aeroneers Club*. Ron St. Jean and Ed Eneffer took most of the hardware home by winning the Sweepstakes and Junior High Point trophies, respectively.

We recently had a bit of a chat with a couple of good friends, Joe Weathers and J. C. "Madman" Yates. Joe was out with one of his beautiful *Orierck*-powered ships, the *Pacificoaster*. This ship is now available in kit form and is a custom-built job manufactured by Harry Fosbury. It was rather unusual to see J. C. holding the tail of a free flight job while Joe was readying the ship for flight. We wonder whether the old free flight bug has sunk its teeth into the "Madman."

Dell Swartz, flying wing specialist, had a little beauty in the air most of the day. His *Baby Spitfire*-powered "wing" was one of the slickest these eyes have ever seen. We were quite amazed at the stable climb and the glide in the gusty weather that would show up off and on throughout the day. Dell hails from Burbank, Calif., and is a member of that well-known *San Valeers Club*.

We had a bit of a jolt when timing Bud Patterson from Oildale, Calif. Bud had just launched his ship when a thermal decided to work it over a bit. As we watched him trot along after his ship, the plane finally dropped out of sight behind a building. The watches were stopped and the time recorded. The next contestant stepped up and tapped us on the shoulder and asked us to time his flight. Believe us, when we turned around, we made with that well-known "double take." We couldn't figure out how Bud got back to the field in a matter of



Jack Ballinger, Junior Sweeps winner at *Aeroneers'* meet, gets ship off with Dad's help

seconds when he had just disappeared behind a building about eight blocks away. You guessed it—his identical twin brother, Bob Patterson, was ready to make his flight with a ship identical to Bud's . . . same engine, paint job, and all. Yes, they were both dressed the same, too. Thought we had too much sun for awhile!

One of the newcomers to free flight circles, Dr. J. Burl Frost, had a mighty sharp little original that copped him fifth place in the meet. We might add that Doc Frost's ship was the second one he ever built; he must be used to handling knives. Doc's home is in Downey, and he belongs to the *Lakewood Model Club*. Final results of the Bakersfield Meet: *Class ½A*—1. Bud Chapman, 13:12.6; 2. R. H. Jensen, 12:07.4; 3. Gail Eckstein, 11:50.4; *Class A*—1. Ronald St. Jean, 21:28.3; 2. Carl Launderville, 21:19.0; 3. Edward Eneffer, 21:18.6; *Class B*—1. Wallace Short, 25:00:9; 2. Tom Nishimoto, 22:47.6; 3. A. E. Rominger, 22:16.3; *Class C*—1. L. O. "Butch" Corbly, 30:00.0; 2. H. R. Friedrick, 23:04.0; 3. Fred Bonar, 22:21.0. The *Sweepstakes Award* went to Ronald St. Jean; the *Junior High Point Trophy* went to Edward Eneffer; the *Testors Beauty Plaque* went to Don Wilden; records have been applied for: Bud Chapman, *Class ½A*; Edward Eneffer, *Class A Jr.*; Wallace Short, *Class B Open*; L. O. Corbly, *Class C Open*. There were 198 entries in this meet.

* * *

It seems that inter-club and challenge meets are becoming more frequent. We get the word from Russ Gass and F. L. Swaney that the third Sunday in May has been chosen for a three free flight club meet. This sectional meet will include members of the *San Diego Aeroneers*, *Long Beach Thunderbugs*, and the *Bakersfield Gas Model Association*. The flying sites will be rotated as the series goes on. Sounds like a good idea. In keeping with the above, the *Santa Ana Thunderbugs* have challenged the *San Diego Airliners* (both U-control clubs) to a team speed contest to be held sometime in May or June. The first challenge meet will take place in San Diego. This may start a circuit of team speed contests. Now that AMA has set up a set of rules for the team speed event, the modelers can get the old production line rolling.

Bill Butler, of Inglewood, Calif., ham operator and radio control flier, was testing a couple of his R.C. jobs at the Wakefield Eliminations on the Fontana air strip on Sunday, April 23. One was his Berkeley *Super Brigadier*, the other was an original job with a Zaic *Floater* wing and stabilizer. The *Brigadier* was powered with an *Ohlsson 23* and had an RK 61 receiver. The ship weighed in at 48 oz. Bill really put the

(Turn to page 60)

Hank Bourgeous adjusts R. C. ship prior to test hop, as Keith Foster looks on

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- ☐ 8"—12 ..... .35
- ☐ 9"— 6 ..... .35
- ☐ 9"— 8 ..... .35
- ☐ 9"—10 ..... .35
- ☐ 9"—12 ..... .35
- ☐ 10"— 6 ..... .35
- ☐ 10"— 8 ..... .35
- ☐ 10"—10 ..... .35
- ☐ 10"—12 ..... .35
- ☐ 11"— 6 ..... .35
- ☐ 11"— 8 ..... .35
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- ☐ 13"—10 ..... .35
- ☐ 13"—12 ..... .35
- ☐ 14"— 6 ..... .35
- ☐ 14"— 8 ..... .35
- ☐ 14"—10 ..... .35
- ☐ 14"—12 ..... .35

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NEW "RITE-PITCH" SUPER STUNT PROPELLERS

Wide Blades, Square Tips for SUPREME PERFORMANCE IN STUNT FLYING !!!

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- ☐ 8"— 8 ..... .35
- ☐ 9"— 6 ..... .35
- ☐ 9"— 8 ..... .35
- ☐ 10"— 6 ..... .35
- ☐ 10"— 8 ..... .35
- ☐ 11"— 6 ..... .35
- ☐ 11"— 8 ..... .35
- ☐ 12"— 6 ..... .35
- ☐ 12"— 8 ..... .35
- ☐ 13"— 6 ..... .35
- ☐ 13"— 8 ..... .35
- ☐ 14"— 6 ..... .35
- ☐ 14"— 8 ..... .35

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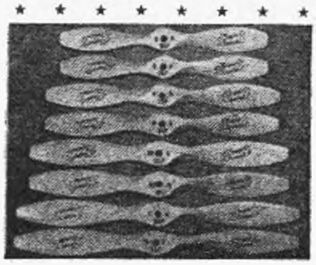

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- ☐ 8"—8 ..... .25
- ☐ 9"—6 ..... .25
- ☐ 9"—8 ..... .25
- ☐ 10"—6 ..... .25
- ☐ 10"—8 ..... .25
- ☐ 11"—6 ..... .25
- ☐ 11"—8 ..... .25

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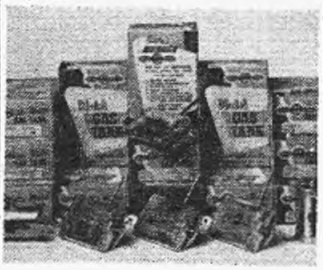

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- ☐ No. 12 Large .60

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- ☐ No. 20 Midget .60
- ☐ No. 22 Junior .60
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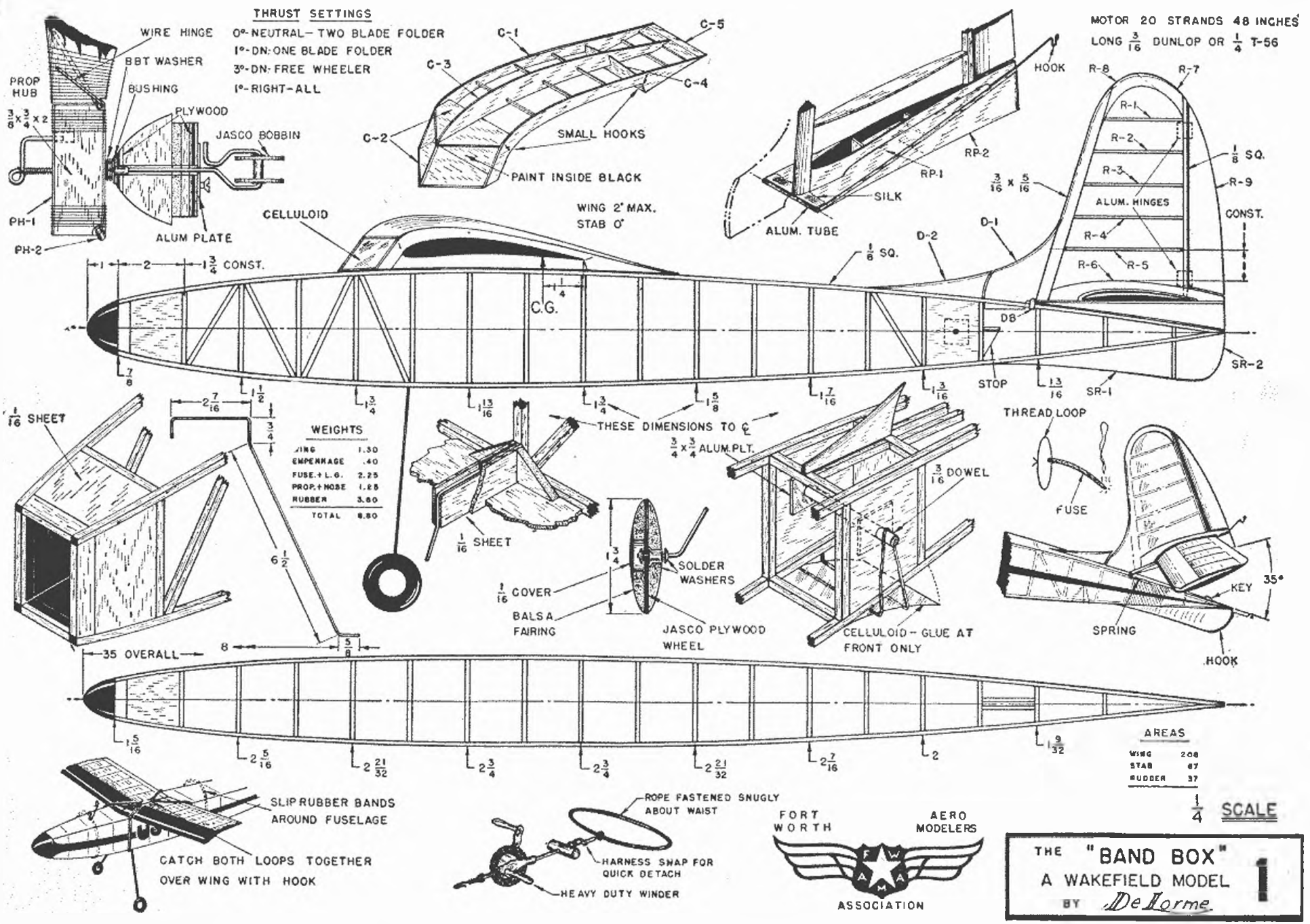
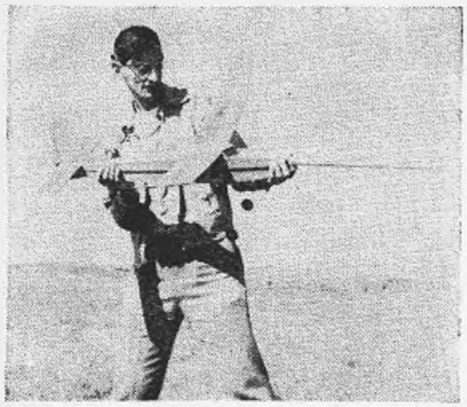


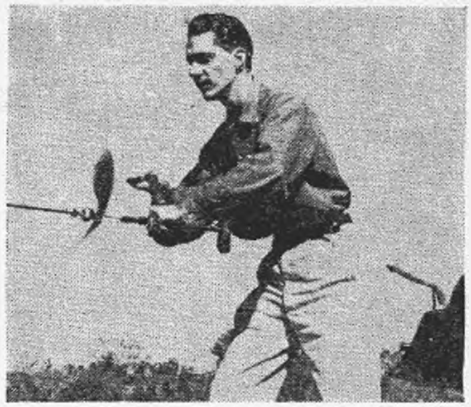
THE "BAND BOX"
A WAKEFIELD MODEL

BY *DeLorme*



Vernon Hahn holds *Band Box*, as turns are packed in

THE BAND BOX



Author at the crank—a waist strap is always used

by BILL DeLORME

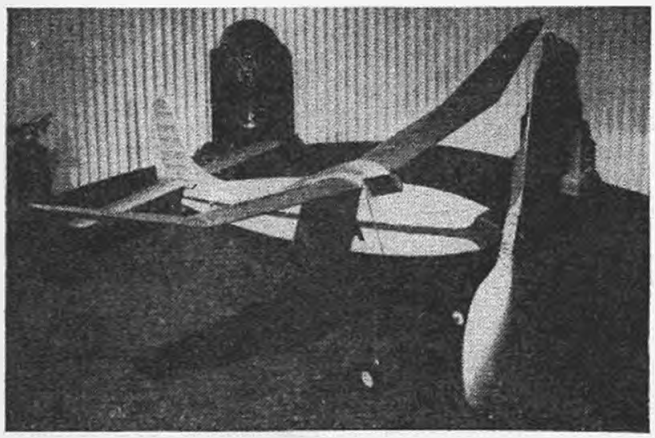
MODELERS from all over the country have been competing at Wakefield Elimination Contests for the purpose of selecting the top six contestants to represent the U.S.A. at the International Wakefield Meet. Following the rules and traditions of the Wakefield Cup, the scene for the 1950 event will move to Finland, with Aarne Ellila of that country being the 1949 Champion.

In years past it was considered almost a cinch that some modeler from the U.S.A. would win because of our very large field from which to select a team; surprise was expressed at times when someone else walked off with the laurels. The past two years have seen our select teams working diligently and using every trick available, only to find their skill and technique more than matched.

Therefore we must accept the fact that in order to come out on top, a deliberately planned technique and a carefully designed model must be employed and the necessity of depending upon the element of luck must be eliminated. The ship must be as near the minimum weight as feasible, to obtain the lightest wing loading possible, permitting both maximum climb and glide; yet it must be remembered that strength cannot be sacrificed. A fuselage that will not twist under the strain of a fully-wound motor, together with warp free flying surfaces, are essential. Structure should remain simple since those inevitable field repairs plague even the best of fliers. It is desirable to have a minimum of tricky gadgets such as folding gear, chute, etc. and yet enough equipment to permit the over-all functioning of the airplane is a must. Complete adjustment of all surfaces is absolutely necessary, but positive settings are imperative if the ship is to be consistent. Unlike in years past, one sensational flight can no longer win because of the five-minute ruling; therefore, a dethermalizer is another item not to be overlooked and weight limitations make this installation tricky.

Thus we see that the entire procedure of designing a *Super* Wakefield model is one of compromise, a matter of weighing theory against practice until all requirements are met. Just what is the ideal Wakefield model? This is difficult to say and depends a great deal on personal preference.

This fine Wakefield design also has been successful in Class D rubber contests



This simple but attractive ship has already collected considerable hardware

The *Band Box* first took shape in the form of a super streamlined ship with everything from a retractable landing gear and monocoque fuselage to a mechanical dethermalizing mechanism. As each succeeding ship was built, one by one the gadgets gave way to a simpler and more dependable design and the present configuration is a clean, reliable, contest-winning airplane.

The trophies in the picture show the wins of the latest of the *Band Box* series, which include the Southern Championship Meet, one of Johnny McHugh's famous contests in Montgomery, Alabama, the 1948 Tennessee State Meet in Nashville, Tenn., and the Radio and Exchange Club Contest also held in Montgomery.

In addition to qualifying for the International Wakefield Event, the *Band Box* meets the requirements for AMA Class D Cabin event and can hold its own in any competition in this category.

Construction of the *Band Box* is conventional except for a few features not generally found in most models; we shall cover these special points here since the drawings show all of the dimensions and views required for building and full size patterns are provided for all the developed parts. This will simplify building considerably, and these shapes can be transferred by slipping the balsa in place under the sheet. Then, using a straight pin, small holes can be punched about 1/8" apart all along the outline.

To build the wing a full size layout is required; this can easily be made by tracing the full size wingtip and using the main rib together with the dimensions supplied on the drawing of the wing platform. One half of the structure will be sufficient if the drawing is made on draftsman's vellum or wrapping tissue; hence the drawing will then be transparent and can be turned over for building the other half.

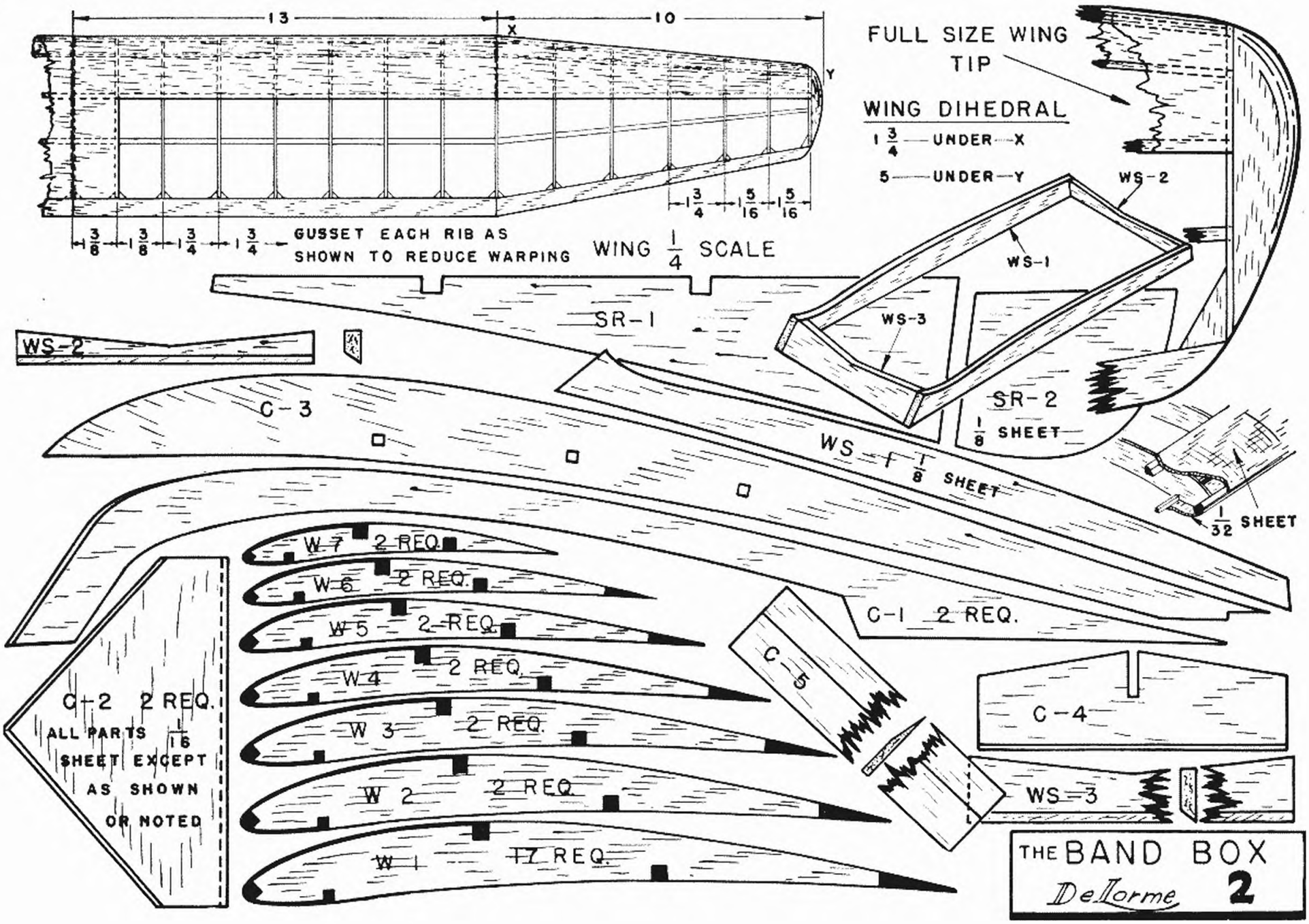
The wing structure has been worked out to give maximum strength with a minimum of weight. The sheeting used on both the upper and lower surfaces of the leading edge is seen as the heavy, blacked-in line on the full size rib layout. Internal spars were eliminated due to the fact that the sheeting gives a better airfoil contour and provides sufficient strength when stopped off by the small stringer spars. Any additional structure would add only unnecessary weight. If for any reason you decide to omit the sheeting on this wing, two 1/8" x 1/4" spars and nose ribs should be added and the stringer spars eliminated. Perhaps you have some pet method of construction you prefer, and this is just a word of caution in case the structure shown is not used. The tip caps are added as blocks which are carved and sanded to contour after the glue has dried. A small piece of thin aluminum, or celluloid, should be glued at each point where the wing attaching rubber passes over the trailing edge, in order to prevent cutting the very thin section.

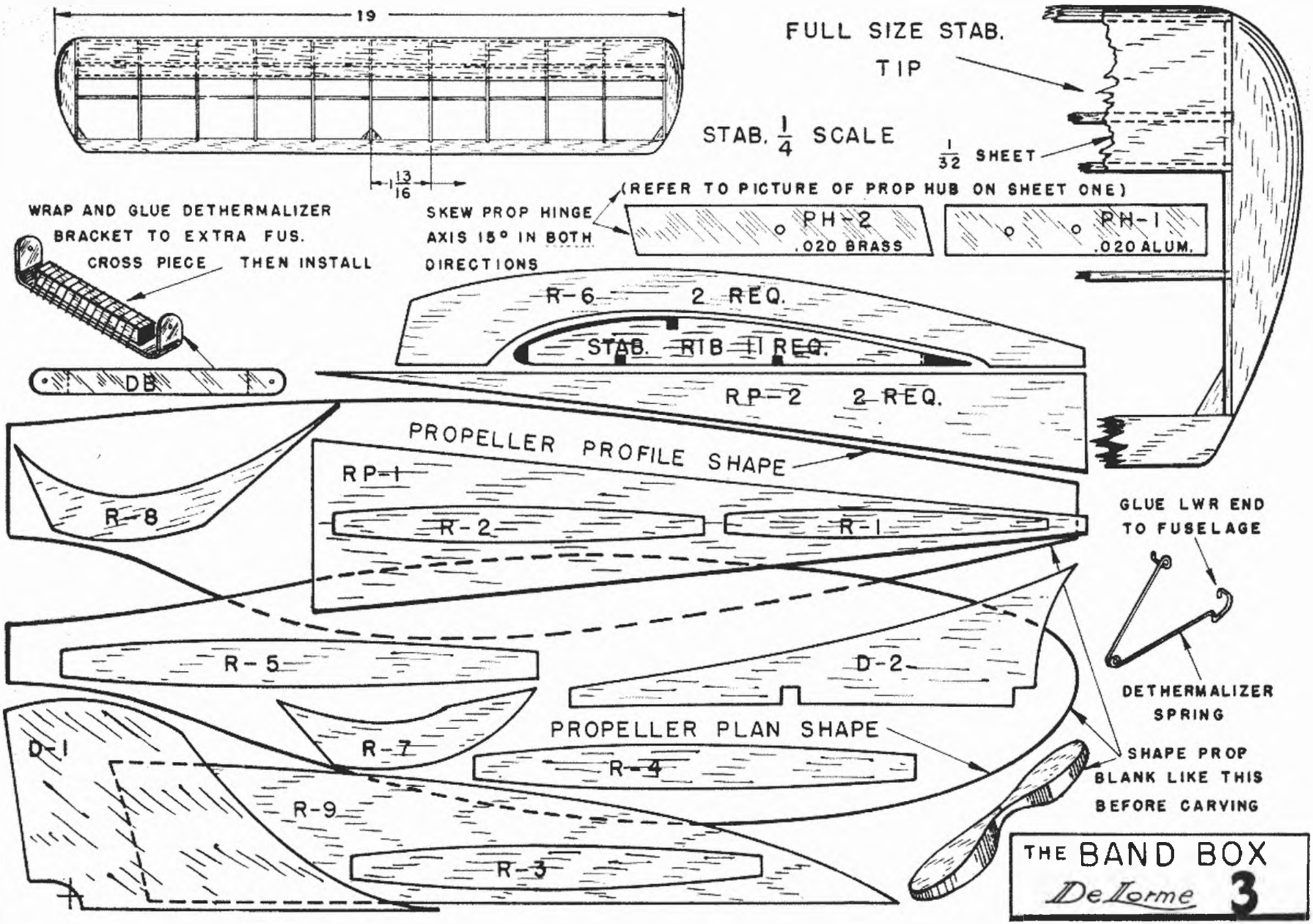
The wing saddle should be glued directly to the wing as this assures the desired amount of incidence, and builds the wing up to the proper height to fit neatly into the cabin cutout. Small strips of sandpaper glued to the lower surface of the saddle reduce wing shifting to a minimum.

The cabin is a multi-purpose device as it serves to complete the fuselage cross section as well as to permit the use of maximum wing area. It is attached by looping rubber bands under the wing and catching the small hooks shown on the drawing. This permits the cabin to slide with the wing during adjustment.

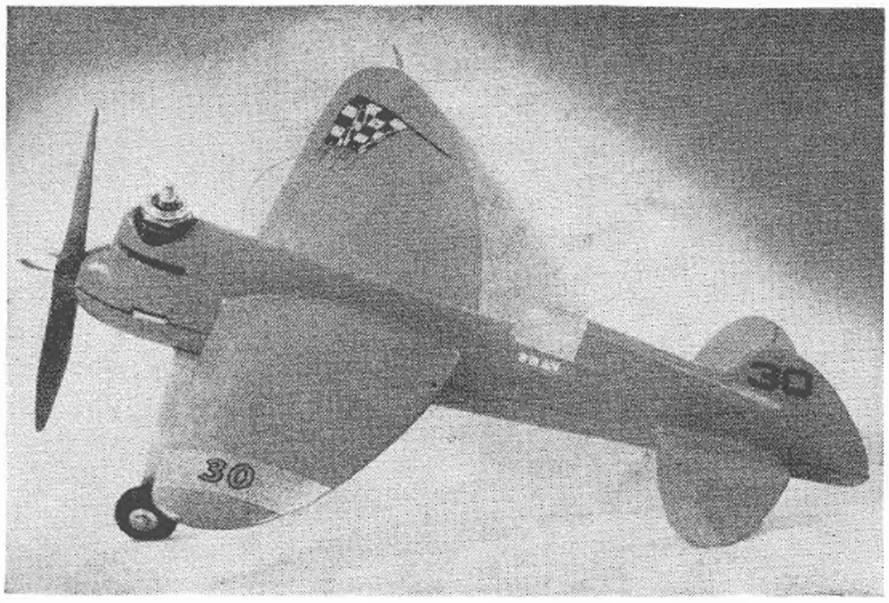
A secondary type of dethermalizer can be worked out utilizing the cabin. A 1/16" sheet of balsa the shape of the cabin planform can be cut out and glued to the bottom of the wing

(*Turn to page* 40)

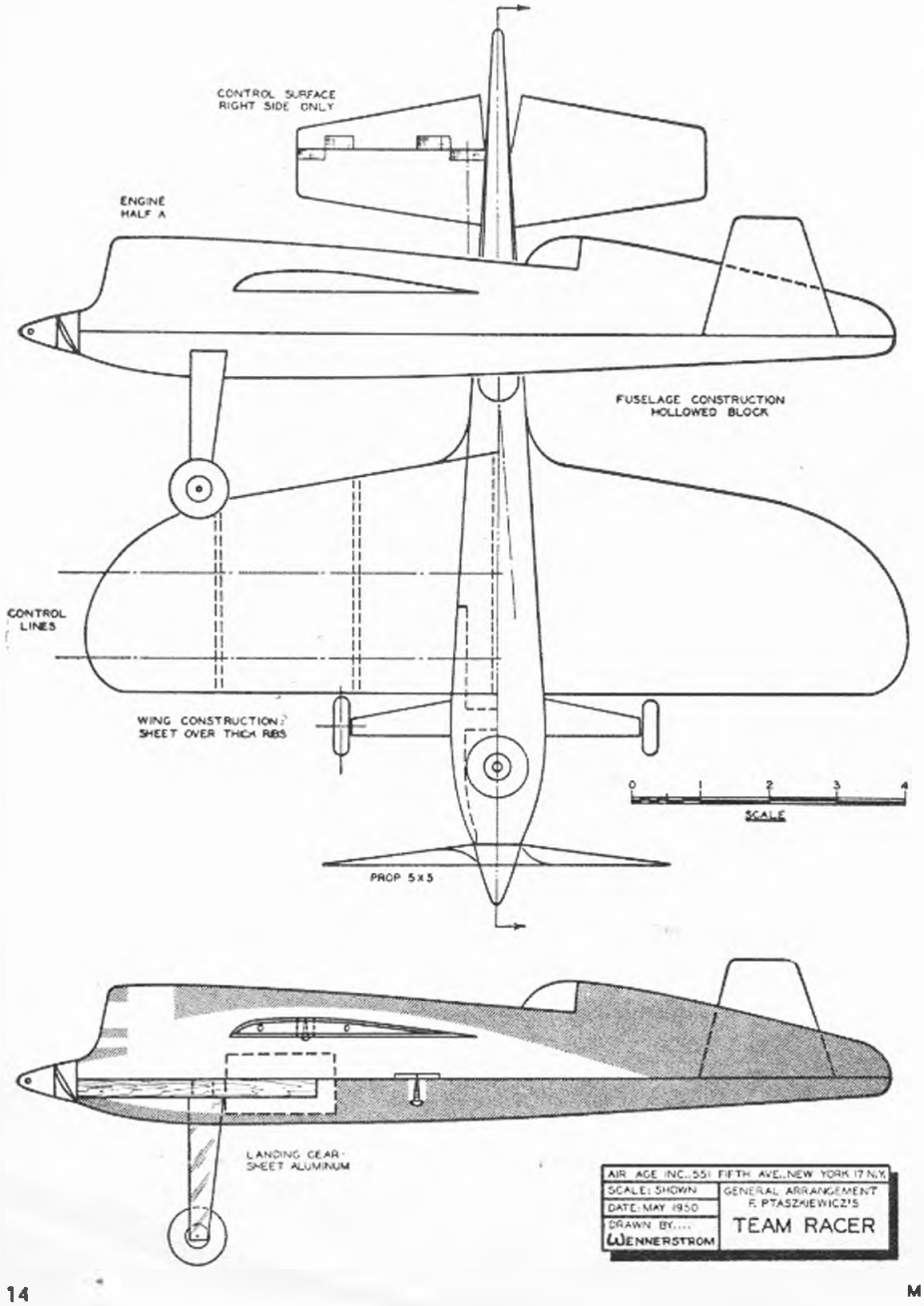

13
10
X
Y
1 3/4
1 5/16
1 5/16
3/8
3/8
3/4
1 3/4
GUSSET EACH RIB AS SHOWN TO REDUCE WARPING
WING 1/4 SCALE
FULL SIZE WING TIP
WING DIHEDRAL
1 3/4 — UNDER — X
5 — UNDER — Y
WS-2
WS-1
WS-3
SR-1
SR-2
1/8 SHEET
WS-2
C-3
WS-1 1/8 SHEET
1/32 SHEET
W-7 2 REQ.
W-6 2 REQ.
W-5 2 REQ.
W-4 2 REQ.
W-3 2 REQ.
W-2 2 REQ.
W-1 17 REQ.
C-1 2 REQ.
C-5
C-4
C-2 2 REQ.
ALL PARTS 1/16 SHEET EXCEPT AS SHOWN OR NOTED
WS-3
THE BAND BOX
DeLorme
2


19
1 13/16
FULL SIZE STAB.
TIP
STAB. 1/4 SCALE
1/32 SHEET
(REFER TO PICTURE OF PROP HUB ON SHEET ONE)
PH-2
.020 BRASS
PH-1
.020 ALUM.
WRAP AND GLUE DETHERMALIZER BRACKET TO EXTRA FUS. CROSS PIECE THEN INSTALL
SKEW PROP HINGE AXIS 15° IN BOTH DIRECTIONS
DB
R-6 2 REQ.
STAB. RIB 1 REQ.
RP-2 2 REQ.
PROPELLER PROFILE SHAPE
RP-1
R-8
R-2
R-1
GLUE LWR END TO FUSELAGE
R-5
D-2
DETHERMALIZER SPRING
PROPELLER PLAN SHAPE
D-1
R-7
R-4
SHAPE PROP BLANK LIKE THIS BEFORE CARVING
R-9
R-3
THE BAND BOX
DeLorme
3

TEAM RACING IN miniature



Estrelitta, Jr., a design by the author, has hit 77.35 mph on 26' lines

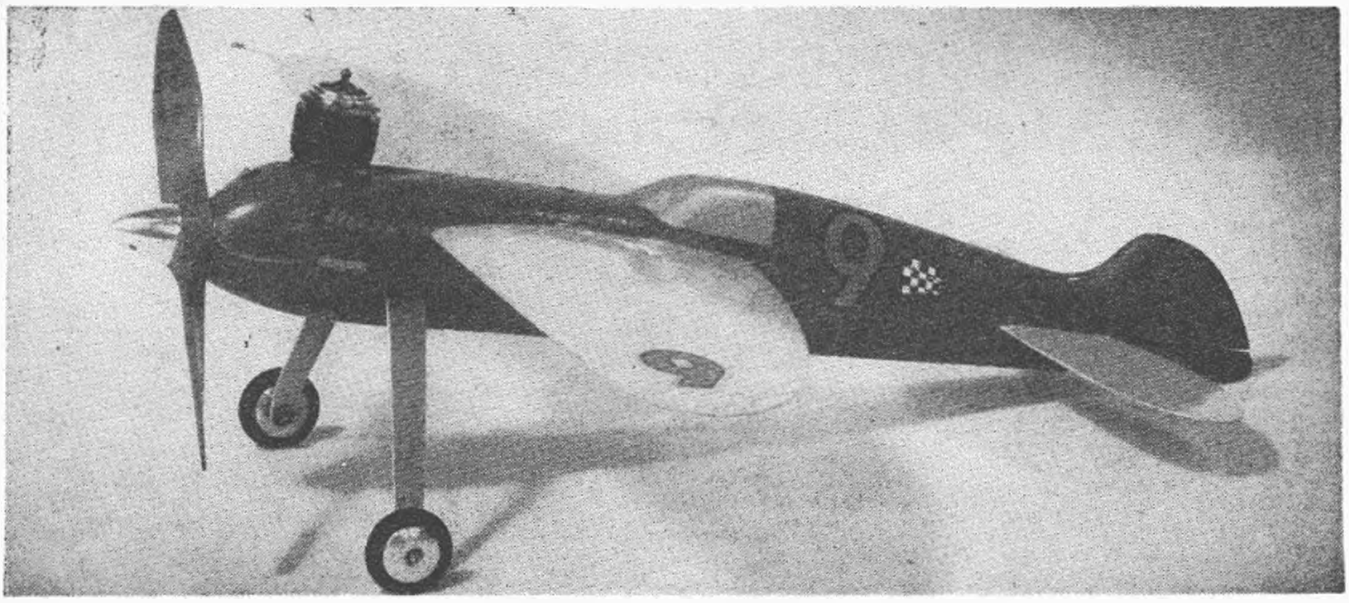


by FRAN PTASZKIEWICZ

WITH the introduction of Team Racing by the West Coasters, a new type of event and a new type of model was created; as with all new events and models, there is bound to be modification and experimentation which can do much to promote this new event and type of model. This experimentation can do little harm; as a matter of fact, it can do more *good* than harm, for it shows the originators that although some modelers are not fully in favor of a new event, they are willing to try it with certain reservations.

Such is the case of our "Team Racing In Miniature." This event originated in the early fall and has rapidly gained popularity over a large part of the East Coast. Further interest was stimulated when Harold de Bolt demonstrated his own original Team Racer at the Philadelphia Hobby Exposition.

Class ½A Team Racing as it is sometimes called is a very exciting event with great spectator appeal, full of fun and surprises. These models were conceived by members of the *Flying Bison* speed, sport and stunt teams, and after very little discussion, a set of rules were drawn up and agreed upon by all members. Model airplanes of all shapes, sizes, and designs were produced and every one tested and experimented with his model to find the correct needle valve settings, best props, and various other information necessary to getting the most out of each model. At this time it was found that with some modification or certain structural changes, an increase in speed was forthcoming. The increase was not large, however, when compared with Class D speed models. An increase of 2 or 3 mph in the small models would be comparable to a jump of about 10 mph in the larger models. With regard to some of the modifications, it was found that on one model too much elevator area made it fly erratically; when this was corrected, the speed increased. In another case, a change in propellers increased the speed, when the model was airborne and also gave a faster take-off and more rapid acceleration to top speed; this is most important because the models are timed for eight laps from take-off. In some cases it was found necessary to redesig the fuel tanks on certain models since the engines had a tendency to richen up as



Ronald Kirks' Reet has top speed of 78.5 mph. A 5-5 prop is used

they became airborne and would not lean out until the end of the run when this was not desired.

When the first model was being readied for flight, there was a great deal of speculation advanced as to whether the model would or would not fly, and if it did fly, would the model be stable or erratic? A number of other queries were answered in the first flight of this model.

After a few false starts, the engine caught, and as it did, a number of watches were forthcoming, to time the model should it prove successful. The engine was leaned-out and upon signal from the pilot, the model was released. As it moved forward, it accelerated rapidly and was off the ground within about 10'. It climbed to about 5' of altitude and remained there for the duration of the flight, thus proving the model to be very stable. The watches were checked, and after some rapid calculation, the speed was found to be 65.50 mph. Immediately after this flight, a number of other models came forth and soon they were being test flown in every corner of the armory.

The interest created the first night the event was held showed up in latter weeks. A number of members, rather than build large airplanes which were high powered and which couldn't do much more than level flight because of the low ceiling, constructed ½A models of their own designs. These proved to be more fun to fly than the larger high-powered stunt and sport models.

The following Sunday, the first heat of our miniature "Goodyear" event was held. At the close of the evening, it was found that the best time registered was 68.18 mph and the lowest time was 31.00 mph, with approximately fifteen models being entered for competition.

The flights went off smoothly and continued through the evening, with the last flight being made a few minutes before closing time. The first night of official flying showed the necessity for various modifications of the rules; one of these was to substitute wire instead of thread for lines. This change came about when the author's model, which was being flown on thread, broke the lines and struck a stationary object, causing severe damage to the model; however, none was caused to the object it struck although a number of members speculated that said object had been moved. This was rapidly disproved, for the object was a General Sherman M-4 tank which was parked adjacent to the flying area.

A closer check of line length was found to be necessary, because one of the line sets was found to be 2' short. The offending entrant immediately agreed to disqualify all his previous flights. However, to impress other members with the necessity of checking line lengths closely, a mock trial was held with the members acting as jury. After several tests, the member proved his ability to measure satisfactorily. He was found guilty and sentenced to measure accurately the length of the armory floor, including the mezzanine, with a six-inch scale; the distance was well over 300'. This made the desired impression and in the following weeks, there were no more short-line violations!

At the close of the third heat, the speeds were computed and it was found the high speed had been increased to 74.38 mph and the lowest speed raised to 33.00 mph. After several more test heats, members were paired off to fly two in a circle, with the lowest times flying together in a duration event and the next two and so on until, by the process of elimination, a final winner was chosen. Eventually the line length will be increased to 35', in order to make it easier for two entrants to fly simultaneously. A model traveling 60 or 70 mph on the short lines (26' 3") is comparable to a full size speed model doing approximately 100 mph or plus. However, in lengthening the lines, the actual speed will not be reduced materially, since the models will fly a given distance in as short a time as possible and with the least number of stops for refueling, rather than flying a short speed dash as in our present qualifications heats. The main reason for having only two members fly in the same circle, rather than three or four as in full scale team racing is the fact that it is much easier to get two engines running simultaneously rather than three or four.

The rules of this event are simple and were written so as not to be complicated or lengthy, in order to encourage as many fliers as possible to construct models for this event. They are as follows:

1. The engines shall not exceed .075 cu. in. displacement, shall in no way be reworked or rebuilt, and must be open to inspection at any time.

2. The model is not restricted to any scale except that it shall look like a feasible airplane and have wing area no less than 4.5 times the displacement of the engine; this makes about 33 sq. in. the minimum wing area possible.

3. The airplane shall take off and land on normal landing gear. If retractable gear is used, it must be lowered again for landing; the engine shall have at least the crankcase cowled.

4. Wire lines of 26' 3" length, and at least .006" diameter are required. Model shall be timed for eight laps, the time being started upon release of the model.

We have tried to keep the rules clear and concise. We feel that we have eliminated many of the questions and doubt which usually crop up whenever a new event or model is introduced. I would like to give a quick breakdown of the rules and how they affect the models themselves.

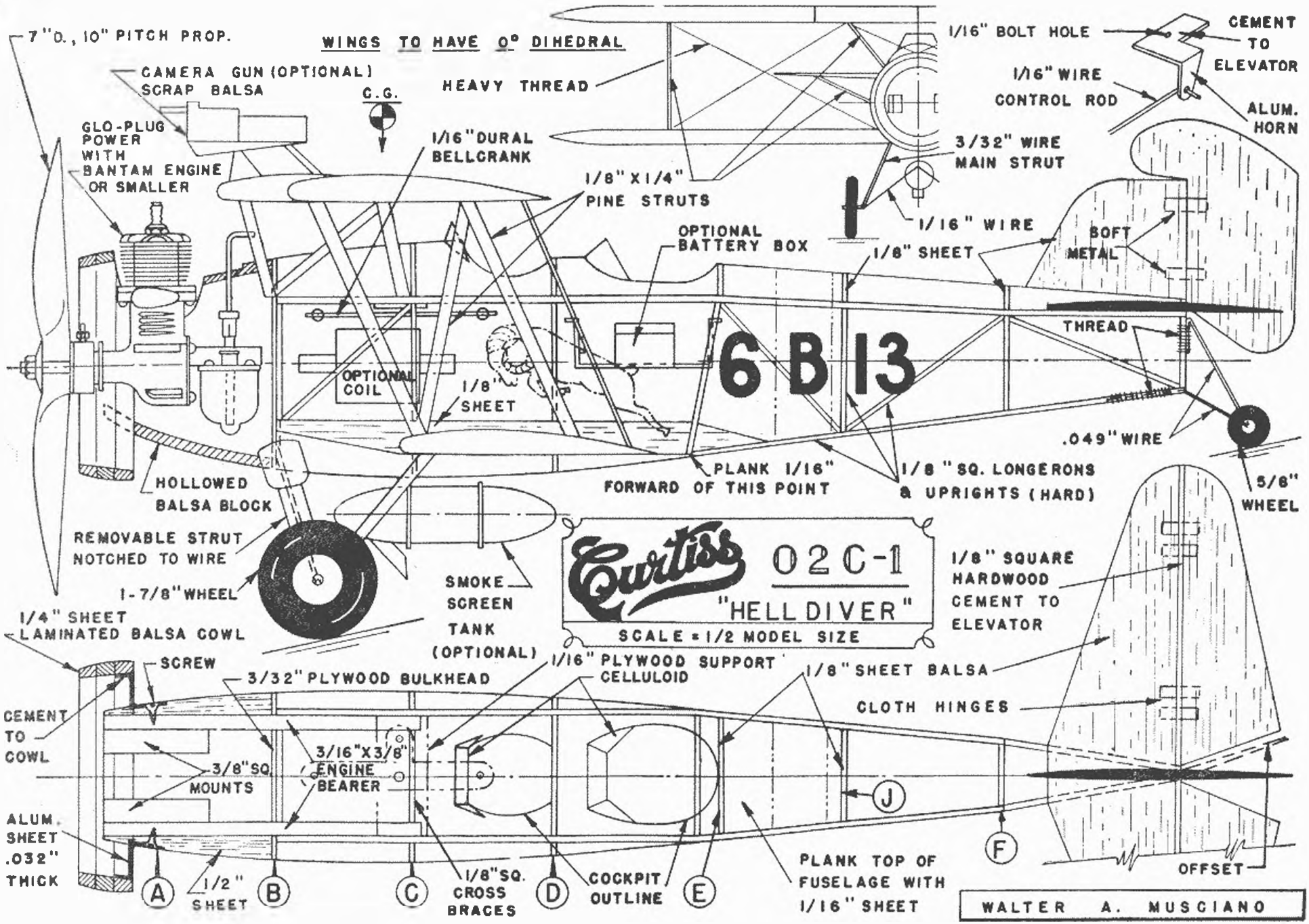
Engines. We felt that by limiting the displacement to .075, we would not only create more interest, but also would eliminate any doubt that the small ½A engines are little more than a novelty with no power or rpm.

By specifying *stock* engines, we have encouraged the event among beginners and non-contest men, due to the fact that the flier will have to seek out the best design and propeller, rather than depend upon his skill at engine work to beat the other man. This prevents the event from becoming a one-man or one-team show.

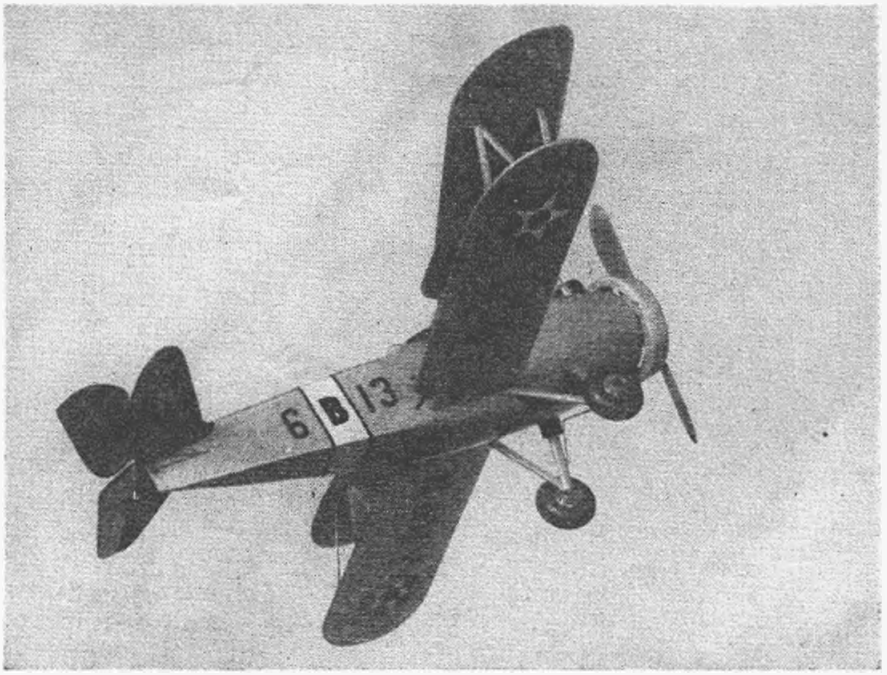
Models. Since we do not restrict the model to any scale, we feel we have left the event open for more originality. However, in order to eliminate freak prone pilot designs and slightly redesigned speed models, we have emphasized that the model should look like a feasible full-scale Goodyear Racer. This has brought out many new designs, among them a twin-boom pusher which has proved very promising. This particular model is a scaled-down version of No. 29 entered by the Lawrence Institute of Technology in the Cleveland National Air Races in 1949.

The construction of our team race models is relatively simple and usually does not require more than a few evenings. Balsa is the rule throughout, with a maple crutch being used on many models for the motor mount. A spring leaf landing gear has been employed on many models due to its simplicity, plus the fact that it gives a touch of realism. The wheels are usually as thin as possible

(*Turn to page* 55)


7" D., 10" PITCH PROP.
WINGS TO HAVE 0° DIHEDRAL
CAMERA GUN (OPTIONAL) SCRAP BALSA
C.G.
HEAVY THREAD
1/16" BOLT HOLE
CEMENT TO ELEVATOR
1/16" WIRE CONTROL ROD
ALUM. HORN
GLO-PLUG POWER WITH BANTAM ENGINE OR SMALLER
1/16" DURAL BELLCRANK
1/8" X 1/4" PINE STRUTS
3/32" WIRE MAIN STRUT
1/16" WIRE
OPTIONAL BATTERY BOX
1/8" SHEET
SOFT METAL
6 B 13
THREAD
OPTIONAL COIL
1/8" SHEET
.049" WIRE
HOLLOWED BALSA BLOCK
PLANK 1/16" FORWARD OF THIS POINT
1/8" SQ. LONGERONS & UPRIGHTS (HARD)
5/8" WHEEL
REMOVABLE STRUT NOTCHED TO WIRE
1-7/8" WHEEL
SMOKE SCREEN TANK (OPTIONAL)
Curtiss 02C-1 "HELLDIVER"
SCALE = 1/2 MODEL SIZE
1/8" SQUARE HARDWOOD CEMENT TO ELEVATOR
1/4" SHEET LAMINATED BALSA COWL
SCREW
3/32" PLYWOOD BULKHEAD
1/16" PLYWOOD SUPPORT CELLULOID
1/8" SHEET BALSA
CLOTH HINGES
CEMENT TO COWL
3/8" SQ. MOUNTS
3/16" X 3/8" ENGINE BEARER
ALUM. SHEET .032" THICK
1/2" SHEET
1/8" SQ. CROSS BRACES
COCKPIT OUTLINE
PLANK TOP OF FUSELAGE WITH 1/16" SHEET
OFFSET
A
B
C
D
E
F
J
WALTER A. MUSCIANO

by WALTER MUSCIANO



No modeler can deny that the prime advantage of controline flying is the ability to fly his favorite scale model successfully, without worrying about lateral stability, looping tendencies, etc. The author has built and flown many controline scale models and the model presented is one of the best for sport flying. Engines from .099 cu. in. displacement can be used, but .19 cu. in. displacement engines have been found to be perfect for this model, and glow plug is recommended.

The full scale craft was one of the most famous planes employed in the service of the U. S. Navy. Designated as the 02C-1 well over a decade ago, it was intended for observation and dive-bombing; after undergoing minor modifications, this design was reclassified as the F8C-1 series. To withstand vertical dives, the plane was built extra strong, and it earned the nickname, *Helldiver*, thus becoming the first of this famous line of Navy dive bombers. Powered by a Pratt and Whitney *Wasp* engine of 550 hp, the O2C-1 served on shipboard as well as at land bases for many years.

CURTISS HELLDIVER

When your model is completed, it will be to a scale of 3/4"=1' and the plans are drawn one-half size, *except* for the front view. This makes it easy to enlarge them because all measurements are merely doubled.

The fuselage is of conventional longeron-crossbrace-former construction, using very hard 1/8" sq. longerons and 1/8" sheet balsa formers. After the "box" frame has been completed, the bulkhead can be added and the 3/32" diameter wire landing gear bolted to it. The engine bearers are added next, using plenty of cement. This is followed by the addition of the formers, balsa nose block (which is made of soft 1/2" sheet balsa) and filler pieces. The controls can now be installed. The bellcrank is mounted on a plywood platform which is attached securely to the upper fuselage longeron in the location shown. Cut the horizontal tail from 1/8" sheet balsa, and sand to a streamline cross section. Bolt the control horn to the elevator and cement well. The stabilizer is cemented to the fuselage and the elevator is hinged to it.

If you intend using electric ignition, install it now. Before covering the fuselage, test the ignition system to be sure of correct wiring. The switch can be located in the forward cockpit.

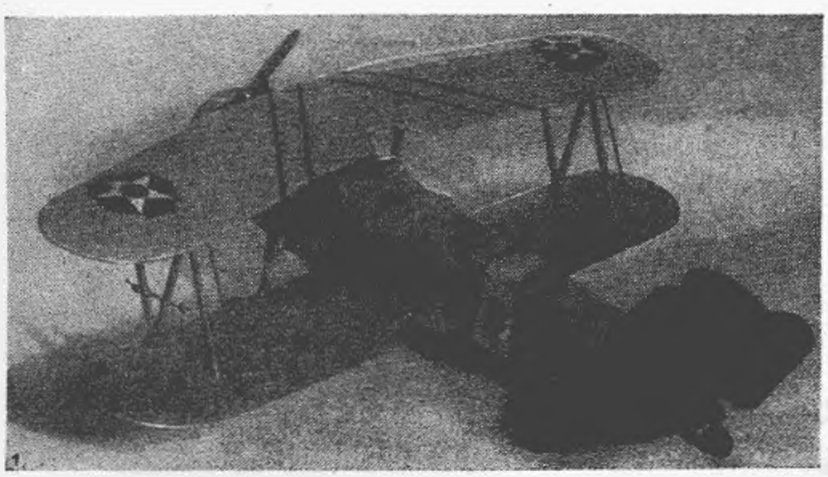
From the plywood bulkhead to the back of the rear cockpit, the fuselage is planked with 1/16" sheet balsa. The remainder is light *Silkspan* covered. If the builder so desires, he can cover the entire fuselage with sheet balsa. The author used *Silkspan* on the fuselage rear because the full size plane had fabric on this portion and true scale appearance was desired. Laminated 1/4" sheet balsa rings make up the ring type of cowl. Fin and rudder are added at this time. The wood landing gear struts (both front and rear) should be used for exhibition only and removed when flying, leaving the 3/32" and 1/16" wire to absorb the shocks. Cut the interplane and cabane struts of 1/8" x 1/4" pine and sand to a streamline cross section. These should be assembled to form the "N" before the wings are attached.

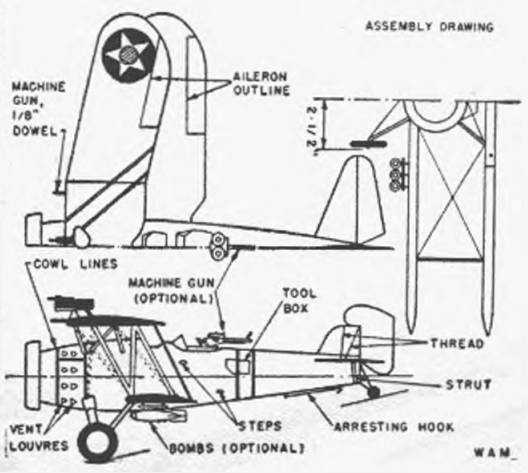
It will be noticed that the "knock-off" type of engine mounts are used. These consist of a bearer which is cemented well to the fuselage frame and the mounts which are cemented very lightly to the bearer. The engine is bolted *only* to the amount.

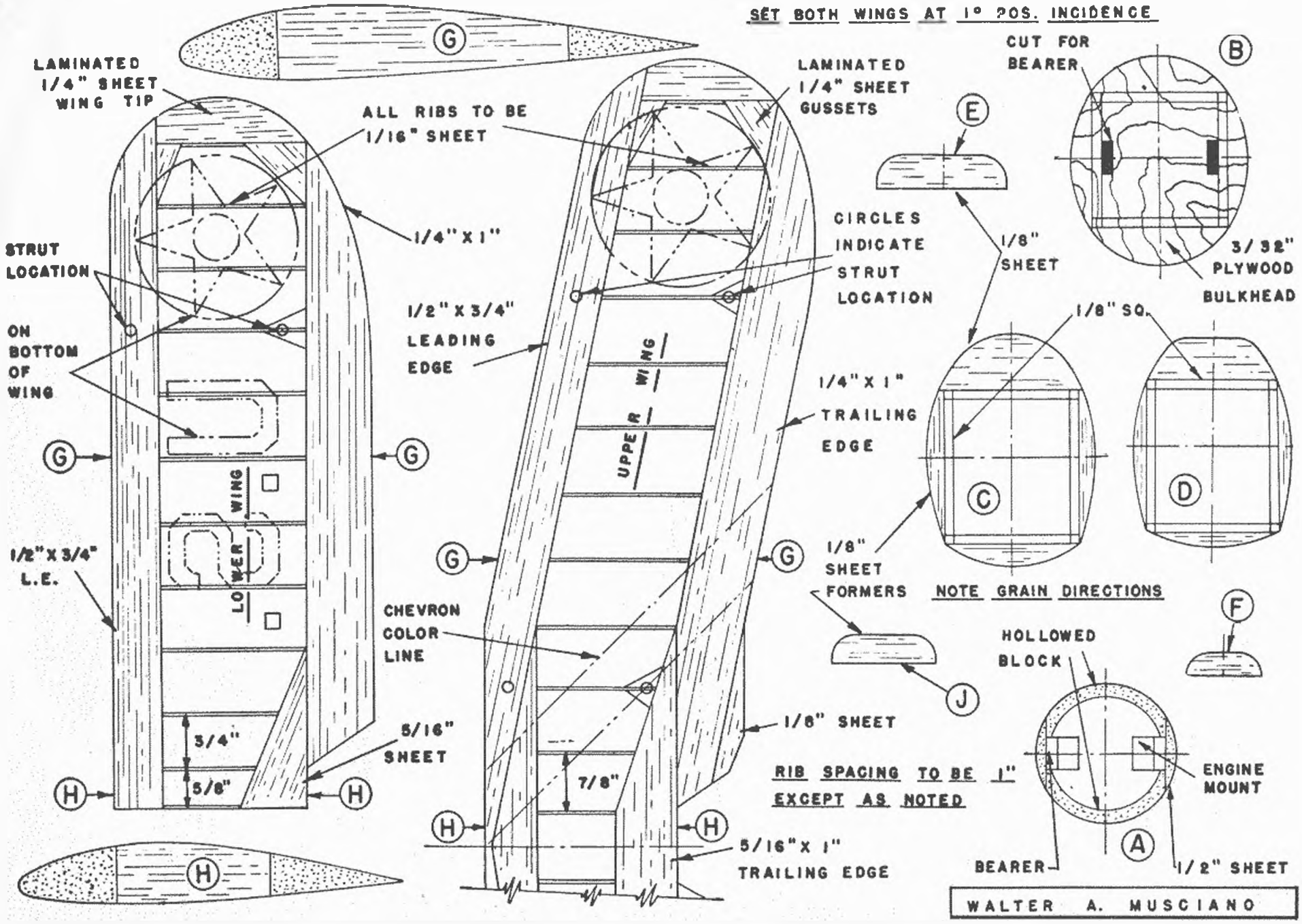
The wings are designed to be simple in construction and durable in operation. They consist of a heavy leading and trailing edge to take the loads, thus eliminating the spars. The upper wing is constructed in one section. Neither wing has any dihedral. Light *Silkspan* is used to cover these structures. The structures should be well sanded before covering.

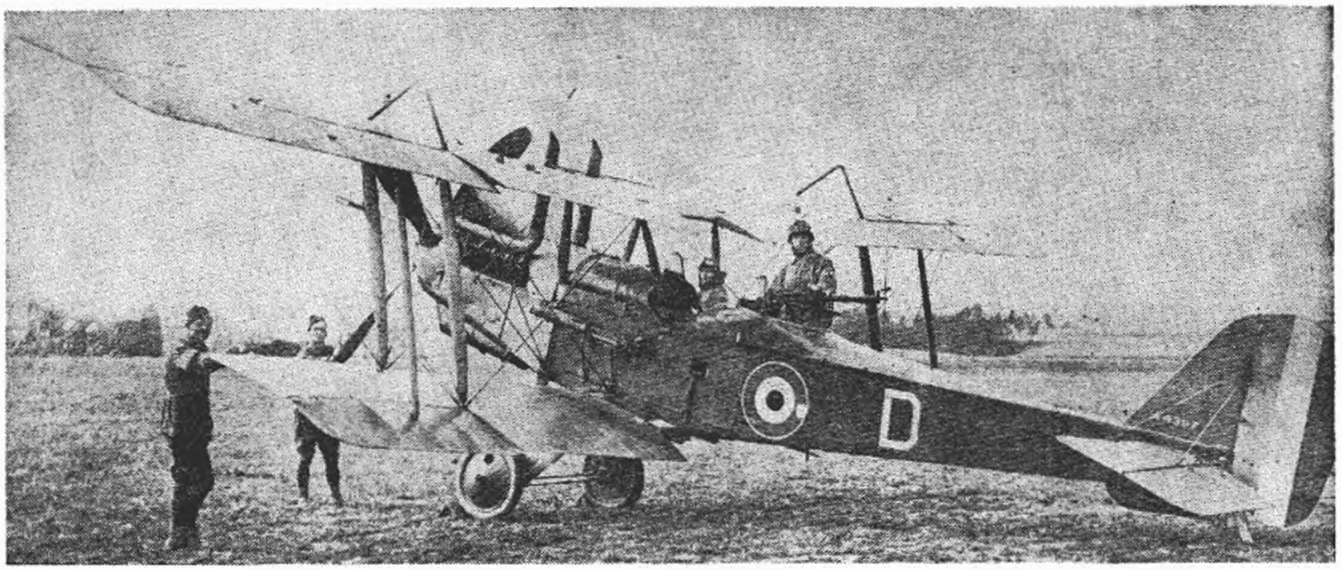
It is suggested the model be colored before the wings are assembled because of the wide variety of decoration required. After four coats of clear dope were applied to the entire model, the ship was painted as follows: *gray*—fuselage, landing gear, wing struts; *aluminum*—lower wing, bottom of upper wing; *red*—entire empennage; *chrome yellow*—top surface of upper wing; *lemon yellow*—fuselage band, cowl, wing chevron; *black*—lettering, "U.S." under left wing and "Navy" under right, outline on fuselage band, chevron outline, ram insignia of the Sixth Bombing Squadron. As can be imagined, this makes a very attractive appearance, especially with the addition

(*Turn to page* 45)





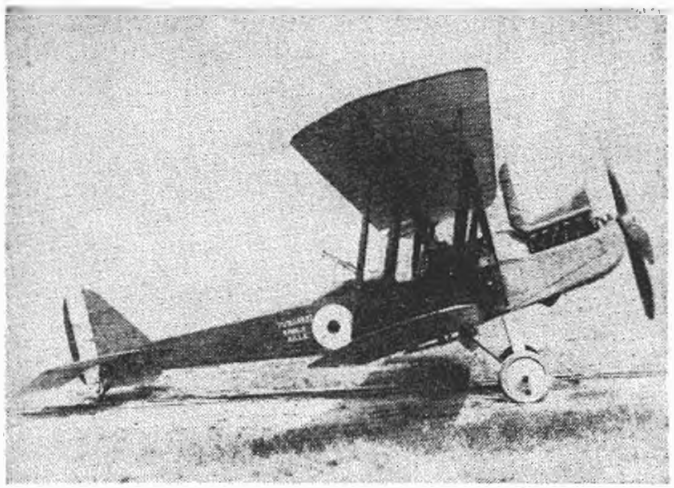

SET BOTH WINGS AT 1° POS. INCIDENCE
G
LAMINATED 1/4" SHEET WING TIP
ALL RIBS TO BE 1/16" SHEET
LAMINATED 1/4" SHEET GUSSETS
CUT FOR BEARER
B
E
1/4" X 1"
STRUT LOCATION
ON BOTTOM OF WING
CIRCLES INDICATE STRUT LOCATION
1/8" SHEET
3/32" PLYWOOD BULKHEAD
1/2" X 3/4" LEADING EDGE
1/8" SQ.
1/4" X 1" TRAILING EDGE
C
D
LOWER WING
UPPER WING
1/2" X 3/4" L.E.
1/8" SHEET FORMERS
NOTE GRAIN DIRECTIONS
F
J
CHEVRON COLOR LINE
HOLLOWED BLOCK
3/4"
5/8"
5/16" SHEET
7/8"
1/8" SHEET
RIB SPACING TO BE 1" EXCEPT AS NOTED
ENGINE MOUNT
A
BEARER
1/2" SHEET
H
5/16" X 1" TRAILING EDGE
WALTER A. MUSCIANO



Capt. R. G. D. Francis flew this R. E. 8 over the lines 440 hours, a record for World War I

WORLD WAR I

by ROBERT C. HARE



Resemblance to famous *Jenny* may be seen in this side view of the R. E. 8

R. E. 8 • PART TWO

Note center section window in this ship which served in Mesopotamia

AS the rumors cast so freely about the R. E. 8 and its initial performances in France filtered across the English Channel, even civilians in Great Britain became upset about this aircraft. Sensing this feeling, combined with complaints about the ship from military sources, the subject became a popular one for debate from time to time in Parliament, by various members of that body.

Members of the military, apparently in an effort to have the plane removed from service, also brought the subject up for discussion, and as usual, got nowhere. A typical discussion follows in condensed form, to give the reader an idea of the interest shown in the R. E. 8:

Colonel C. Lowther asked the Under-Secretary of State to the Air Ministry whether the R. E. 8 was used on the Western Front (May, 1918) and whether it had been condemned "as dangerously inadequate compared to German aircraft now in use."

Under-Secretary Major Baird: "The answer to the first part of the question is affirmative; the second part, negative."

Colonel Lowther: "Is it not a fact that every expert and every pilot are unanimous in condemning this type of machine as a death trap?"

Major Baird: "No, Sir."

Lowther: "If I give my honorable and gallant friend the names of experts who do condemn this type as a death trap, will he look into the matter?"

Baird: "One or two people condemning it would not be sufficient. The machine has been used for a long time and with great success. I am afraid that my honorable friend has been misinformed."

Lowther: "Can the honorable and gallant gentleman give the name of one expert who does approve of this type of machine?"

Baird: "Certainly, General Trenchard."

(General Hugh Trenchard commanded the Independent Air Force, a bombing group with a roving commission to bomb out German industrial centers. Certain I.A.F. squadrons used R. E. 8's.)

At this point Commons member, Mr. Joynson-Hicks entered the discussion: "Have orders been given during the last four months for a further supply of these not altogether satisfactory machines, instead of very much better machines which my honorable and gallant friend knows of?"

Baird: "This is not a matter for discussion by question and answer. The squadrons have to be kept up to strength."

Lowther: "Are they making more of these particular machines?"

Baird: "They are making more machines of this kind to keep up squadron strength."

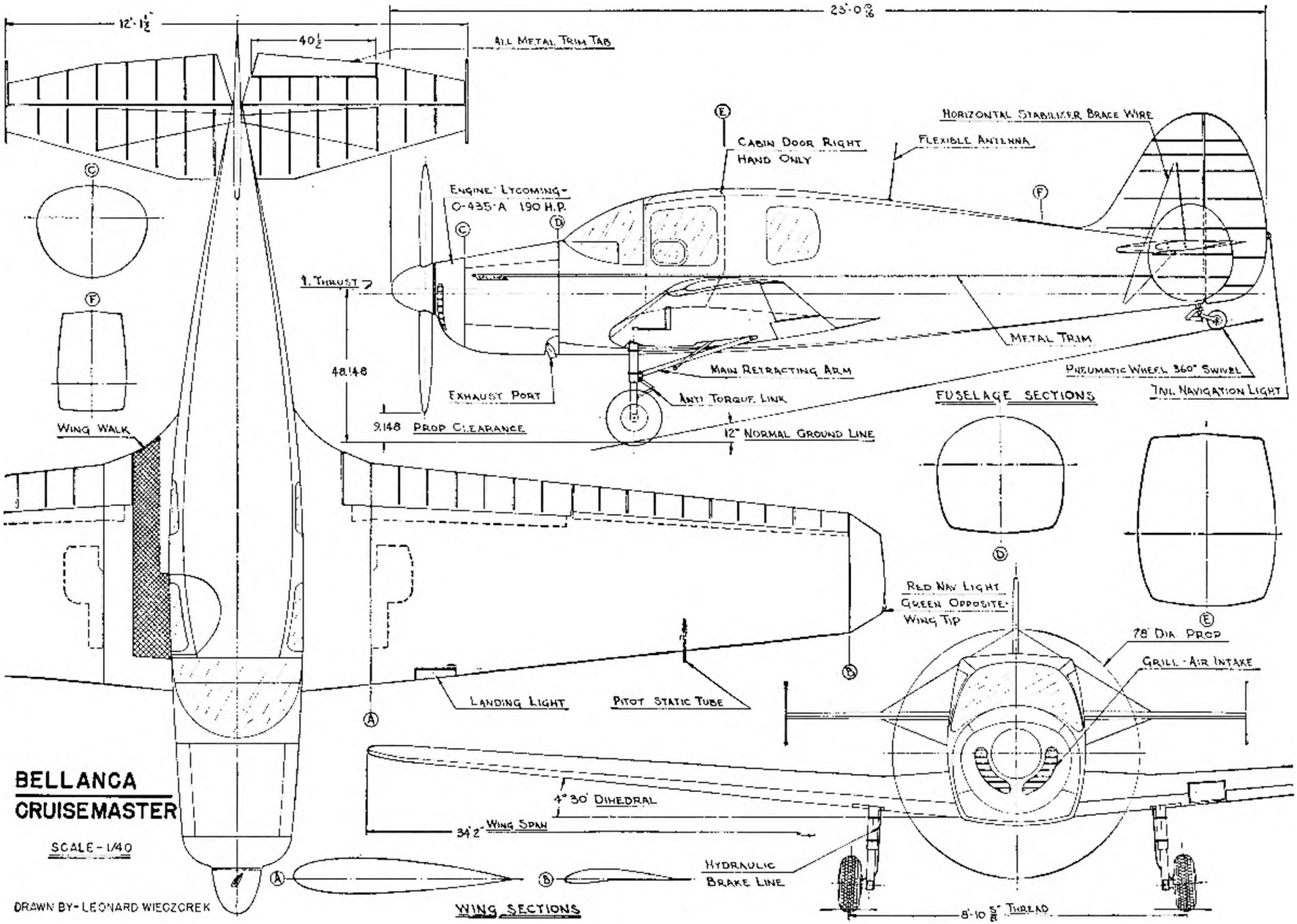
Lowther: "Why not make Bristol Fighters?"

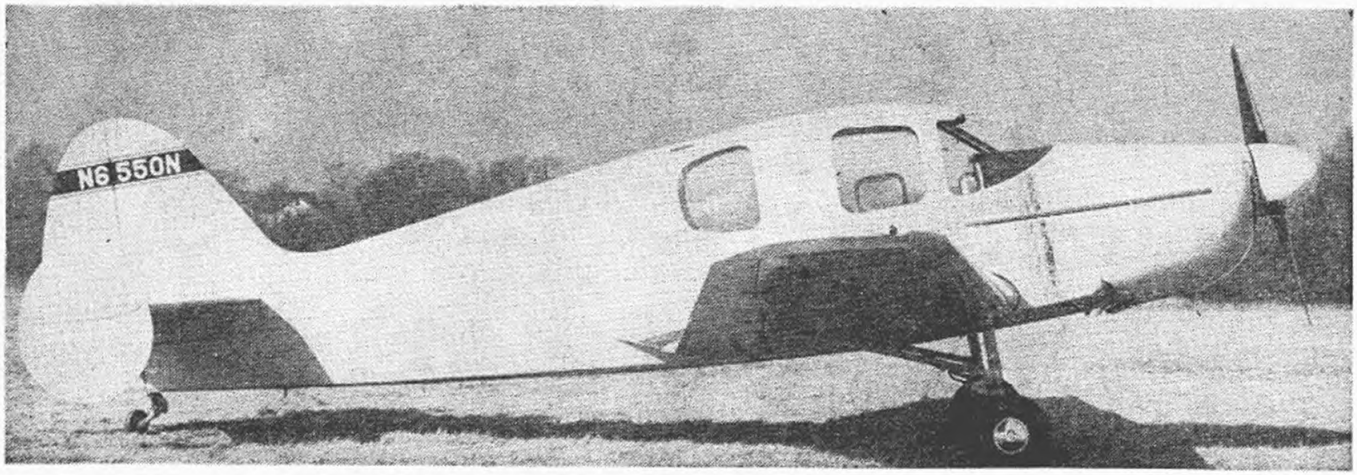
And so it went, but while all the debating was going on, old reliable "Harry Tate" was plugging along at the Fronts, racking up new records.

In No. 69 Squadron (No. 3, Australian Flying Corps), Captain R. G. D. Francis, D. F. C., was establishing a record for the number of hours flown over the German Lines—440 hrs. 35 mins! And every second if this was made in the same R. E. 8 he had obviously flown for months!

The previous over-the-lines record of 425 hrs. also was established by an R. E. 8.

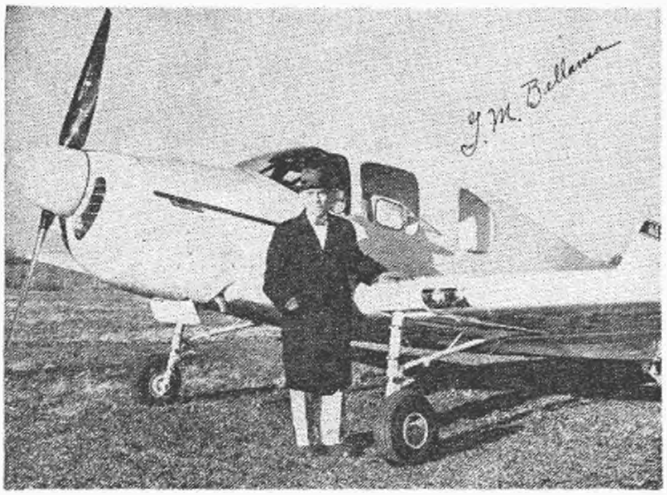
Then take the case of Captain Freddie McCall, a Canuck from Vernon, British Columbia, who wound (*Turn to page 54*)

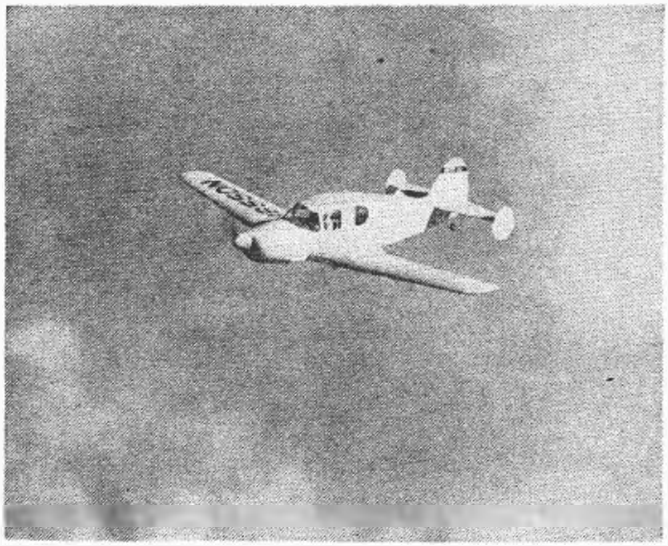

12'-1½"
40½"
ALL METAL TRIM TAB
23'-0⅜"
HORIZONTAL STABILIZER BRACE WIRE
CABIN DOOR RIGHT HAND ONLY
FLEXIBLE ANTENNA
ENGINE LYCOMING O-435-A 190 H.P.
T. THRUST
48.148
EXHAUST PORT
9.148 PROP CLEARANCE
METAL TRIM
MAIN RETRACTING ARM
ANTI TORQUE LINK
12" NORMAL GROUND LINE
PNEUMATIC WHEEL 360° SWIVEL
INL NAVIGATION LIGHT
FUSELAGE SECTIONS
WING WALK
RED NAV LIGHT
GREEN OPPOSITE WING TIP
78" DIA PROP
GRILL - AIR INTAKE
LANDING LIGHT
PITOT STATIC TUBE
4° 30' DIHEDRAL
34'2" WING SPAN
HYDRAULIC BRAKE LINE
8'-10 5/8" TREAD
WING SECTIONS
BELLANCA
CRUISEMASTER
SCALE - 1/40
DRAWN BY - LEONARD WIECZOREK



Bellanca Cruisemaster

by ROBERT McLARREN





THE *Cruisemaster*, our neat, trim Plane of the Month, comes from the drawing board of one of the most famous men in all aviation history—and yet one of the least known, to this generation at least. For if an airplane is known by the name behind it, there is no airplane flying today with a longer, more brilliant reputation than the Bellanca *Cruisemaster*.

It was only by a hair's breadth that the name Bellanca was not stamped on the first American transatlantic airplane, but that name was stamped on airplanes that made more long-distance over-water flights than all the others combined, in the days when a transatlantic flight made headlines and parades.

The name Bellanca became synonymous with record-breaking flights during the late 'twenties and early 'thirties and signified sturdy, dependable and—above all—efficient airplanes. Yet the owner of that name is a shy, slight man of esthetic appearance and quiet habits that no amount of fame can change. He was born Guiseppe Mario Bellanca in Sciacca, Italy, March 19, 1886, and when only 17 years of age and a student at the Technical Institute, Milan, Italy, he was experimenting with aircraft design and construction at the same time as the famed Wright Brothers. With a little more information, a little more capital, and a little more courage, this mild-mannered engineer might well have become the most famous man in the world: the first to fly.

His first airplane, however, did not fly until 1909, just six years *too late* for such honor, but his airplanes were destined to far outshine in the history books any that the Wright Brothers produced subsequent to their first historic creation. Bellanca's first airplane was a two-seat pusher design biplane completed in Milan, and he also produced a tractor version of the same airplane. At the time, however, Bellanca was not a pilot and concentrated on his drawing board while others took his creations aloft. The urge to come to America to seek his fortune in aviation proved irresistible, and in 1911 he landed in New York to begin a new career as an American. Determined to fly, he visited the old flying field at Mineola, Long Island, New York, until—completely without assistance—he taught himself to fly in 1912!

In those days anyone who had been aloft *alone once* was a fully accredited "pilot," and Bellanca forthwith formed the Bellanca Airplane School at Mineola and began teaching others to fly. His school proved successful and he became one of the best-known instructors in the United States prior to World War I. With war clouds gathering, Bellanca joined the Maryland Pressed Steel Company, Hagerstown, Md., in 1917, as Chief Engineer of the company's aircraft department. His first design was a trim little single-seat biplane which weighed only 775 lbs. fully loaded and attained a speed of 85 mph on only 35 hp! One of the outstanding attributes of this little sport plane was its remarkable stability; it could be stalled with complete safety, the airplane gently nosing forward as though nothing had happened. The airplane was slightly enlarged to become the Bellanca *C.E.*, a two-place job weighing 980 lbs. but attaining 101 mph on a little 55 hp Anzani engine!

Following the war, Bellanca found a sponsor for his designs and he journeyed west to Omaha, Nebr., where the Roos-Bellanca Airplane Company was formed in the fall of 1922. The announced purpose of the new company was the manufacture and marketing of designs by "Professor Bellanca" (drawing on his teaching experience in Italy), but the venture did not prove successful and Bellanca resigned in 1923.

In 1924 Bellanca joined the Wright Aeronautical Corporation which was engaged principally in the production of aircraft engines, but Wright established an aircraft department to

(*Turn to page* 56)

Your Club Can Hold A Contest

By JAMES E. GRAY

HOW long has it been since your club held a contest? Or hasn't the first contest been scheduled yet? Nevertheless, if you and your fellow club members are losing interest in modeling or if those meetings are getting dull, then a contest is just what it will take to pep things up, so get to work!

At your next club meeting, suggest this idea and let the boys talk it over. Stress the fact that there will be prizes, competition, and the chance to see just what the other fellows can do. And when they are all in accord, get together and schedule the contest date. Schedule this date at least two weeks in advance so that everyone will have an opportunity to get his favorite ships in tip-top shape and will have plenty of time to make all the necessary preparations for the Big Day.

Decide, too, whether it is to be an open or closed contest. Some members may wish to limit entry to only members of the club; others may want to admit any modeler who desires to enter, regardless of whether or not he belongs to the club. This is a question, of course, that may be decided by vote; let the fellows toss it around until they have reached a satisfactory decision.

Now is the time to make arrangements for the entry blanks and required forms. These forms may be purchased from the Academy of Model Aeronautics, 1025 Connecticut Avenue, S.W., Washington 6, D.C., at a nominal cost. This is the quickest and easiest method of obtaining them. However, the necessary forms may be written up by one or two members of the club and the desired number of copies mimeographed.

A complete set of contest rules can be obtained from this same source, the AMA, for a very few cents. By getting them in this manner, the club can be sure it is using rules that have been tried and found successful in hundreds of other contests. However, again if desired, the club may draw up an original set of rules to apply specifically to its own contest. If this is going to be done, keep the rules as simple as possible and then read each rule to the club members and vote on each rule as it is read. Should they vote against any particular rule, either discard it or iron it out until it is satisfactory.

At this first meeting, appoint a contest committee of three members whose special duty it will be to prepare for the forthcoming event. This committee will be responsible for obtaining a flying field, getting publicity, procuring prizes, appointing timers and judges and, in general, seeing that the contest runs smoothly.

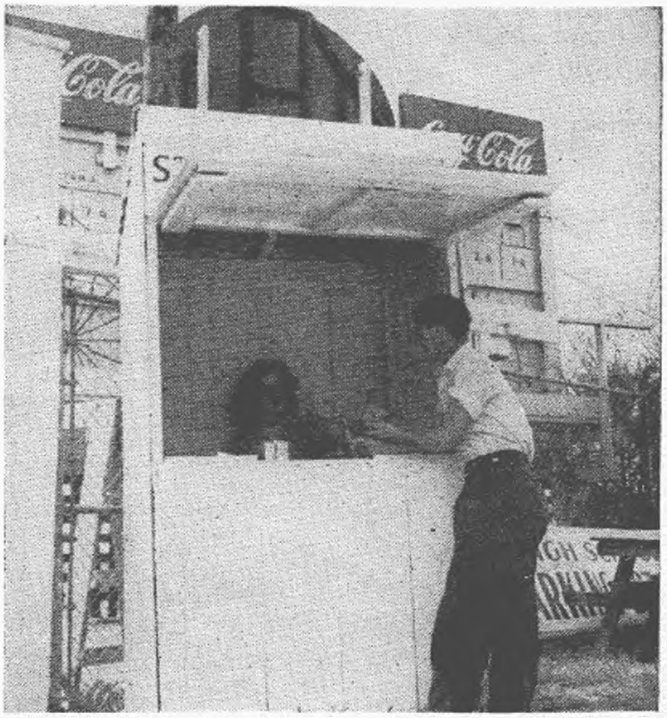
The first thing this committee must do is either to borrow or to rent a flying field for use on the contest day. How and where can such a field be obtained? Do you know a farmer who has a pasture or meadow that will be easily accessible to all interested spectators and contestants? If you don't perhaps some other club member does. Is there a spacious playground or park that may be used? A ball park is good and, in most cases, seats will even be provided for spectators. Of course, you will need to contact your local city officials and ball teams in order to get permission to use such facilities, but you will find that they'll eagerly cooperate with you. Then, there's your local airport. Ask the manager to let you use a certain section of his field for your contest. Let him designate which portion of the airport would be best, since he is familiar with the flying habits of his patrons.

If none of the above pan out, use your imagination. In our hometown in Tennessee, the best local flying field was a partially vacant lumber yard! It was spacious and it was centrally located. Just look around and you'll discover something and learn too, that most people will be willing to donate the use of their field, rent free.

Now that you have procured a flying field and have your contest date set, it's time to start your (*Turn to page 52*)

Put colorful posters around town—they'll help draw a crowd

First step at meet is registration. Processing table is near-by



If size of meet warrants, a small refreshment stand will prove popular

What About PROFESSIONALISM?

pro-fes'sion-al-ism . . . Model Flying. One who competes against amateur model builders while actively engaged in the manufacture or sales of the specific model or engine in competition.

CONDUCTED BY
JACK BAYHA

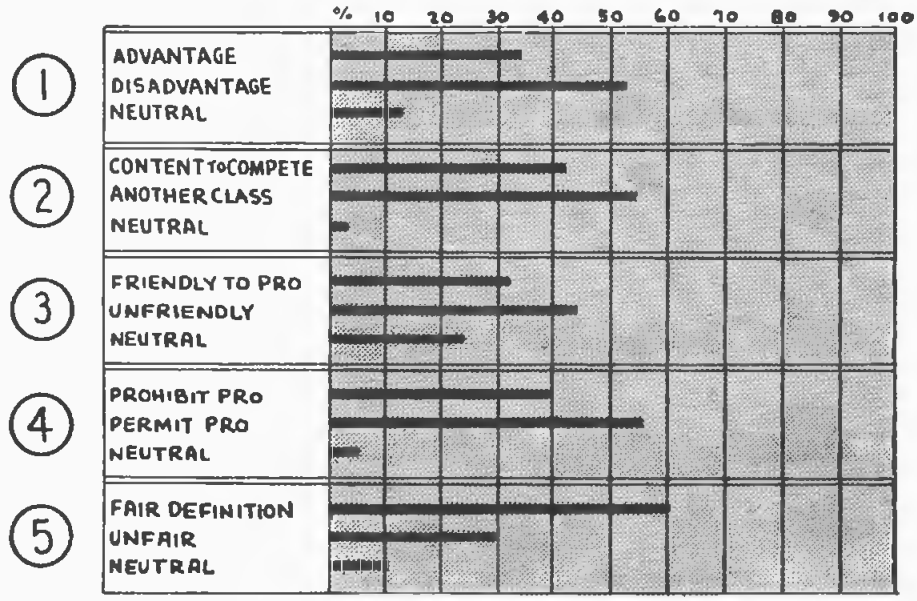
PART FOUR
Conclusion

AT long last we are able to sit back and see at one glance a full view of just how the model builders themselves feel about the professionalism question. To compile the data presented here, proved most difficult. All too many modelers felt so incensed, and for both sides, they neglected to answer the questions fully. Still others claimed to speak for groups, and we found ourselves in quite a quandary as to how to handle these items. Finally we decided to count one letter as one ballot, despite the number of people mentioned as favoring the side discussed in the letter, and also to include an additional tally of club ballots.

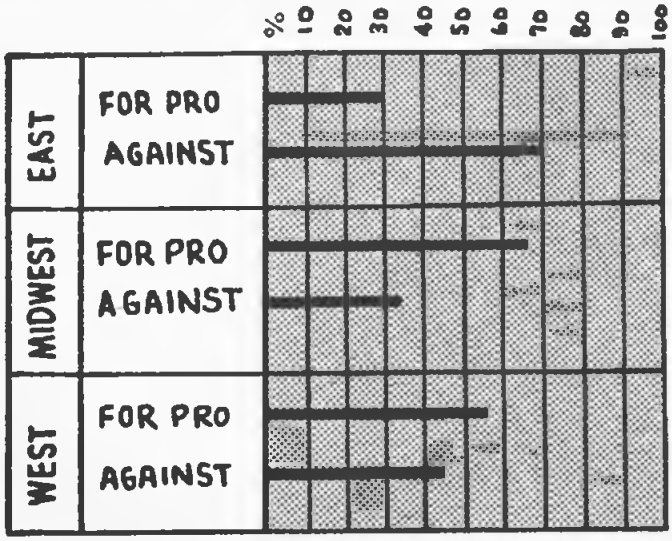
Here are the six questions asked:

1. As a model builder, do you find the professional competition an advantage to you, or does it cause you to make out more poorly in contests?
2. Are you content to participate against the professionals, or would you rather see them in a separate class?
3. Do you feel more friendly towards the professionals who do not compete against you, or who do not accept prizes, than to those who do?
4. Would you be for, or against, a ruling prohibiting the professionals from active competition?
5. Do you feel the definition we have set up for a professional is fair?
6. Have you had any particular experience in a contest with a professional?

We can sum up the answers this way:



Here we have the graphical answer to the questions listed in our Professionalism Questionnaire. Question 6 could not be listed as a percentage



It's interesting to note the variation in attitude toward Professionalism in the different areas of the country as tabulated above

Question One. Fifty-two per cent of our modelers thought that professional competition was not advantageous. Thirty-five per cent felt it was advantageous to them, and did them no harm. The remaining thirteen per cent felt it made little difference, and were neutral on the subject.

Question Two. Fifty-four per cent were not content to compete against the pros and felt pros should be in a separate class. A neat forty-three per cent felt that they would be satisfied to leave the pros in the same class as themselves. A very tiny three per cent group remained non-committal.

Question Three. Forty-four per cent of the modelers answering felt more friendly to pros who do not compete, or do not accept prizes. Thirty-two per cent felt more friendly to those who did compete and took prizes. A rounded-off twenty-four per cent felt neutral on the subject.

Question Four. With an amazing sense of sportsmanship, only forty per cent felt a rule should be made which prohibited the pros from competition. Fifty-five per cent felt the pros should be allowed to compete. Five per cent were neutral. Here we must add one item, a large percentage of the ballots which felt no ruling should be made, made mention of the fact that as long as a fair-play attitude was shown by a pro, and as long as he stuck strictly to the rules, he should be allowed to compete.

Question Five. Our definition seemed fair to sixty per cent, unfair to thirty per cent, while ten per cent were disinterested in the definition and claimed neutrality.

Question Six. Here we are unable to compile any percentage data, but most experiences with professionals seemed to have been unpleasant if we judge from the examples cited.

It is difficult, now that our forum has been completed, to draw any specific conclusions about just what to do about professionalism. From the letters received we can, however, offer a digest, a form of open letter to the professionals.

* *

Dear Mr. Professional:

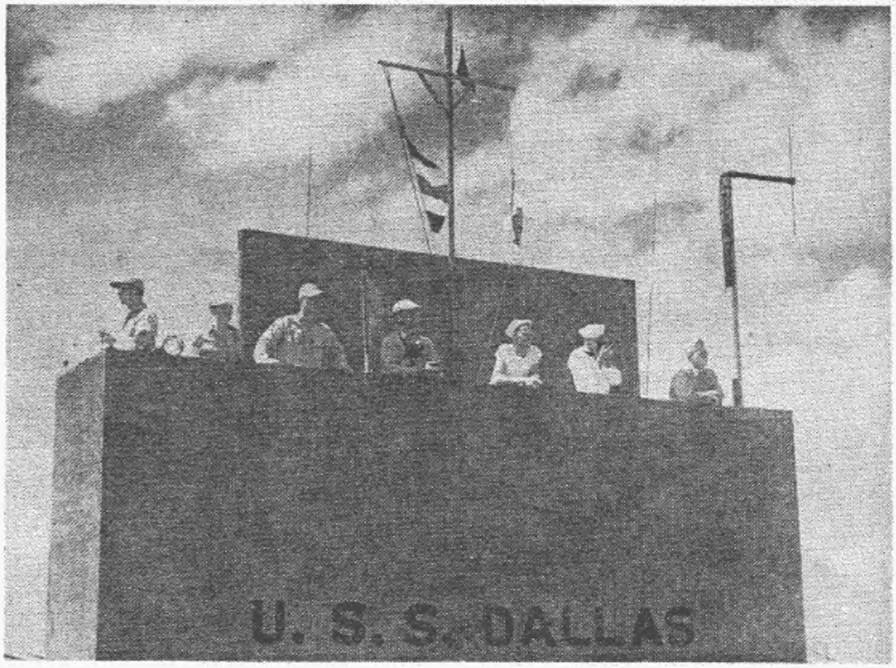
We have at hand a vast store of letters from model builders, the fellows who keep you in business. These fellows have expressed opinions to us, which we feel should be made known to you. The exact tabulation you can see from the article;

(*Turn to page* 55)

Dallas Invasion

When the modelers start pouring into Dallas in late July, the natives will indeed think that the 1950 Nationals is a full-scale invasion, unless they are model builders themselves

by JOHNNY CLEMENS



Portable "control-tower" is used for special activities; it will be Official control point for 1950 Nats

It is being predicted that Texas will be invaded this Summer! According to the usual "well-informed sources," the invasion is set for the last week of July. In fact the invading army will start descending directly on the Dallas Naval Air Station July 25. Their prime purpose will be to capture as much of the prize list of the 1950 National Model Airplane Championships as possible.

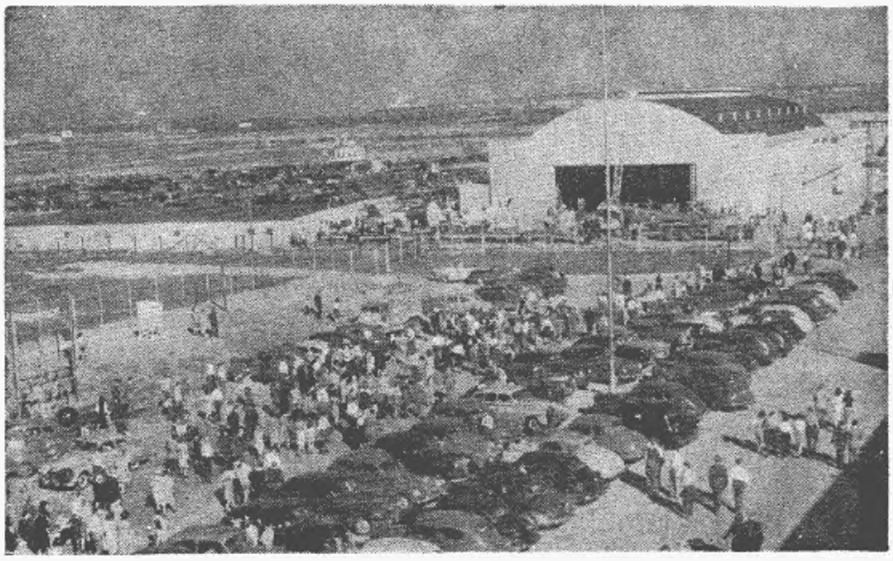
It is being estimated that this "invading army" of model builders from all over the United States and our neighboring countries will number between 1,500 and 2,000. Preparations are being made to welcome these contestants in true Texas Style! The advance planning on the part of the sponsors is taking into consideration the entertainment, convenience, and safety of the visiting modelers and spectators.

The sponsor of the 1950 Nationals is the Exchange Club of Dallas, an organization of about 100 air-minded businessmen who have a genuine interest in youth and sportsmanship. This Exchange Club (the downtown Exchange group) will be ably assisted by the other three Exchange Clubs in Dallas. Each of these clubs, located at Oak Cliff, Park Cities, and East Dallas, will provide valuable manpower, experienced in handling model contests, and although smaller than the downtown Exchange Club, make up for it in their intense enthusiasm.

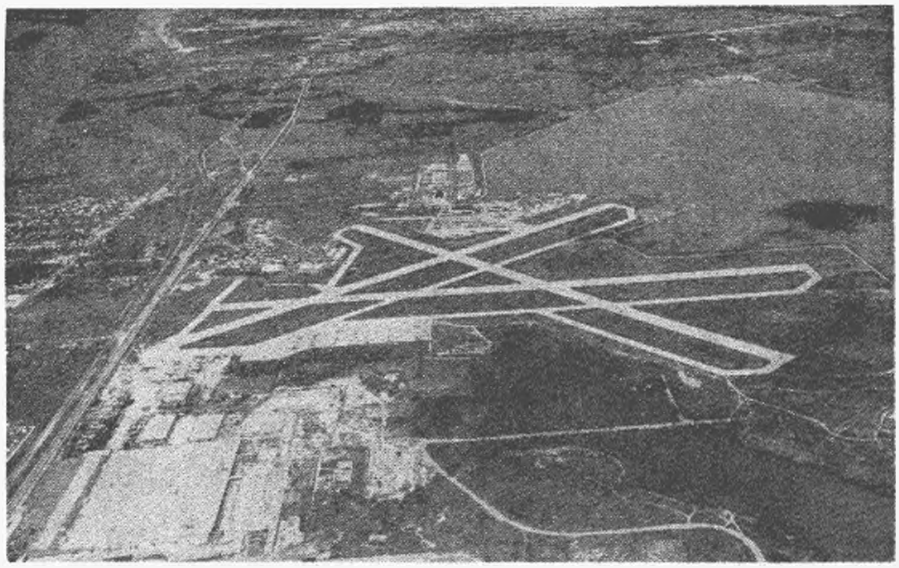
A word about the make-up and purposes of the Exchange Clubs will serve to show the modelers why those civic groups make good model aviation and youth activity sponsors. Exchange Clubs are composed of businessmen, each member from a different business or profession, and dedicated to the exchange of service among each other and to the community. Including, as they do, a man from each business or profession; these clubs have the power to accomplish great things, because whatever ability may be needed, there is usually a man right in the club who can furnish it.

As a joint sponsor, the U. S. Navy will provide the facilities and personnel of the Dallas Naval Air Station for the Mid-Century Nationals. The Navy is well experienced in handling such "invasions" as the Dallas Station will experience in

(*Turn to page* 50)



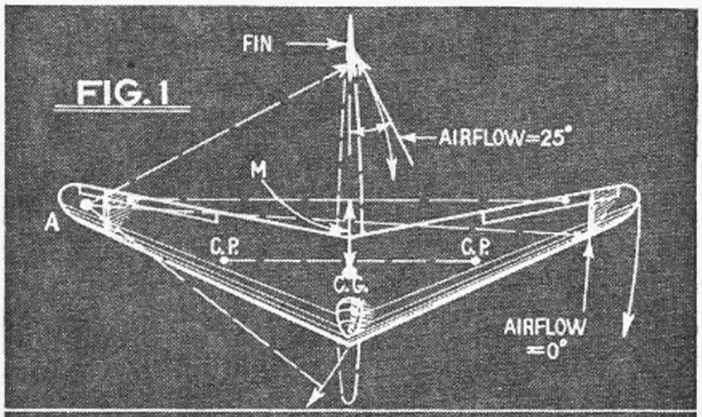
The big drill hall in the background is slated to house the Exposition of Model & Hobby Progress

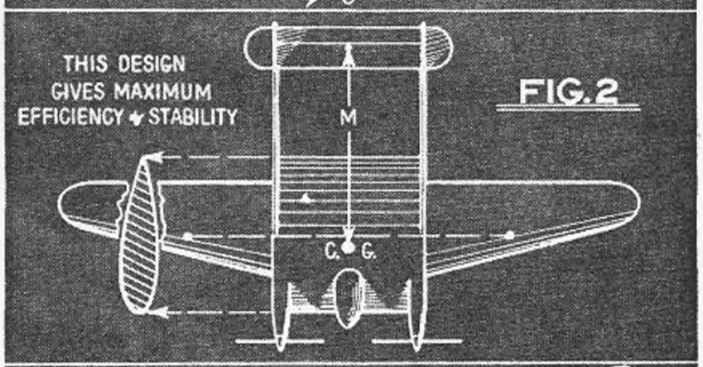


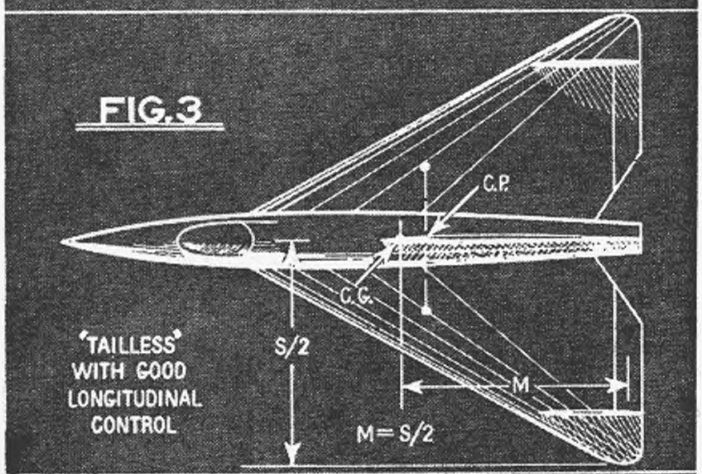
Air view of Dallas N. A. S. shows lake—site of R. O. W. event—and Vought plant at lower left

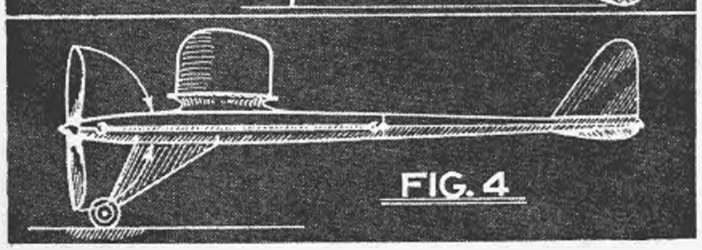
DESIGN FORUM

by CHARLES H. GRANT









Flying wings are efficient, but they introduce stability problems; the cure for these problems is given herein

THE struggle to increase the speed of flight is a history of never ending attempts to reduce drag or resistance to flight. In the early days, drag limitations imposed by wires, struts, and other structural elements were conceded to be necessary because, with engines of low power and excessive weight, it was necessary to adhere to this structural system which provided large wing area with little weight. Briefly, the types of airplane structures used were determined by the power available. With this low power, real speed could not be obtained, even though drag was reduced considerably. Because of the relatively small influence of drag at low speed, it was more important to reduce the *weight* of the airplane which had a large effect on the useful load at slow speed. Consequently, less thought was given to drag, and attention was concentrated on reducing the weight of structures regardless of their drag. This resulted in the box-like strut and wire structures of the early days.

However, as power increased to a degree that increased plane velocity to 170 or 180 mph, drag became more important in proportion to the weight of the airplane, because drag increases with the *square of the velocity*. So, at high speeds the drag of strut and wire construction becomes tremendous. At the point where speeds began to reach above 150 mph, designers started to eliminate struts and wires here and there and to build internally-braced structures in order to reduce drag. These structures were heavier than the old type, but the increase in weight of the internally braced structures absorbed far less power than would the increase in drag of externally-braced planes. Therefore, it became advantageous to eliminate all structural elements that created resistance or drag, wherever flight speeds of more than 150 mph were to be encountered. The history of aviation progressed rapidly beyond this point because the power of motors increased rapidly. With sufficient power to drive planes faster, it became still more advantageous to consider drag seriously.

The next progressive step resulting from this condition was the elimination of the fixed landing gear. *At slow speed*, retractable gear was impractical because the increase in weight absorbed much more power than the resulting small reduction in drag. At the higher speeds, however, it was and is a different story.

Airfoil shapes, body shapes, engine cowls were all given serious consideration with resulting progress in the design of these component parts and in airplane performance. The engine cowl reduced drag considerably by creating smooth airflow around the fuselage. New airfoils were more efficient. In addition to this, greater experience in building internally-braced structures resulted in decreased weight.

But the power of engines kept on increasing, to give even relatively "dirty" planes unheard-of velocities. This resulted in a tremendous decrease in power loading or weight of the airplane relative to the power of the engine which made possible very rapid rates of climb—rates higher than were required in normal commercial operation, because of the large amount of wing area compared to power. Speed was more important than this rapid rate of climb and/or the comparatively very low landing speed possible with the large wing area.

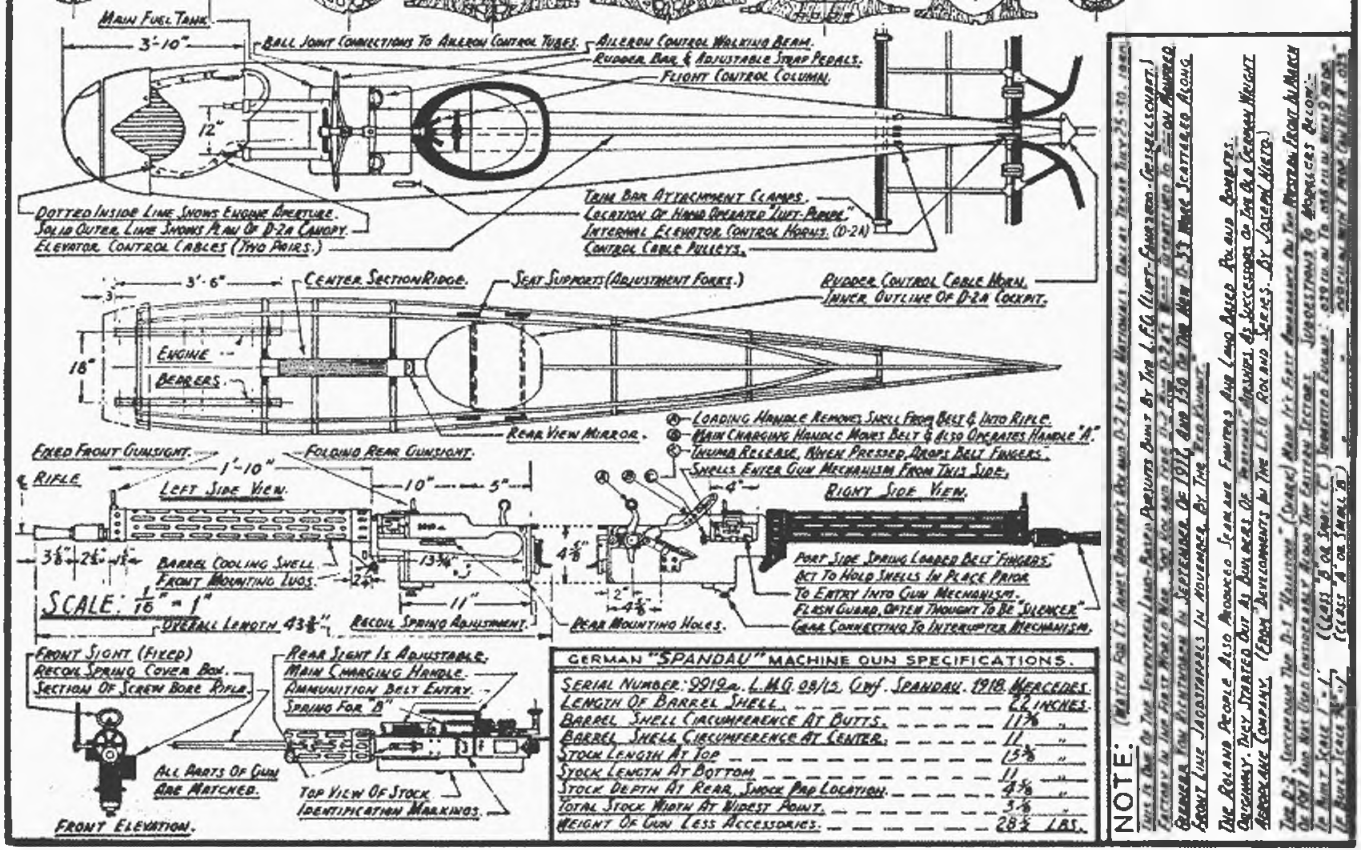
So, the next speed-increasing step was to reduce wing area with an attendant reduction in structure and airplane weight. This pushed up the wing loading, that is, pounds of weight of airplane per square feet of wing area, until today wing loadings on commercial transports range from 40 to 80 lbs./sq. ft. In the early days of the Wright biplane, wing loadings ranged from 2 to 4 lbs./sq. ft.!

Though speed was increased by increasing the aerodynamic efficiency of all the component parts such as the wing, fuselage, tail, etc., the point was eventually reached where it was extremely difficult to reduce drag by improvements in shape. Such drag reductions now have become relatively microscopic, and attention was turned to other ways of eliminating drag.

The first and obvious method was to eliminate parts of the airplane which heretofore had been accepted as necessary, the fuselage, for instance, and the tail group. These represented a comparatively large percentage of the total airplane drag. As a result designers began to think seriously of planes without fuselages and tail surfaces—*flying wings*. Some preferred to call them tailless airplanes. Theoretically, an airplane which consisted only of streamlined lifting wing surfaces would give the least amount of drag with the greatest amount of lift.

Mr. Northrop was one of the advocates of this type of

(*Turn to page* 58)



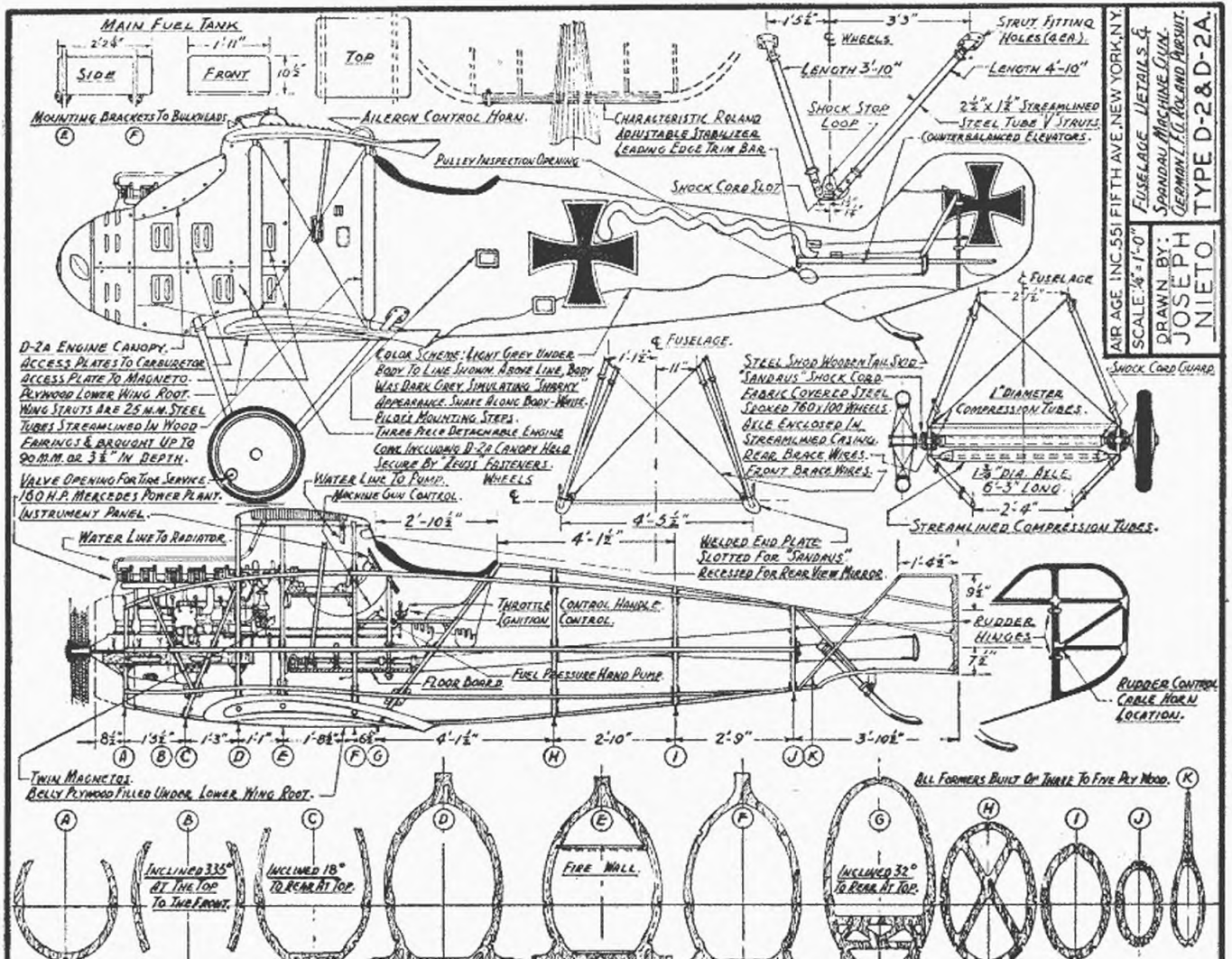
GERMAN "SPANDAU" MACHINE GUN SPECIFICATIONS.

SERIAL NUMBER: 9919a. L.M.G. 08/15. Cmf. SPANDAU. 1918. MERCEDES.	
LENGTH OF BARREL SHELL	22 INCHES.
BARREL SHELL CIRCUMFERENCE AT BUTTS	11¾ "
BARREL SHELL CIRCUMFERENCE AT CENTER	11 "
STOCK LENGTH AT TOP	15⅝ "
STOCK LENGTH AT BOTTOM	11 "
STOCK DEPTH AT REAR, SHOCK PAD LOCATION	4⅞ "
TOTAL STOCK WIDTH AT WIDEST POINT	5⅛ "
WEIGHT OF GUN LESS ACCESSORIES	28½ LBS.

NOTE: (WATCH FOR IT. INFO. SOURCES) AS WAS D-2 AT THE NATIONALS. DALLAS TEXAS MAY 25-30, 1960 THIS IS ONE OF THE SEVENTEEN LONG-RANGE PRIZES GIVEN BY THE I.F.F. (INTERFORENCE-FREE SOCIETY.) FACTORY IN THE FIRST WORLD WAR. SEE ALSO AND THE D-2 & D-2A ARE IDENTICAL TO ON-WARD. REMEMBER VON RICHTHOFEN IN SEPTEMBER OF 1917, AND 150 OF THE NEW D-3'S WERE SCATTERED ALONG SCOUT LINE SQUADRONS IN NOVEMBER. BY THE 1918 ARMISTICE.

THE ROLAND PEOPLE ALSO ARMED SCHLAND FIGHTERS AND LONG RANGE RECON AIRCRAFT. FACTORY: DULY STARTED AS BUILDERS OF RAILWAY ARMORED CARS. ETC. BECOMING AERONAUTICAL ENGINEERING COMPANY. (EDDY COMMENTS IN THE L.F.F. ROLAND SERIES. BY JOSEPH NIETO.)

THE D-2 SUCCESSOR TO THE D-1 "MONSTER" (SCALE) MADE ITS FIRST APPEARANCE ON THE WESTERN FRONT IN MARCH OF 1917 AND WAS USED CONSIDERABLY ALONG THE EASTERN SECTORS. SPECIFICATIONS TO WORDLESS DRAWING:-
IN PART, SCALE 1"=1' (SCALE "A" OR SMALL "B") VERTICAL SCALE: 6" TO THE FOOT (SCALE "A" OR SMALL "B")
IN PART, SCALE 1"=½" (SCALE "A" OR SMALL "B") HORIZONTAL SCALE: 6" TO THE FOOT (SCALE "A" OR SMALL "B")


MAIN FUEL TANK
SIDE
FRONT
TOP
MOUNTING BRACKETS TO BULKHEADS
AILERON CONTROL HORN.
CHARACTERISTIC ROLAND ADJUSTABLE STABILIZER LEADING EDGE TRIM BAR.
PULLEY INSPECTION OPENING
SHOCK CORD SLOT
WHEELS
LENGTH 3'-10"
LENGTH 4'-10"
STRUT FITTING HOLES (4 EA.)
SHOCK STOP LOOP
2½" x 1½" STREAMLINED STEEL TUBE V STRUTS.
COUNTERBALANCED ELEVATORS.
FUSELAGE
SHOCK CORD GUARD
D-2a ENGINE CANOPY.
ACCESS PLATES TO CARBURETOR
ACCESS PLATE TO MAGNETO.
PLYWOOD LOWER WING ROOT.
WING STRUTS ARE 25 M.M. STEEL TUBES STREAMLINED IN WOOD FAIRINGS & BROUGHT UP TO 90 M.M. OR 3½" IN DEPTH.
VALVE OPENING FOR TIRE SERVICE.
180 H.P. MERCEDES POWER PLANT.
INSTRUMENT PANEL.
WATER LINE TO RADIATOR.
COLOR SCHEME: LIGHT GREY UNDER BODY TO LINE SHOWN. ABOVE LINE, BODY WAS DARK GREY SIMULATING "SHARKY" APPEARANCE. SHADE ALONG BODY-WHITE.
PILOTS MOUNTING STEPS.
THREE PIECE DETACHABLE ENGINE COWL INCLUDING D-2a CANOPY HELD SECURE BY "ZEUSS FASTENERS."
WATER LINE TO PUMP.
MACHINE GUN CONTROL.
WHEELS
STEEL SHOD WOODEN TAIL SKID
"SANDRUS" SHOCK CORD
FABRIC COVERED STEEL SPOKED 760 x 100 WHEELS.
AXLE ENCLOSED IN STREAMLINED CASING.
REAR BRACE WIRES.
FRONT BRACE WIRES.
1" DIAMETER COMPRESSION TUBES.
1⅜" DIA. AXLE 6'-3" LONG
STREAMLINED COMPRESSION TUBES.
WELDED END PLATE SLOTTED FOR "SANDRUS" RECESSED FOR REAR VIEW MIRROR.
THROTTLE IGNITION
CONTROL HANDLE CONTROL.
FLOOR BOARD.
FUEL PRESSURE HAND PUMP
RUDDER HINGES
RUDDER CONTROL CABLE HORN LOCATION.
TWIN MAGNETOS.
BELLY PLYWOOD FILLED UNDER LOWER WING ROOT.
ALL FORMERS BUILT OF THREE TO FIVE PLY WOOD.
INCLINED 33½° AT THE TOP TO THE FRONT.
INCLINED 18° TO REAR AT TOP.
FIRE WALL.
INCLINED 32° TO REAR AT TOP.
AIR AGE, INC. 551 FIFTH AVE., NEW YORK, N.Y.
SCALE: ½" = 1'-0"
DRAWN BY: JOSEPH NIETO
FUSELAGE DETAILS of SPANDAU MACHINE GUN. GERMAN I.F.G. ROLAND PURSUIT.
TYPE D-2 & D-2A.

MORE ON THE GYRO!

It seems this gyroscope question keeps popping up, even though it should have been disposed of long ago

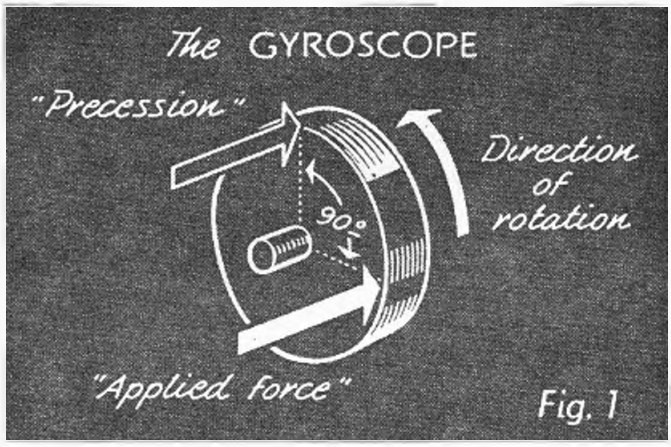


Fig. 1

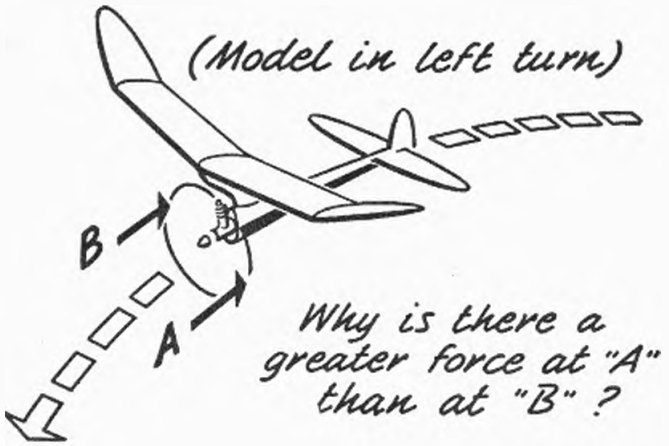


Fig. 2

by H. A. THOMAS, Jr.

DON FOOTE eliminated the gyroscope (April, 1950 issue) sure enough, and while we agree with his conclusions, we differ with his assumptions in arriving at them. So, the following is set forth with all respect to Mr. Foote's acknowledged prowess as a model designer and contestant, and it is not intended to torpedo his beliefs but rather to open some of the puzzling aspects to readers of this magazine and contribute a few of the writer's own hunches and observations.

To rehash, briefly: the revolving propeller is assumed to behave as a gyroscope, Fig. 1, affecting the model's flight path under power. The propeller disc, corresponding to the gyroscope, is consequently subject to "precession." When a force is applied to the gyroscope edge and parallel to its center line, another force known as "precession" acts similarly upon the gyroscope but 90° away from the first force in the direction of rotation.

Therefore, in order to get this impressive factor of "precession" into the already vague and muddled picture, which is model design, we must *assume* the first force (applied pressure or resistance on a *part* of the propeller disc). And *here* is where we differ with Mr. Foote: he assumes that if the model is in a left turn, for example, a force is applied to the left side of the propeller disc, Fig. 2. He writes, "All this theory, as far as it goes, is absolutely correct. The forces are there, and no one can deny it." Why, Mr. Foote?

At least down here in Arkansas the air is just as dense on the right side of that propeller disc as it is on the left. In fact, we wonder if the barest trifle of a force or resistance might not be assumed to work against the opposite (right) side since in this turn it describes a bit larger radius and encounters a bit more of this air, Fig. 3.

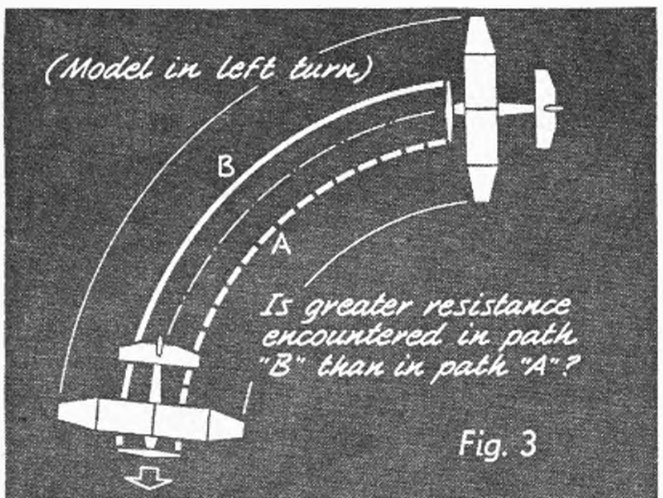


Fig. 3

The theory goes on: when this force (and we don't know who applies the force or what with) develops on the left side of the propeller disc, precession makes its appearance on the scene 90° away, right at the top of the propeller disc where it proceeds to make the model tend to nose upward.

We couldn't tell you positively why, but it is plain to see that most pylon models can, do, and indeed seem to prefer to fly in right-power turns. Models of lower wing mounting often find right-power turns sure poison and do their best flying in left turns; hence the right turn is associated with pylon models and the left turn with other types. Our mysterious force, then, works on the right side of the propeller disc of most pylon jobs, and on the left side of other types. Precession would tend to have the effect of downthrust in pylon models and an opposite effect in other types of models.

Mr. Foote hasn't said *all* this, we hasten to add. But we have "drug it out" to preface the following: if you, Mr. Modeler, feel that precession is plaguing your ship, you can

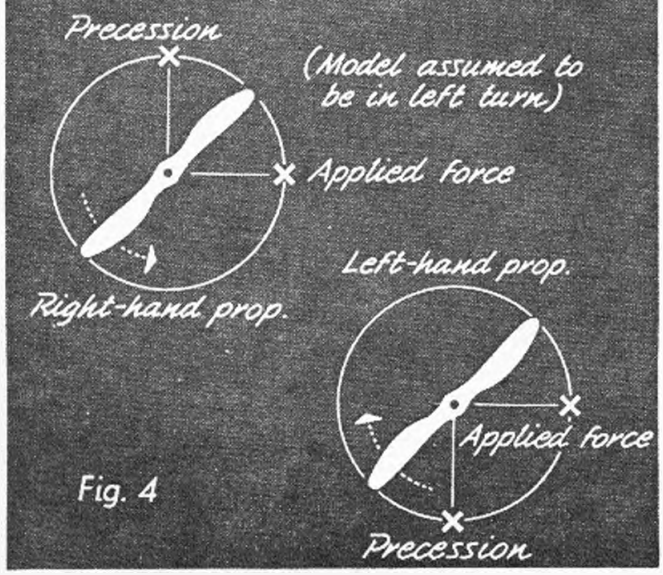
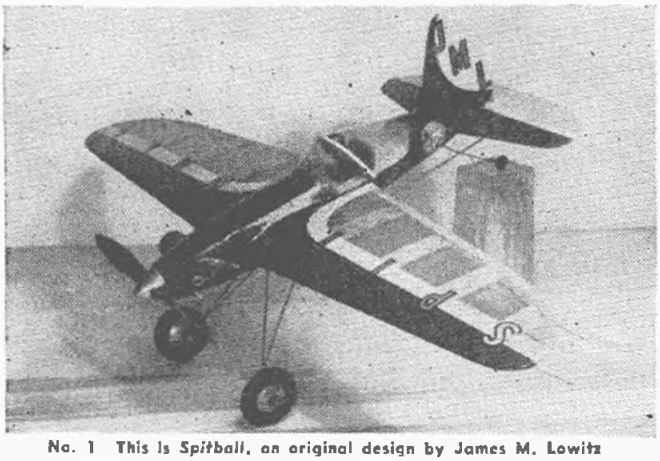


Fig. 4

(*Turn to page 45*)



No. 1 This is *Spitball*, an original design by James M. Lowitz

No. 2 Parnell Schoenky sent this view of Art Beckington in action

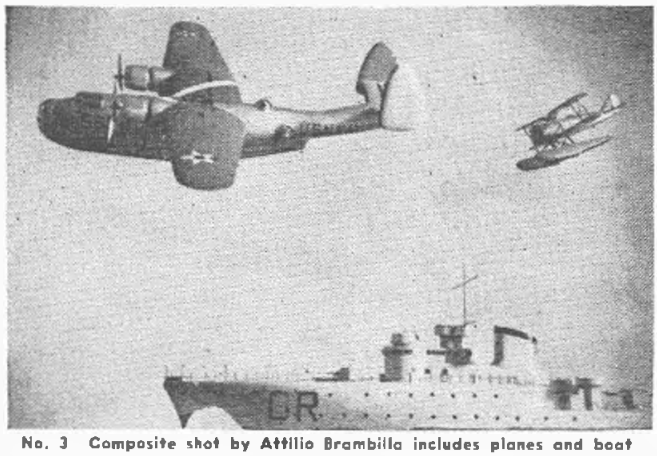
Air Ways

NEWS OF MODEL AIRPLANE EXPERIMENTERS FROM ALL OVER THE WORLD

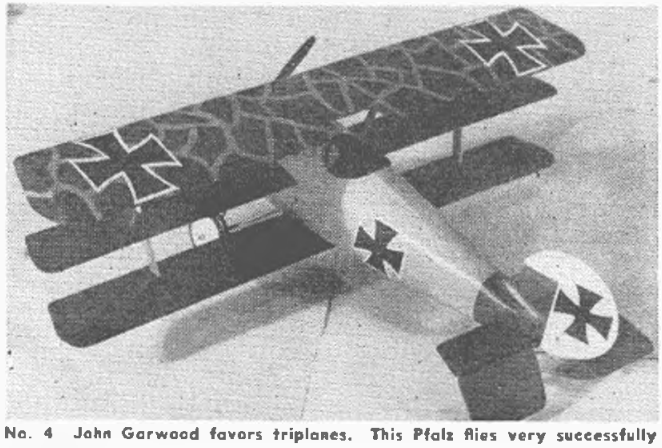
NOW WE HAVE International Model Plane Cargo flying! In what is believed to be the first flight of a valuable cargo by a model airplane across the border separating two countries, an Elgin watch was recently flown over the Rio Grande river from Laredo, Texas, to Nuevo Laredo, Mexico. The watch is going from John E. Clemens, contest director of the forthcoming 19th Nationals, by a roundabout route through Central and South America, back to New York City, then across to the *Finnish Aero Club*, at Helsinki, Finland, for presentation as a special prize at the Wakefield Contest.

The watch and its case were placed in a tobacco tin and carried in the PAA-Load plane of Ray Mathews. Ray's ship, *The Crowbar*, was the same one with which he won the Class A PAA-Load event at the 1949 Nationals. The breezes didn't cooperate with the fliers very well; in fact, the plane, after being launched in the United States and heading upward and toward Mexico in fine style, turned back to the U. S. A. again; then it appeared to start down—right for the middle of the river. However, it stretched the glide out nicely, and after a flight of about 3 mins., landed almost at the feet of the officials awaiting the model in Mexico. The watch was then removed from Ray's *Crowbar* and rushed to Mexico City, via the C. M. A. Airline, after which Pan American took it over for the roundabout trip to New York City and Finland.

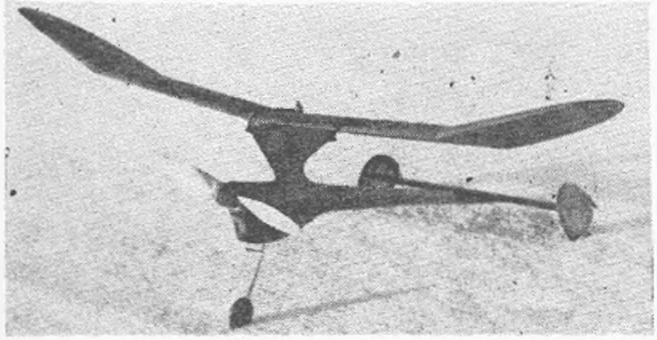
The actual International Cargo Flight was made on March eleventh and the watch was scheduled to reach New York City



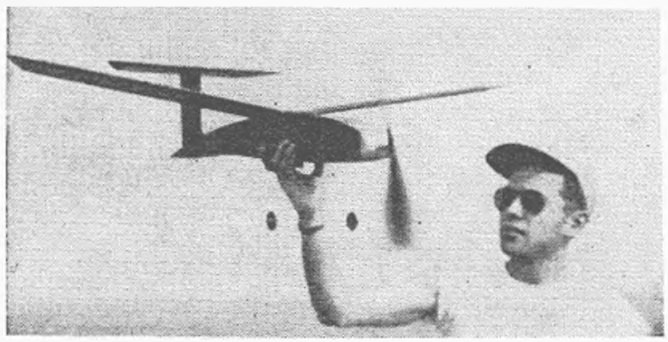
No. 3 Composite shot by Attilio Brambilla includes planes and boat



No. 4 John Garwood favors triplanes. This Pfalz flies very successfully

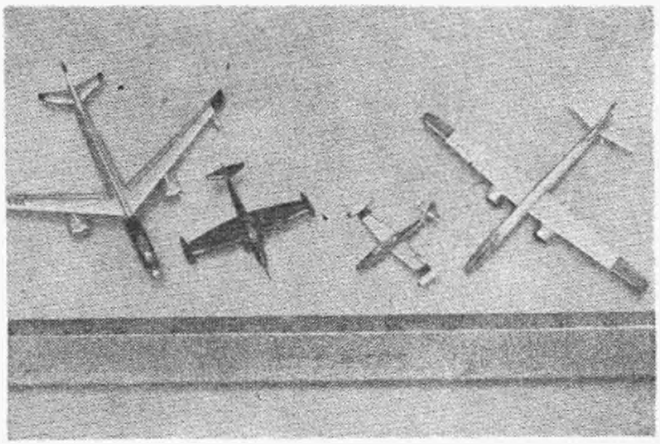


No. 5 A Norwegian prize winner designed and flown by E. Brendeng



No. 6 Well-known Coast flier, Hal Roth, with latest Wakefield effort

No. 7 Ed Krum uses this *Dyna-Jet* speed ship as a trainer



No. 8 Lloyd Jones favors microscopic solids; here are a few of them

on March nineteenth. The *Crowbar* was built specifically for PAA-Load purposes and is powered by a glow plugged *Arden .19*. It weighs 28 oz. (with pay load), has a wing area of 444 sq. in. and a span of 58".

Mathews thus becomes the first to fly real cargo over the border, his "Crowbar Clipper" carrying the load instead of the Pan American Clipper, to which we have become accustomed.

AN AMERICAN SECTION of the English *Low Speed Aerodynamic Research Association* is now in the process of formation; full information is available from W. J. Werback, 1250 Norfolk, Willow Run, Michigan. The *L. S. A. R. A.* was formed in England in 1945 by a group of engineers, with an interest in active research and development in model aeronautics. Many fields have been explored, including laminar flow airfoils, strength of materials, performance calculations, radio control, jet and rocket power plant development, and other model plane fields. Sections of the *L. S. A. R. A.* have been active for some time in Canada, India, Germany, Italy, and Palestine, all dedicated to solving the many problems associated with model plane flight.

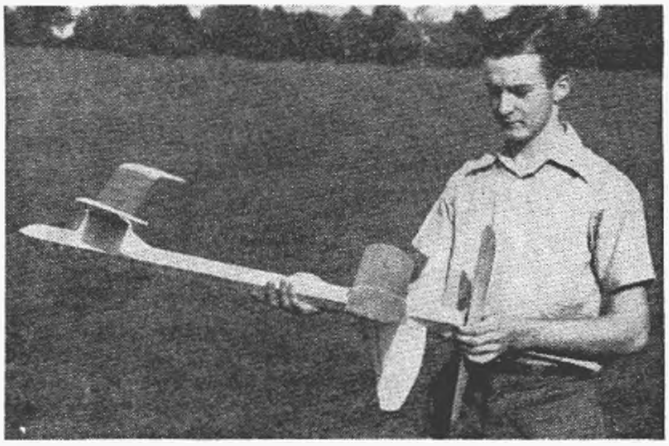
An active group has been formed at the University of Michigan, and is currently engaged in research on propellers and engine testing. A program of investigation of various types of dethermalizers will also be undertaken by this group.

It is felt imperative that an American Headquarters be established immediately to assure real coordination among the research groups in this country. Also, a journal, or newsletter, should aid in stirring up interest among the many American modelers who are really interested in the technical side of model aviation. All interested modelers are urged to write to Mr. Werback for full information.

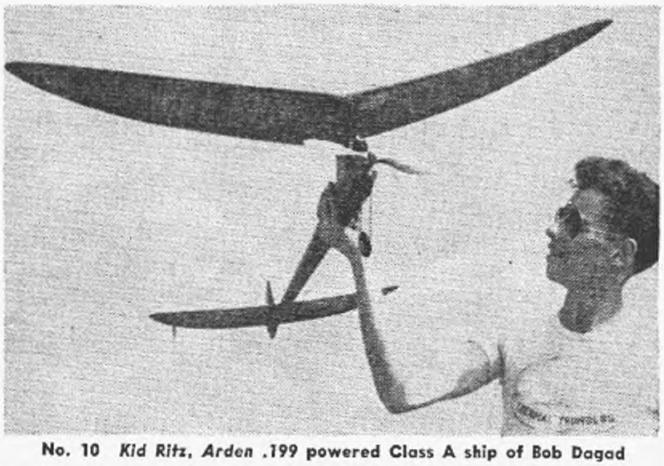
IN LINE WITH the growing interest in more "realistic" forms of model flying and tying-in the great popularity of the ½A motors, several groups of modelers around the country have been experimenting with ½A PAA-Load models. One such group, the *Tulsa Glue Dobbers*, of Tulsa, Oklahoma, has been very active in this line, and through their enthusiasm have raised a great deal of interest in the large *Mid-States Model Aeronautical Association*, which heartily indorses the new activity.

The *Glue Dobbers* have been active in this new field ever since the 1949 Nationals when many of their members had a lot of fun competing in the regular PAA-Load events. Since realism is one aim of this event, the Club drew up a set of rules and got in touch with Pan American to see what the sponsors of this sort of flying thought of the idea. PAA thought it was fine and the *Glue Dobbers* immediately set about developing planes and staging experimental contests. As Jo Ann Litchenburg who sent us this information states, "We found that ½A's could be much more efficient than most larger planes, were easier to build (and repair), and that the cost

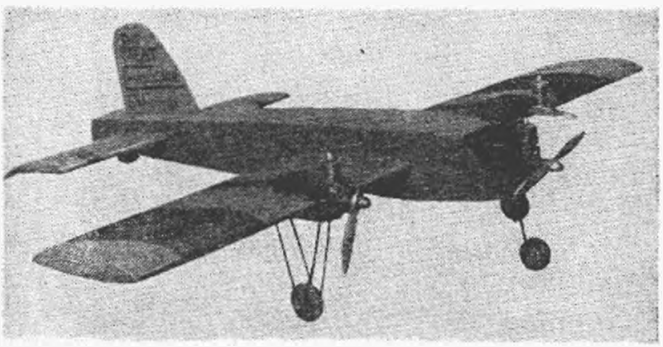
(*Turn to page* 46)



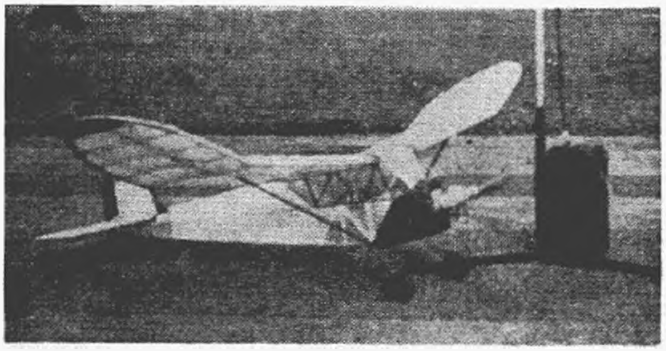
No. 9 W. R. Lindemann finds this rubber-powered canard very satisfactory



No. 10 *Kid Ritz, Arden .199* powered Class A ship of Bob Dagad



No. 11 Something different! Billy Weisbrodt's three-engine stunt ship



No. 12 This picture was sent us by Jean Bocque, Belgian R. C. enthusiast

WEIGHT - TABLE

2 - BOOMS	.42 OZ.
1 - STABILIZER	.17 "
2 - RUDDERS	.04 "
- WING -	
1 - CENTER PANEL	.32 "
2 - OUTER PANELS	.50 "
JETEX MOTOR	.68 "
TOTAL	2.13 OZ.

- POWER -

"JETEX - 100" JET MOTOR
-- FULL 20 SECOND CHARGE.

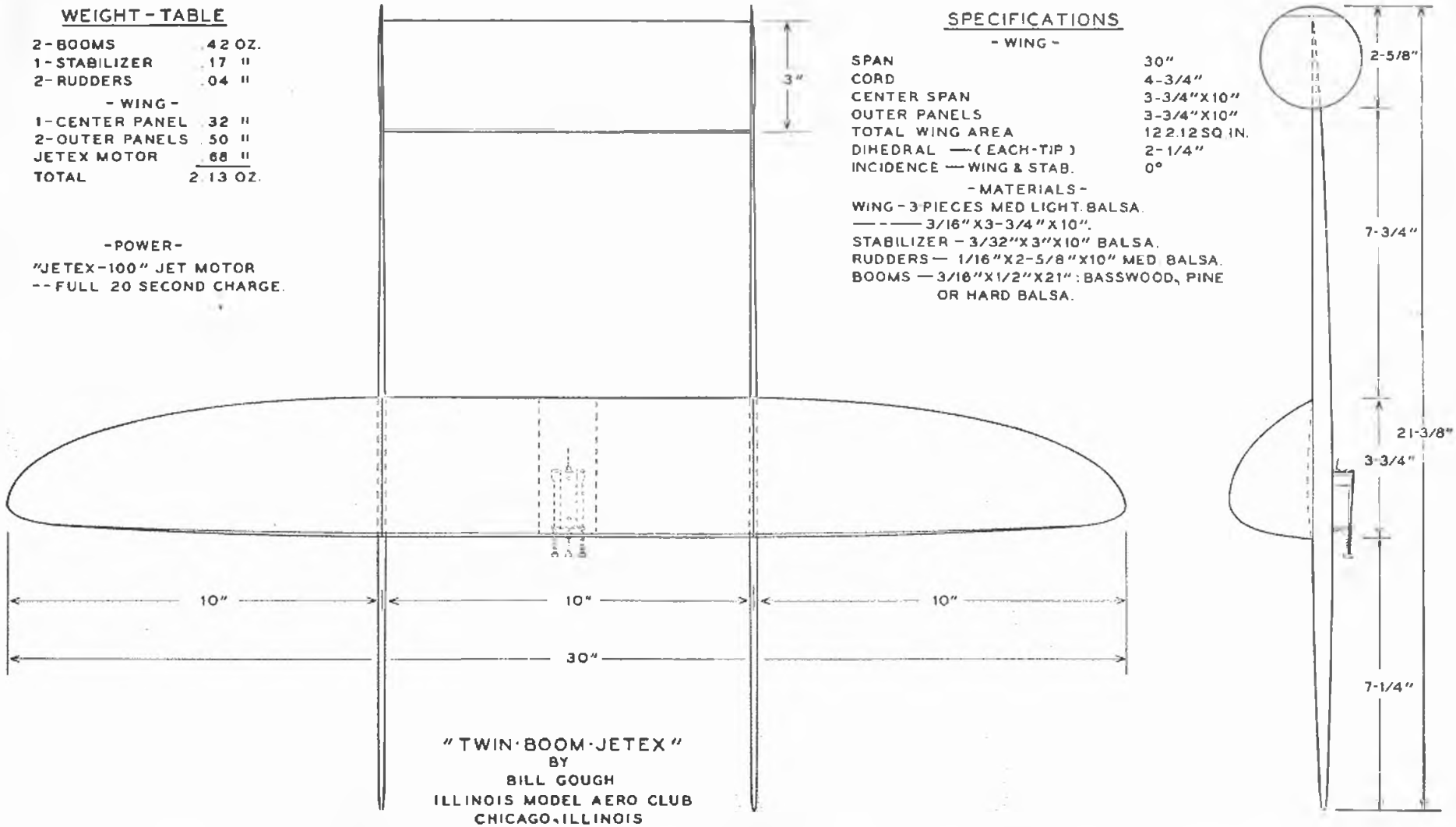
SPECIFICATIONS

- WING -

SPAN	30"
CORD	4 - 3/4"
CENTER SPAN	3 - 3/4" X 10"
OUTER PANELS	3 - 3/4" X 10"
TOTAL WING AREA	122.12 SQ IN.
DIHEDRAL — (EACH - TIP)	2 - 1/4"
INCIDENCE — WING & STAB.	0°

- MATERIALS -

WING - 3 PIECES MED LIGHT BALSA.
— - — — 3/16" X 3 - 3/4" X 10".
STABILIZER - 3/32" X 3" X 10" BALSA.
RUDDERS — 1/16" X 2 - 5/8" X 10" MED. BALSA.
BOOMS — 3/16" X 1/2" X 21" : BASSWOOD, PINE OR HARD BALSA.



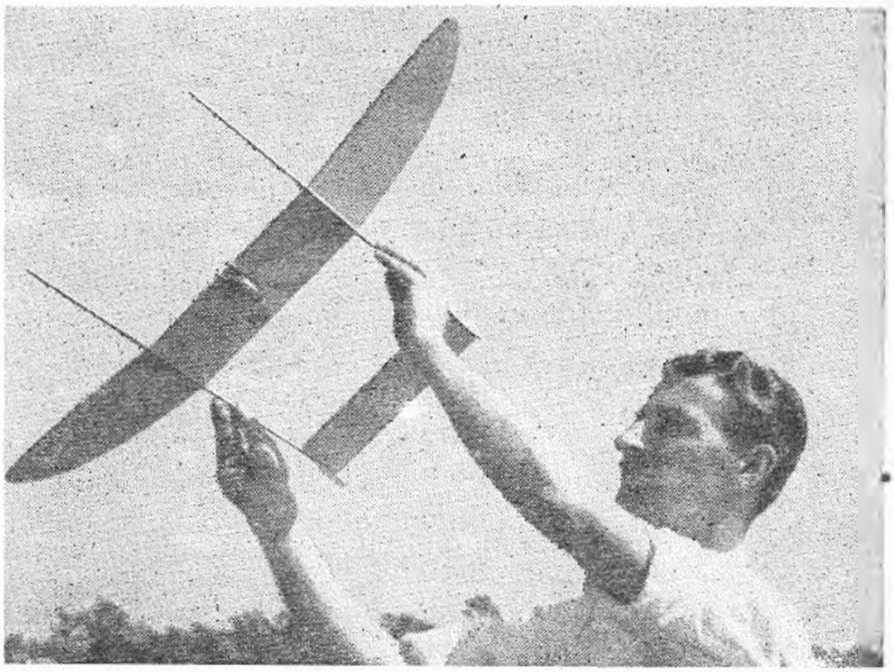
"TWIN-BOOM-JETEX"

BY
BILL GOUGH
ILLINOIS MODEL AERO CLUB
CHICAGO, ILLINOIS

DRAWN BY — BILL GOUGH

TWIN BOOM JETEX

by BILL GOUGH



The author demonstrates two-handed launching technique, turning ship sideways to show Jetex unit.

UPON receiving a *Jetex 100* solid charge jet motor, the author was intrigued with its possibilities, and later set it up on a test stand with a small household fan tossing air towards the little engine for cooling. Lo and behold! The thrust output was found to be excellent for its size. It was decided to mount this jet engine on a previous design, a "high start" twin boom glider model which had been developed by the writer during the war.

Some modelers may not be familiar with the "high start" method of launching gliders, this seems to have been an East Coast development by our old friend Frank Zaic. The model is catapulted into the air with about 20' of rubber (two or more strands as desired for power), tied to 50' of string, mounted on a pole or held by hand. This power gives a reliable method of launching and altitudes are very high. However, Hi-Start has been eliminated in this article, as *Jetex* power is utilized instead.

CONSTRUCTION DETAILS. Our model has a 30" wingspan, per manufacturer's specifications of maximum span for the *Jetex 100* engine.

Notice the scaled dots along the one side and bottom of the three view plan; a draftsman's "T square" may be used with a sharp fine-line pencil, such as 4H or 6H, to rule lines across plan through dots. Scaling-up may then be accomplished by enlarging these squares. A faster method is to cut all pieces indicated to specifications on the drawing, and use the eye for general curve shapes, plus a ruler for measurements.

WING. Our wing is constructed of three medium-light balsa panels 3/16" x 3-3/4" x 10". If 4" wide balsa is too difficult to obtain, two-inch wide pieces may be cemented together and trimmed down to give the desired width. Should the balsa be hard, cut the wing airfoil down to about 1/8" thick, instead of the 3/16" thickness used with light or medium-light balsa.

Cement the three panels lightly at the dihedral joints (but without dihedral) and allow to dry. Make a cardboard or heavy paper template of wingtip panel shape, then trace this on each side. Cut to outline. Next, pin wing down flat, and cement on the 1/8" sq. basswood or soft pine strip along leading edge. When completely dry, remove pins and shape wing to airfoil section. Use rough, medium and fine sandpaper, Nos. 2, 4, 6 and 8/0 wet-or-dry, obtained at your local hardware store, for the finishing job.

Keep trailing edge fairly heavy (1/32" rounded) to prevent wing flutter, especially at the tips. Your jet model will climb very fast and any excessive tip flutter will cause it to dive in at full speed.

To keep model weight down, apply only two coats of medium thin dope on wing. Sand between coats with No. 8/0 wet-or-dry sandpaper, used dry. Follow the same procedure on all surfaces.

Next, break the lightly cemented dihedral joints, lay a sheet of waxed paper on bench and block up tips to the minimum of 2-1/4" on each tip (no less). If anything, add 1/4" to 1/2" to each tip for additional stability.

STABILIZER AND RUDDERS. The stabilizer is simple, being rectangular in shape as can be seen on the plan. Leading edge may be reinforced with 1/16" sq. basswood or pine if desired; however, if the balsa is of a fairly hard grade, this may be left off. Sand a piece 3/32" x 3" x 10" to a streamline airfoil, coat with dope, and finish same as the wing.

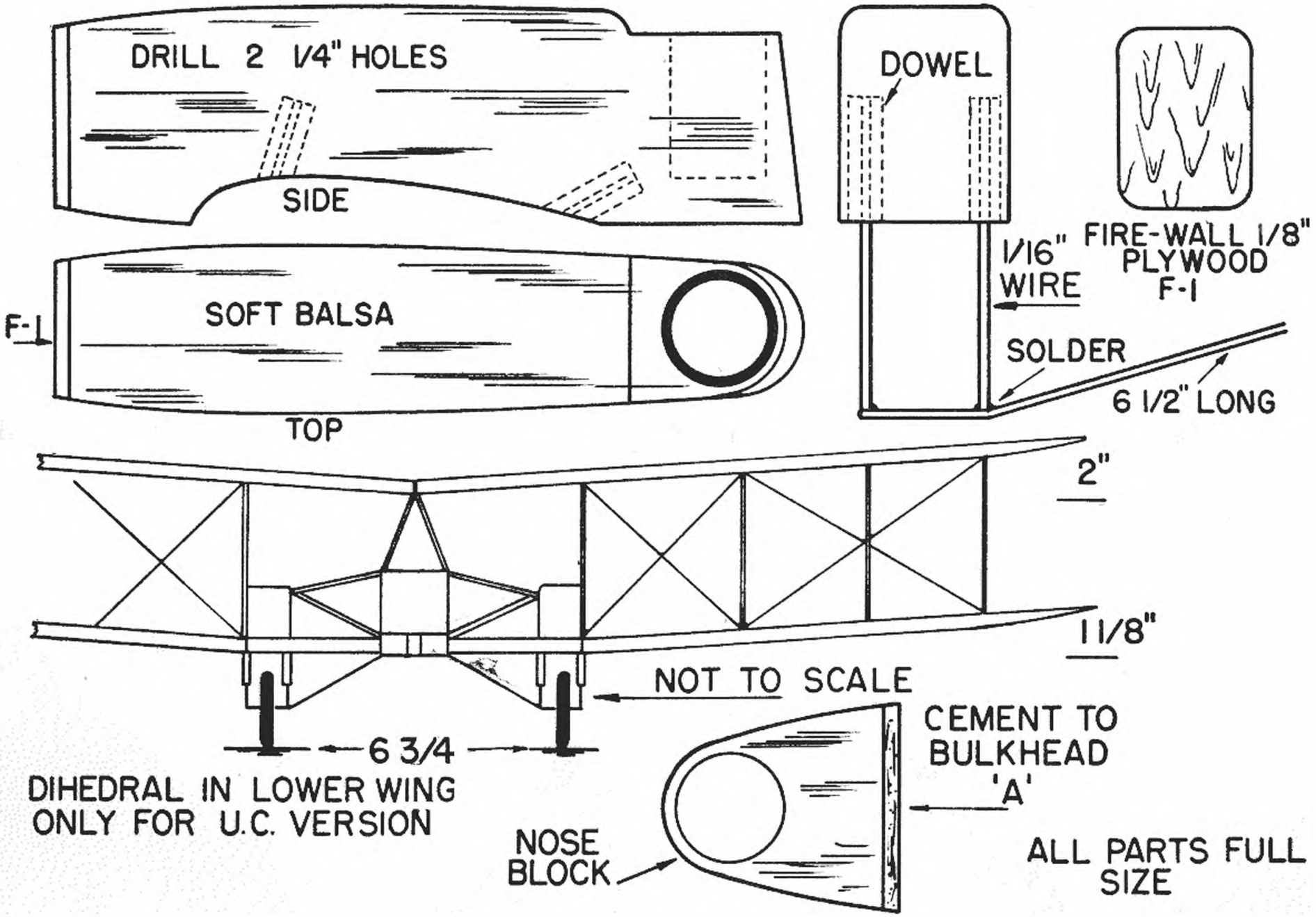
Rudders are circular in shape and can be ruled right on the balsa sheet with a pencil compass. Inside shape of each rudder cemented to boom is flat, and the outside is sanded to an airfoil section. (See plan.)

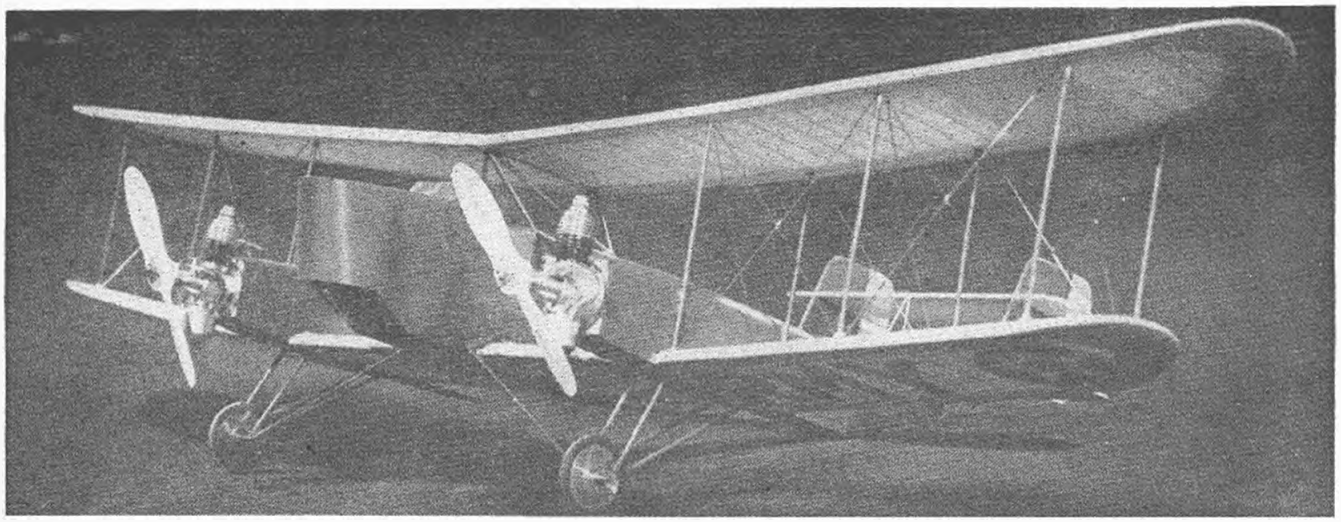
BOOMS. Our two booms are quite easy to shape. Be careful to inspect them for straightness of grain. Boom cross section is "tear drop" in shape. Either hard balsa, basswood, or pine may be utilized nicely. Material blank size is 3/16" x 1/2" x 21". Make sure, while shaping and sanding that the top of the booms, from leading edge of wing to rear tip are as close as possible to being straight. This is *important*, as when the wing and stabilizer are cemented to booms, both must be at zero degrees of incidence.

ASSEMBLY. By now, some very fine pieces should be on your bench, ready for assembly. You may feel an urge to cement the works together quickly and toss it into the air to see what happens. Take it from me, a bit of slowness and care will assure that every part is lined up for flight. Since

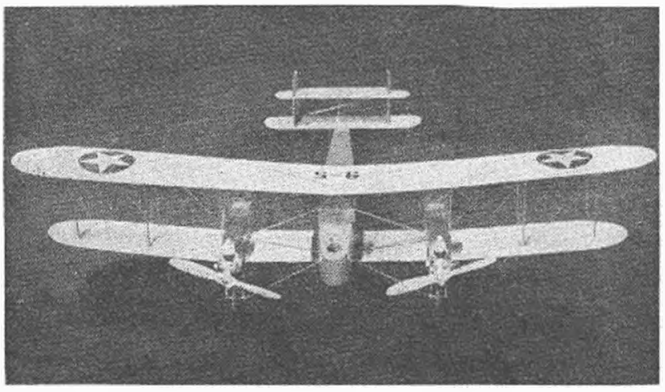
(*Turn to page* 62)

Author's "helper" proudly displays the twin-boom speedster


DRILL 2 1/4" HOLES
SIDE
DOWEL
FIRE-WALL 1/8" PLYWOOD F-1
1/16" WIRE
SOLDER
6 1/2" LONG
F-1
SOFT BALSA
TOP
2"
1 1/8"
NOT TO SCALE
6 3/4
DIHEDRAL IN LOWER WING ONLY FOR U.C. VERSION
CEMENT TO BULKHEAD 'A'
NOSE BLOCK
ALL PARTS FULL SIZE



CURTISS CONDOR BOMBER



by FRANK EHLING

MANY old-timers will remember at a glance this model of the Curtiss *Condor*; however, they may not admit it (even though they are much older than I). It is certainly a pleasure to see the *Condor* in flight, as here we have a biplane full of interesting details, along with twin engines. This type of airplane cannot be made in an evening, but it is not the least bit difficult to build because there is no trick construction, just straightforward, everyday modeling.

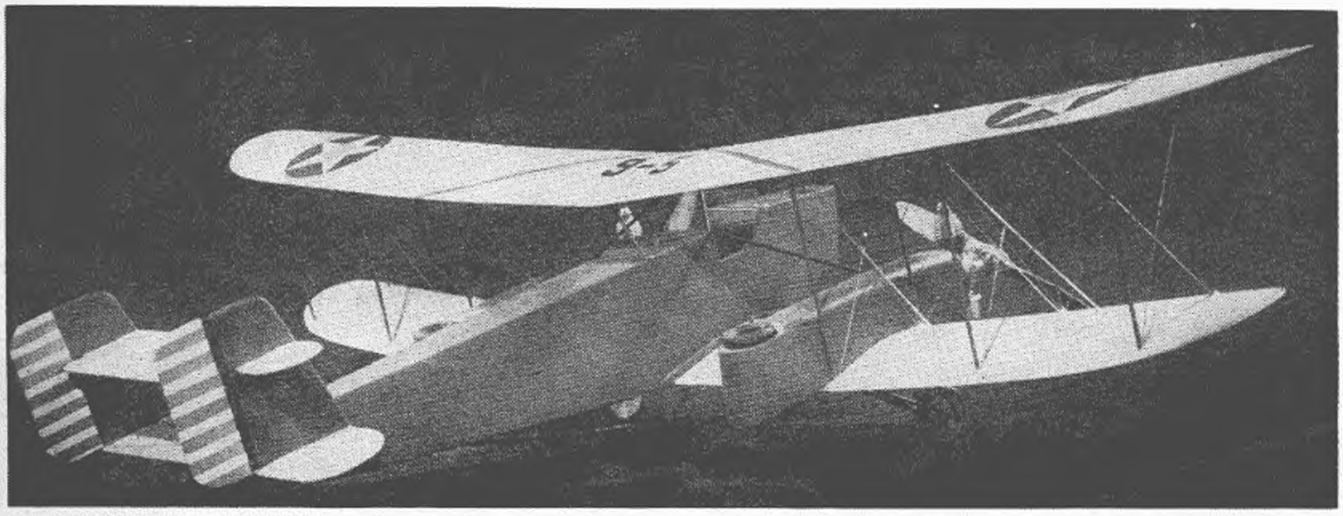
The ship was not highly doped since we wanted to hold the weight to approximately 8 oz., which makes for slower flying, and in turn spells longer life. The plans are full size and no enlarging will be required.

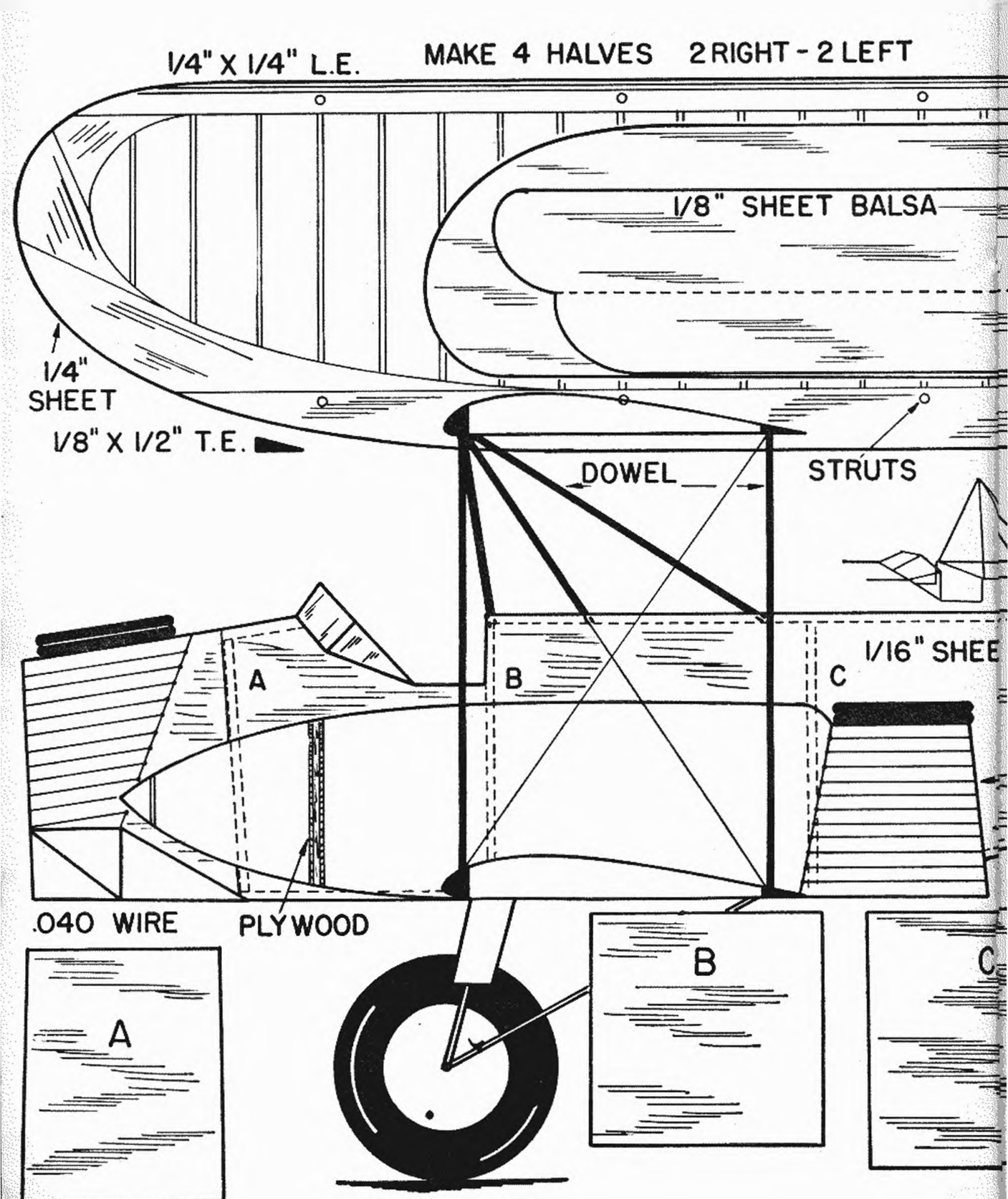
First make the fuselage. It is best to cut the sides from sheet, then the bulkheads, and cement the latter in place. The top sheet can now be cemented to the assembly along with the bottom; make top and bottom a little oversize and trim them flush with the fuselage sides after the assembly has dried. The underside of the nose is covered with celluloid and represents the bombardiers location, which is clearly seen on the cover painting of this issue. Add the nose block after drilling it out for the gunner. The windshield is cut out and cemented in place at this time. The tail wheel is then fastened to .040" wire and cemented to the fuselage.

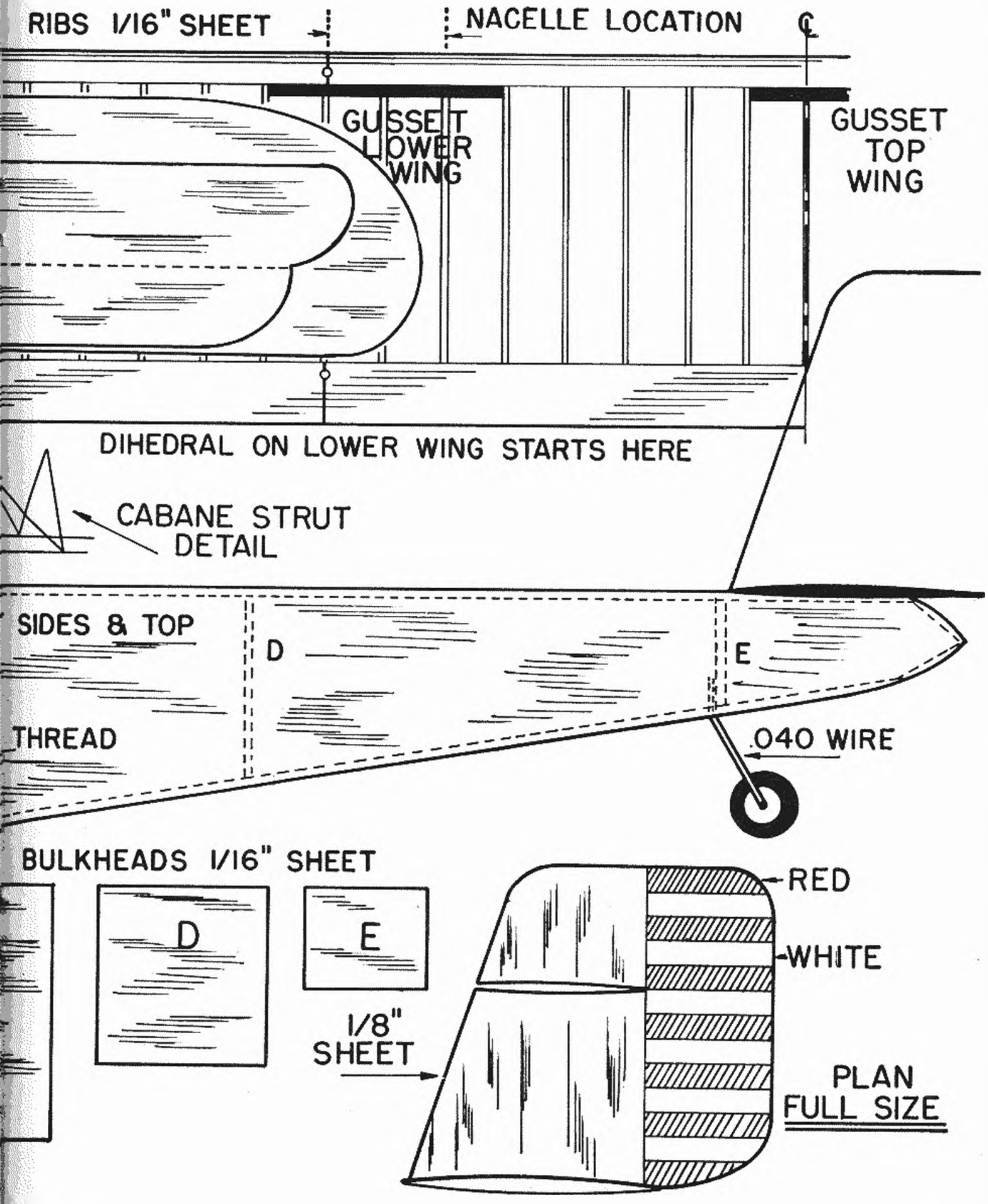
Since the entire tail assembly is made from sheet, it can be built up as a unit on the bench, then cemented directly on the fuselage top. The horizontal areas are made and shaped in the same manner as a hand-launched glider wing. Cut out all the parts, sand to a streamlined section, then cement together, finally mounting everything on the fuselage.

Begin the wing by cutting all the ribs that will be needed. Lay out the leading and trailing edges and cement the ribs in place, adding the tips so as to have the complete wing frame all drying at once. Be sure to let the cement *dry well* before removing the wing from the plan; this will assure you of a wing with minimum warps. Build the lower wing first and you can cement it

(*Turn to page 56*)




1/4" X 1/4" L.E.
MAKE 4 HALVES 2 RIGHT - 2 LEFT
1/8" SHEET BALSA
1/4" SHEET
1/8" X 1/2" T.E.
DOWEL
STRUTS
A
B
C
1/16" SHEE
.040 WIRE
PLYWOOD
A
B
C

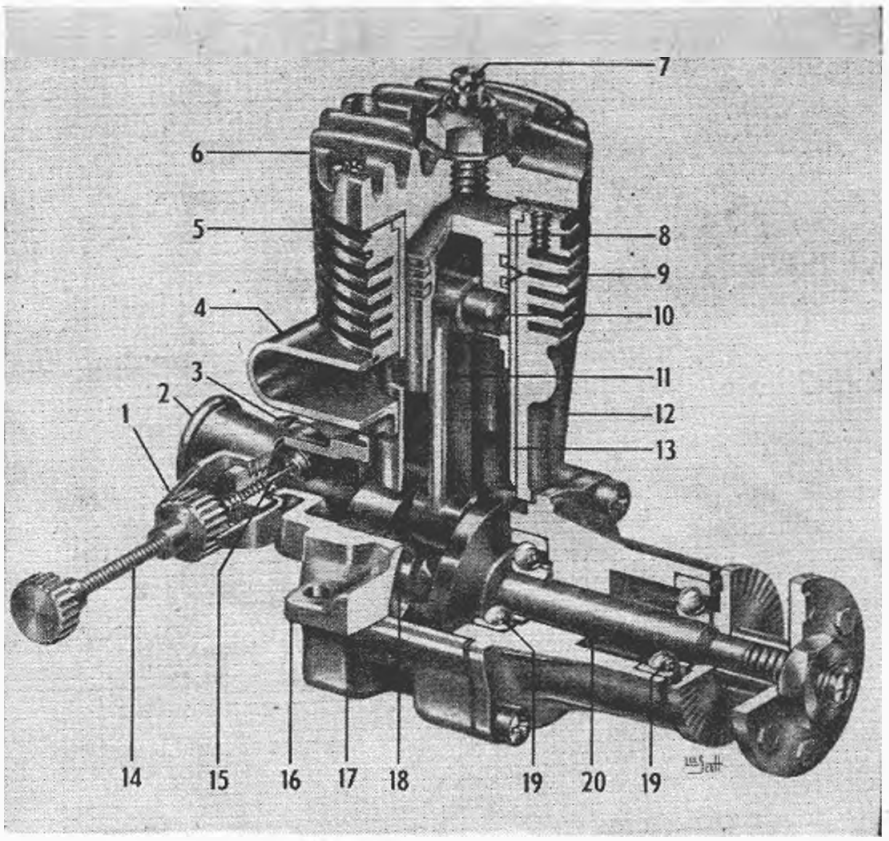

RIBS 1/16" SHEET
NACELLE LOCATION
℄
GUSSET LOWER WING
GUSSET TOP WING
DIHEDRAL ON LOWER WING STARTS HERE
CABANE STRUT DETAIL
SIDES & TOP
D
E
THREAD
.040 WIRE
BULKHEADS 1/16" SHEET
D
E
1/8" SHEET
RED
WHITE
PLAN
FULL SIZE

ENGINE REVIEW

Data on new engines and practical hints on how to get the most from them will appear in this department.

1950 McCoy Red Head Engines

by KEITH STOREY



No. 1—Ratchet Spring
No. 2—Venturi
No. 3—Elbow Jet
No. 4—Exhaust
No. 5—Cylinder Fins
No. 6—Head
No. 7—*Hot Point* Glow Plug
No. 8—Piston
No. 9—Rings
No. 10—Wrist Pin
No. 11—Connecting Rod
No. 12—Cylinder Block
No. 13—Hardened and Ground Sleeve
No. 14—Needle Valve
No. 15—Carburetor Housing
No. 16—Motor Mount Lugs
No. 17—Crankcase
No. 18—Rotor Valve
No. 19—Ball Bearing
No. 20—Crankshaft

THE manufacture of model engines is no longer a hit-or-miss, back yard affair. It has become an industry where the finest in precision and the highest degree of craftsmanship must prevail. The advancement of your engine from the early experiments to the present-day small package of efficient power was made possible only through the refinements of a two-cycle theory and the processes of production. In order for this development to be truly effective, it requires that the owner of such an engine know his equipment thoroughly. The builder of the engine can have little to do with his merchandise after it leaves his factory; it is up to the modeler to care for his engine, making it perform in the way he desires. Today there is a type and size of engine available for you, whether your specialty be speed, stunt, team racing, free flight, race cars, or boats.

This month we will preview the *McCoy Red Head* racing engines and review the basic essentials of engine care and maintenance. 1950 should be a big year for the modeler, as the manufacturers have made significant steps to help the modeler obtain better performance and longer life from his engines. The purpose of this article will be to point out some effective measures for engine care and operation and to bring you up to date on the standard equipment for the next year.

A new engine. Every new engine is a new experience for the modeler. It is a new piece of equipment that must be learned and understood. There are certain recommendations and practices the manufacturer thinks best for his product. The considerate owner will give careful thought and attention to the instructions that come with his engine. The fuel, propeller, and running-in advice given is sound and should be followed.

While learning the use of your new engine, the author has found that easy and quick starts can be made by putting a few drops of light oil in the venturi, on the piston, and on the front bearing. It assures adequate lubrication for the motor that has run a tank dry or one that has been sitting idle for a few days. This extra oil will help keep the engine at the right temperature during bench testing and will decrease the chance of scoring and scratching the vital moving parts.

When you are running your engine at home, you will have time to learn the starting routine, and time also to experiment with fuel and propellers, to find the best combination for ground or stationary efficiency. It should be remembered that high-speed engines must really rev up for efficient power output. The *McCoy Red Head*, for example, should turn at least 13,000 rpm. The backplate rotor and large venturi (Nos. 2 and 18 on the accompanying illustration) do not become effective, or draw fuel properly, until this minimum has been reached or passed. Through selection of the right propellers, you can regulate and obtain the desired rpm.

The manufacturer, as well as the author, strongly advises you to use the engine as it comes from the factory. Do not attempt to hop it up. Your engine has been proven to be good through factory test runs against predetermined standards. This is the truth—*you don't need special or hot engines to win a race or climb higher* than your competitor. Consistent performance with a clean stock engine will put you in the money more often than the butcher artist's special. This is aside from the fact that the "file-and-error" method can prove very costly. There is no magic formula that can raise your engine's efficiency so much that its speed will increase 20 or 30 mph.

Above all, while the engine is still new, learn to operate and care for it. If you spend time wisely at home, you will have more fun, make more flights, and obtain a longer life for your engine.

Vital points of care. The worst enemy of your model engine is DIRT. It causes more lost flying time and more repairs with subsequent discouragement than all the other troubles put together. The careful, respectful owner will prevent much unnecessary damage by following these precautions:

1. Keep your airplane and engine clean, inside and out.

2. Keep dust plugs in the exhaust and intake ports when not in use. This means at the field between flights as well as on the bench at home.

3. Pre-oil accessible parts before each run.

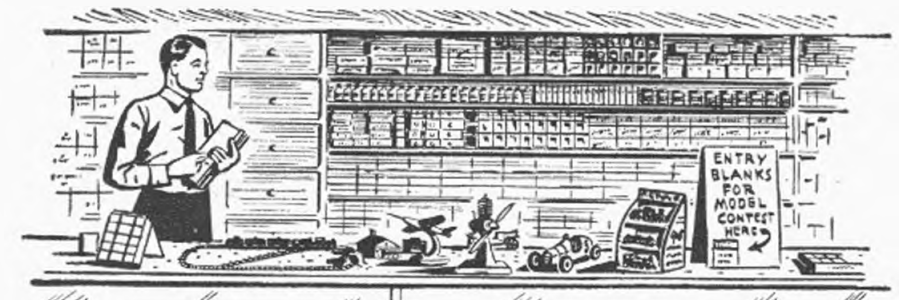
4. Run your engine as little as possible when on a dirt field. When you have to run it, hold the plane off the ground or place cardboard beneath it.

5. If you think dirt has entered your engine, don't run it. Take it home, or to a clean place, and wash it thoroughly with gas or solvent. Pre-oil it well before running again.

6. Keep your fuel clean. Strain it through clean linen or filter paper if necessary.

Remember the dirt problem can be licked only by you and your careful handling of the engine and all its equipment.

(*Turn to page* 60)



HOBBY COUNTER

Conducted by THE TRADE OBSERVER

MANY people who come into my shop think that U-control makes the world go around. Actually, as a lot of my fellow dealers can tell you, an entirely different kind of model is the backbone of our business. For example, the Strombeck-Becker Mfg. Co. (Moline, Ill.) has for years put out a line of solid model airplanes, largely finished from hardwood, at 50c, 59c, 69c and $1. Kids from eight to eighty go for these, and the small fry frequently progress through the whole series, then switch to old fashioned trains by the same company. Also popular are the *Speedee-Bilt* flying scales at 75c, by Monogram Models, Inc. (225 N. Racine Ave., Chicago, Ill.). When the builder wants something more complicated than a simple solid, the *Speedee-Bilt* kit is gaited to his new-found skill. After he runs through the *Speedee-Bilts*,—to answer your question of what happens to all these builders,—about one in two can be brought into the serious model stage via some easy-to-build stick job with a proved record. Of course, Strombeck-Becker and Monogram are only two good examples. Cavacraft Model Airplanes (1526 No. 5th St., Philadelphia, Pa.) also have the same type of solids, and the Enterprise Model Aircraft (5107 Avenue D, Brooklyn, N.Y.) *Nifties* are another sample of the many prefabricated inexpensive flying models that are on my shelves.

Some dealers would rather be out of some popular make of engine or a currently popular high-priced kit, than run short of those little solids and low-cost flying scales. Until the modeler gets into really serious building, his prime interest is scale. But what interests me most about this aspect of the business is the fact that for years every one has been trying to ram beginners' models, or a graduated series of models, down the builders' throats on the theory that they should build such items before tackling gas. That never seemed to work out. Now, due to the great interest in these solids and simple fliers, which have flash or sparkle, kids start the right way. They eat it up!

* * *

One new free flight kit I show all my customers is the Veco *Dakota* at $2.25. (Henry Engineering Co., 312 South Keystone, Burbank, Cal.). It's truly revolutionary. Coming from a firm that has made a world-wide reputation in stunt designs, this all-wood prefabricated free flight model has been an extraordinary surprise. First, it is a biplane; second, it's comparatively heavy and rugged; third, you don't even hand glide it before a full power hop. It is supposed to climb in left circles and, by bending the rudder tab, you can make it glide in circles also. Designed for engines of from .035 to .074 displacement, it spans 24", and probably does all that the company claims. You free flighters ought to show this controline company that you are alive! Speaking of Veco, that flapped *Chief* is something to write home about. Out my way, *Chiefs* are doing well when powered by *K & B 32's*, *Foxes*, and various "Sixties," to mention just a few. Chiefs took the first three places in stunt at the South African nationals. The winner had a McCoy 36, second up, a Torp 29.

* * *

One ready-to-fly number that has us rubbing our eyes is this Berkeley *Swisher* (Berkeley Model Supplies, 140 Greenpoint Ave., Brooklyn, N.Y.) for the *Jetex 50*. You realize, of course, that it's complete, engine, fuel, and all, for $1.95! It looks cute, with die-cut and printed fuselage, and colored wing and tail. The wing has dihedral and camber: span is a big 17-1/2". It's a real buy no matter how you look at the *Swisher*. If you are bored (temporarily, of course!) with gas and haven't tried *Jetex*, give it a whirl with this time-saving Berkeley deal. We tried the *Swisher* and can attest that it climbs to a great altitude.

Berkeley is introducing a new R. C. receiver tube in this country; similar in characteristics and performance to the popular RK 61 tube used in *Aero-Trol*, *Control Research*, *RCH*, and other receivers, outstanding feature of the new Hivac XFG-1 tube is greatly extended life. It can be installed in any receiver designed for the RK 61, without any other changes.

* * *

Ever since America's Hobby Center, Inc., (156 W. 22 St., New York, N.Y.) brought out that series of dollar books (Model Gas Engine Handbook, Gas Model Plane Construction, Gas Modelers Guide, Control-Liners—How to Build and Fly), this shop has been hoping "AHC" would keep up the good work. Now we can recommend their latest, Glo Engine Handbook, still just a lonely dollar. After going over a copy, all we can say is "Wow!" No fooling, men, it is full of facts and useful information. Jack Bayha, who did the writing, must have run himself ragged on that ambitious list of contents. To skim over it briefly, there are fourteen chapters, covering everything from history, operation, buying an engine, flying, break-in, to accessories and a really complete glossary section. When we say you shouldn't be without this handy book, the statement is backed up by the fact that previous books by America's Hobby Center have sold by the tens of thousands. One had sold 15,000 copies in six months, another 6,000. One finally went well past the 50,000 mark. So why scratch your head, when for only $1, you can have all the answers, real handy-like.

* * *

Looking for trophies? Tell your sponsors that Russell Brothers (312-14 K.P. Building, Des Moines, Iowa) have some real dillies. Maybe you have seen them at some of the meets. Not only do they feature airplanes that look like models, but they look like the right kind of models for appropriate events. At least five of them depict modelers flying planes; one, for R.O.G. events, has a modeler releasing a free flight by the tail, the whole being on a flat surface like a runway; another has the modelers running with ship poised high for a hand-launch. There's a realistic U-control combination. The one that really gets you is for "R.C." There's the ship flying along, the Y-shaped antenna with transmitter at

its base, and the builder with push-button in hand. Terrific!

* * *

Jim Walker's (American Junior Aircraft Co., 1166 N.E. 31st Ave., Portland, Oregon) fuel regulator and pressure tank is one of the most remarkable items in stock. It's worth every cent of the $2.50 price tag and then some. For serious flying you can't be without it. Builders who have had tank problems, fuel flow problems, changing mixture problems, have eliminated all these headaches with the regulator. Have seen some of the speed merchants going at a great rate with no feed problems, the engines running "in" through the entire flight. Another fellow had a pressure tank in the bottom of the cowl on a scale radio job; said it did away with tank location and accessibility problems. You can put the tank anywhere. Under enough pressure it will squirt fuel several feet in the air! Walker, incidentally, has been flying free flight with models of rather unique construction. Let's hope this means another resourceful manufacturer intends bringing free flight models up to date with U-control, at least in kit design.

Within a month of reading this you can expect to buy a ready-to-fly profile U-control job, complete with engine, lines, and fuel-proofed, for $6.95, or for $1.95 less motor but with flying lines and handle. This is another American Junior deal. When Walker first brought out his *Fireball* and quoted $7.95, customers would ask if it included engine. Now, he gleefully quotes $6.95 on the new deal and waits for same question. Ironically, many people want to buy the thing without engine.

* * *

RANDOM NOTES: Are you interested in boats? Builders who fancy the Monogram flying models should consider the destroyer, battleship, and carrier models at $1 by that company. Exact scale is a fetish with this concern . . . Scientific (Scientific Model Airplane Co., 113 Monroe Street, Newark, N.J.) *Buckeye Jr.*, $3.95, for engines of .02 to .099 displacement, makes up into a good looking, practical boat. It's completely prefabbed, with carved hull, wood parts cut out; accessories are excellent, including brass flywheel, propeller, shaft, coupling, etc. As the ads claim, it can be made in an evening. We put one together in the store, just to see! One customer put in a *Supermite* (Motoys, Inc., 11 W. 42 St., N.Y.), a 1-1/2 oz. electric motor at $1.50, and turned his *Buckeye* loose, much to his regret. Took him 2 hrs. of hard rowing to catch it! Oh, yes, Scientific's prefabbed *Little Devil* and *Little Bipe*, at $1.50 each, are buys on which you can't go wrong. Word has just reached us that the *Citizenship* radio control equipment (Vernon C. Macnabb Co., 915 Westfield Blvd., Indianapolis 20, Ind.) has received full FCC approval. Production will be started soon on this 465 mcc apparatus, which can be operated legally without an Amateur license.

The Band Box

(*Continued from page* 11)

saddle and a cloth hinge attached to the rear of the cabin and this extension. A torsion spring or rubber band can be used to pull the cabin up and a piece of string will limit the angle. (Cabin should pop up and lean back at about a 45° angle.) A thread-loop fuse stretched between two hooks will release the unit. At this point a word of caution should be given, for this gadget is NOT as effective as the pop-up stabilizer.

A full size layout is also necessary to build the fuselage, and the following method is suggested. On a piece of paper of sufficient size, lay in a center line the length of the fuselage and draw vertical lines crossing the center line, spacing them the distance between the spreaders as indicated on the drawing. With a compass scribe an arc on either side of the center line to mark the height of the fuselage at the spreader locations that are dimensioned. Without any further drafting the fuselage can now be built by pinning down the longerons where they touch the arcs. Proceed as usual by building one side over the other. Join the two sides at the rear, then cut to length those spreaders which are dimensioned and install. When dry, cut the remainder of the spreaders to fit and complete the fuselage structure. Refer to the sketches on the drawing for boxing in the fuselage at the nose and at the motor anchor peg at the rear. Note that the sheeting is cut to fit in between the longerons and spreaders in order to produce a flush surface. A hazard will be eliminated if aluminum plates are glued as shown inside the fuselage sheeting, to resist the pull exerted by the motor anchor dowel during winding.

The landing gear should be installed at this time and the lower surface of the fuselage immediately fore and aft of the balsa sandwich should be sheeted as shown in the cut-away sketch.

Silk covering is used on the fuselage and accounts for the 3/4 oz. overweight of the writer's *Band Box*. Silk will resist handling a great deal better, and it will even stand a broken motor; silk is recommended although tissue or *Silkspan* will suffice.

The empennage is handled as a separate unit of the model inasmuch as it serves a dual purpose; in addition to providing the horizontal and vertical tailplanes, it also serves as a positive type of dethermalizer. In order to maintain adjustments on the stabilizer and rudder, they are both mounted on a platform; this way the entire empennage can be popped up for dethermalizing. You will note on the drawing how an aluminum tube is attached to the forward end of the platform. This tube should just drop in between the hinge tabs so as not to bind the pivoting action. The torsion hinge that lifts the empennage can be made by wrapping a piece of wire around a small nail to make the coil, and forming the ends as shown on sheet three of the drawing. When assembling, the pivot pin wire should be slipped through the eye of the spring and is held in place

OFFICIAL ENTRY BLANK 1950 NATIONAL MODEL MEET

AMA Sanctioned AAAA Model Airplane Championships to be held at the U. S. Naval Air Station, Dallas, Texas, (Indoor events at Will Rogers Coliseum, Fort Worth, Texas) July 26 through 30, 1950.

Sponsored by the Exchange Club of Dallas. Address all correspondence to John E. Clemens, Contest Manager, 2114 Greenville Avenue, Dallas, Texas.

PLEASE ENTER ME IN THE FOLLOWING EVENTS OF THE 1950 NATIONALS AT DALLAS (check events):

Indoor Hand-Launched Glider .....
Indoor Stick Model .....
Indoor Cabin Model .....
Outdoor Stick Rubber Model .....
Outdoor Cabin Rubber Model .....
Outdoor Towline Glider .....
Free Flight—CO2 .....
Free Flight Gas Class ½A .....
Free Flight Gas Class A .....
Free Flight Gas Class B .....
Free Flight Gas Class C .....
Free Flight Seaplane Gas .....
Flying Scale Rubber Model .....
Outdoor Hand-Launched Glider .....
Radio Control .....
Controline Speed Class A .....
Controline Speed Class B .....
Controline Speed Class C .....
Controline Speed Class D .....
Controline Jet Speed .....
Controline Precision Stunt .....
Controline Flying Scale .....
Controline Team Racing .....
Pan-American PAA-Load Class A .....
Pan-American PAA-Load Class B .....
Navy Carrier Event .....

Total Entry Fees Enclosed .....
Check ( ) Cash ( ) Money Order ( ).

RESERVATIONS FOR HOUSING

Male contestants will be housed, if desired, at the Naval Air Station, Dallas, with only a two-dollar linen charge, for the entire meet.

Both Male and Female contestants will be furnished breakfast and dinner at a *total* charge of about $5. This charge covers both meals on July 25, 26, 27, 28, and 29, and only breakfast on July 30.

Relatives may have their meals without identification card for 50 cents per breakfast and $1 per dinner. Meals will be at the Chance-Vought Aircraft Company, adjoining the flying site.

RELEASE

I hereby release the sponsors or directors of this contest, and the U. S. Navy, from responsibility for any claims of damage, loss, or injury resulting from any cause while attending this meet, and I also assume full responsibility for any damage or injury caused by myself or my airplane to any persons or property.

Signed .....
Address .....
City..... State.....
Club Affiliation.....
AMA No..... Age.....

ENTRY FEES

Basic Entry Fee	$1.00
Each event or class entered	.50
Late Entry Fee	1.00

All fees must accompany each entry. Deadline for entries without Late Entry Fee is midnight, July 11, 1950. Entries postmarked after that time will be accepted only on payment of the additional $1 Late Entry Fee.

PARENT'S CONSENT, WAIVER, RELEASE:

As parent and/or natural or legal guardian of .....

a minor, I hereby give my full and unqualified consent to his (her) participating in the 1950 National Model Airplane Championships, and to his (her) accepting any and all awards whatsoever that he (she) may win, whether it involves travel or otherwise.

In consideration of their sponsorship of this meet, I hereby release the Exchange Club of Dallas, The Academy of Model Aeronautics, the U. S. Navy, and any organization(s) and persons connected with said meet, from all claims which may arise with said meet.

Signed .....
Address .....
City..... State.....
Witness .....
Address .....
City..... State.....

NOTE: This Parent's Consent must be signed before entry of any contestant under 21 years of age can be accepted.

(SEE PAGE 24 OF THIS JULY, 1950, ISSUE MODEL AIRPLANE NEWS—FOR FURTHER INFORMATION)

by bending the ends. Note on sheet one of the drawing that when the maximum up angle is attained, the dorsal fin strikes the stop built inside the fuselage.

When constructing the stabilizer use light sheeting and hollow out the tip caps. Due to the rubber motor running all the way back in this type of model, aft structural weight should be kept to a minimum.

The rudder construction is shown on the drawing and the tab is held in place by two aluminum hinges which should be scuffed up with sandpaper to provide a good gluing surface. When completed, the rudder should be mounted directly to the platform. The upper dethermalizer hook should be installed and the empennage is now complete.

Cover the entire model, excepting the fuselage, with Jap tissue. The use of plasticized dope on the covering is highly recommended as warping tendencies are reduced to a minimum.

Two propellers are recommended for the *Band Box* if you are striving for contest performance. The first propeller is used for normal flying conditions, with a wind velocity up to 15 mph. It is the two-blader shown in the pictures, and is very efficient, giving a high rate of climb on the power recommended and affording about a minute and thirty seconds power run. The second propeller is a one-blader, using a single blade identical to the first prop and is used when flying in very windy and gusty weather. It gives a straight up climb at the take-off and grabs plenty of altitude, getting the model away from ground obstacles in a hurry. If you use the single-blader, you will undoubtedly have a favorite way of providing a counterbalance; therefore this point will not be discussed. When carving the blades, be sure you cut the prop blank to the plan and profile indicated on the drawing *before* starting to carve. Begin by cutting the back side of the blades first. If you glue the blanks to the hub, balancing and installing the hinges will be greatly simplified. This joint can then be cut as a later operation. After the prop is sanded to its final shape, cover the blades with silk. Fashion the nose block and prop shaft assembly as shown on the drawing.

The motor is made up in two separate loops. (Refer to drawing for size of motor.) Drive two nails in a board 48" apart and lay out the two motor halves, one at a time; be careful to pull just the slack out of the strands but do not stretch. After lubricating thoroughly, slip both motor halves into the fuselage and onto the dowel, and hook *only one half* on the propeller bobbin. Slip the winder into the prop eye and wind 80 turns in the half motor, winding in the same direction as for flight. Now wind 80 turns on the other motor half and transfer to the prop shaft. This produces two individually knotted motor halves which will pull up just snug between the hooks and which will return to this position after each power run, thus maintaining the balance of the airplane.

The winder shown on the drawing is made from a heavy duty breast drill. A wooden handle with a hook-eye was installed; the chuck was removed, a hole drilled in the shaft, and a permanent hook bent and soldered in place. *The waist strap shown is a great help in relieving fatigue during the winding of such a very powerful motor.* A mechanical counter, salvaged from war surplus equipment, is easily attached to the winding shaft and eliminates the guess work in counting turns.

To prepare the model for flight, a thread-loop fuse is placed in the upper hook and the complete empennage assembly is pulled down in place and secured by catching the thread loop in the lower hook. Balance your model by sliding the wing to the point shown on the drawing and test glide over high grass. Do not change the balance obtained, but rather make all further adjustments for flight with the thrust line and rudder. (Refer to the angles given on the drawing that will match your particular prop setup. On the original *Band Box*, 1° right-thrust, neutral up and down setting, and 1/8" right rudder tab produced a 100' diameter climb and glide circle.)

Scrap Box

(*Continued from page 2*)

radiator, aluminum cowl, finished metal ribs. It was a beautiful thing and it flew, and some say prefabrication is new? The boys should have seen that one! But, like we said, there's really too much to learn.

In the AEROMODELLER we read a remark that finally cleared up the mystery of why the Britishers don't use folders, why they say folders upset the trim. Hang on now, we are just beginning to move! Wal, as the motor reaches the end of its run, its power output is way off. If you had trimmed the glide with the blades folded back, the ship will become nose heavy near the end of the run, inasmuch as the blades still remain well forward of the folded position. The ship flies level, maybe even loses altitude. Better it should be gliding.

Take turns. It is nice to have a job that suddenly rolls its nose up, not down, when it begins that fast turn after launch. We noted that a couple of ships with stabs on the bottom of the fuselage tended to do this. Anti-spin fins accomplish the same purpose. What happens is that the profile is lowered at the rear. Then why not raise it at the front? And isn't that the basic plyon layout. So along comes Gilliam with the *Hearse*—no pun—and sweeps his nose profile upward with the explanation that he wanted pylon characteristics. Aha! Well, we had tried this business on the *Citizen* (the raido job). When it first turns, the nose twists up but loses no time coming down after that as lift is used up in the turn. It won't hold altitude in a turn. If you took things at face value, you'd say, a nose-high profile is all wet. Then Frank Zaic convinced us that the spiral tendency in turns is the result of high wing loading (the *Citizen* grew like Topsy to 17 oz. plus per square foot, on nearly 600 oz. of power loading—and it still climbs on that .09). But now how to explain our first radio job, about *Rudder Bug* size, only weighing 7-1/4 lbs. It turned like a gull in a gust . . . this could go on and on. See what we mean. No doubt you get puzzled too.

E. L. Rockwood has been telling us lots of new stuff about R.C. flying. In his neck of the woods you hear casual references to Stinsons, SE-5's, Camels (yet!), and a host of other scale jobs, flying on anything up to five channels. There is nothing like trying, for finding out, so yours truly is going to have a fling at a three-channel scale deal. One channel for right rudder, one for left, and the third for engine. It seems agreed that this setup so far has given best results for three channels, offering real controlled flight—miss an approach and go around again, land when you want with the engine still alive for an emergency, steering on long take-offs over rough ground. Sounds good. We will install a new two-speed *Forster 305* in this ship. The old *Citizen* made a spiral approach around the mast Sunday and gave a convincing demonstration of the importance of clean design. The ship didn't whistle daintily: it rumbled like a runaway train!

Do fuels make much of a difference; to be sure. We recall a hotshot contender who mixed his own. One day he mixed a batch and stood a can on the drafting board while he went to lunch. When he returned, he found the drawings and some of the instruments in sorry shape. The fuel ate through the can, ran over the drawing, and dissolved the triangles and curves. Who was it that described the race car boys, who keep looking at their watches, then suddenly dash over to the edge of the field to dump their fuel? Seems you had to use it quickly or else.

Last summer at the *Carolina Open Controline Contest*, at Roxboro, N.C., one of the old-timer speed merchants from Reidsville was mixing a supply of glow fuel. He accidentally spilled some on his pants. A few minutes later he had to go out to the circle minus a pants leg. (Almost forgot the word pants.) According to Allen Carter who tells this one, the methanol base fuel reacted with a chemical base fabric in the pants.

This should be a warning to mixers of hot fuels, says Carter. We think it good enough

for the free subscription to MODEL AIRPLANE NEWS for the best tall but true story of the month.

Now suppose this chap had sat in the fuel?!

More on the Gyro

(*Continued from page 27*)

cure its ills by the simple expedient of switching to a left-hand propeller. Many engines will run in either direction, Fig. 4. Now precession is moved to the opposite side of the prop disc and its effect, if any, is reversed.

The right-turning characteristic of pylon models has raised the supposition that it is the twisting slipstream, thrown up and against the left side of the pylon, that results in the tendency to turn to the right. Won't somebody put a southpaw prop on a pylon model, crank the engine backwards, and shed some light on the subject? Or, better still, place the left-hand prop on a model of lower-wing mounting and see if it acquires any of the pylon model's right-turning habits.

Dont' take the above too seriously because Don is quite likely right in that precession is of trifling significance compared to other factors in model adjustment. Few of us install engines with extreme accuracy anyhow—and a degree or two of thrust variation would outweigh precession in all probability.

But it seems obvious some form of gyroscopic action is present in model planes. It is said that rotary-engined planes of World War I were decidedly affected by the gyroscopic action of the whirling engines, and free flight models powered by the high-speed racing engines often evidence strange quirks under power not noticed when the slower, longer stroke engines are used.

Curtiss Helldiver

(*Continued from page 17*)

of the star insignia at each wingtip. Regardless of the tail, chevron, fuselage band and cowl, the fuselage and wings must be colored as indicated. The tail color indicates the carrier or Naval Base, and fuselage band and chevron are only for flight leaders. Yellow is for flight No. 5 (three planes to a flight); hence the leader is No. 13. Cowl, chevron and band must be the same color (red, white, blue, green, yellow or black); the entire tail can also be any one of these colors, as long as you are certain that O2C-1 craft used it. (Many scale contests have been lost because of the wrong color scheme on naval craft.)

When cementing the struts to the ship be sure they are attached directly to the frame and not to the paper covering only. Cutting away a small area of paper where the strut location is marked on the plan insures a strong joint by allowing the cement to grip the wood structure. Plenty of cement should be used. However, heavy waxed thread can be used for the flying and landing wires if the builder so desires.

Attempt to fly the model only when it balances at the point indicated on the plan. The flight lines are 55' long and are of .010" stranded steel wire. The rudder should be offset to pull the plane away from the center of the circle in order to maintain tension on the flying wires. Select a calm day for the test flights. The flying site should be a close-cut field of grass or preferably a paved surface. Full power engine setting is required in order to fly the ship at its peak performance. When the flier has the "feel" of his ship, he will find he has a very maneuverable and a realistic model.

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Air Ways

(*Continued from page 29*)

was more reasonable. As for the interest . . . a bee hive was slow and dull compared to our activity! We were actually having more fun with our planes than was thought possible."

The rules are simple; they closely follow the accepted PAA-Load rules, and the stress is on realism—no pylons, pod-and-booms, etc. Results of early experiments were highly gratifying. The first plane to be finished, flying with 1-1/2 oz. payload and a brand-new engine, clocked 2:47.2 on the very first flight. Experimental weights up to 4 oz. were carried successfully.

The proposed rules are these:

1. Models to be semi-scale, cabin-type, with realism the top goal. No pylons, pods, etc.
2. Landing gear to be two or three wheels, all forward of one-half fuselage length. No one-wheel and stab-skid setups.
3. Dummy shall be 2" x 2" x 3/4" with 3/4" sq. head, and shall weigh 1-1/2 oz. Dummy shall be weighed before each flight.
4. Motor run will be 30 secs. Any flight with longer run is unofficial.
5. Other than above changes, the regular PAA-Load and AMA rules will be followed.

The latest word on this new contest activity is that the sponsors of PAA-Load flying, Pan American World Airways, is very much interested in the ½A event. Although this was developed too late to be included in the PAA-Load schedule for 1950, Pan American has offered to sponsor a trial run (with prizes!) of the ½A event at the 1950 Nationals, provided that a sufficient number of modelers signify their intention to enter such an event at the Nats and also provided that this trial event can be fitted into the crowded Nationals' schedule. We are sure it will be included if the response is great enough. Just write to the Educational Director, Pan American World Airways, 28-19 Bridge Plaza North, Long Island City 1, New York, and signify your intention to be on hand at the Nats with a Class ½A PAA-Load model.

In behalf of the *Glue Dobbers*, Mrs. Litchenburg has asked us to publicly express the appreciation of the Tulsa club to Pan American for their help and support and to the many model builders who have helped work out a successful set of ½A PAA-Load rules.

* * *

Our picture gallery for July starts off with a shot of *Spitball*, a controline sport model designed and built by James M. Lowitz (6646 Stony Island, Chicago 37, Illinois). This ship is his first attempt at original design in the controline field and is patterned somewhat after the Goodyear style of racer. It has hit a top speed of 62 mph and does very nice wingovers; loops are possible by means of a "little friendly persuasion." As Mr. Lowitz does not claim to be an expert controline flier, the tiny plane has had a pretty rugged life but has proven itself to be almost indestructible. *Spitball* is powered with a glow plugged *Arden .099* engine and has been flown by many members of the *Illinois Model Aero Club*, of which Mr. Lowitz is a member. The flying weight is 11 oz., with a full tank of "paint remover."

A representative of the indoor fliers, Art Beckington of the *Kirkwood Thermaleers*, is shown in action in photo No. 2. This photo was sent us by Parnell Schoenky, a fellow club member, who tells us that Art, aside from his model interests, is a McDonnell aircraft engineer, a National Guard P-51 pilot, and he also designed and flies a snappy pusher prop Goodyear Trophy Racer. We have no information on the Class C stick job shown here, except for the fact that it utilizes a unique stabilizer bracing arrangement.

The composite view in our third illustration includes a Martin PBM1 Mariner, a French Romano R.90 fighter, and the Italian destroyer *Grecale*. All these models were built to the same scale by Attilio Brambilla (Via S'Ottavio 45, Torino, Italy), who is very desirous of corresponding with an American solid scale modeler. He is 30 years of age and will write in English, if preferred.

World War I fans will undoubtedly recognize the Pfalz triplane scale model in picture No. 4. This attractive controliner was constructed by John Garwood (Ten Camden Road, Sutton, Surrey, England), a member of the *Carshalton Model Aero Club*. The airplane is a very successful flier, and Mr. Garwood notes that since he has had so much luck with this triplane also with a Fokker tripe, he intends to try a Nieuport three-winger next. The ship illustrated is built to a 1/12 scale and is powered by an *E. D.* 2 cc. diesel (Competition Special) and weighs 14 oz. The fuselage is yellow, with a blue tail, and gray wings, with green camouflage.

(*Turn to page 48*)

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*Fox 29	11.95
Arden .099	8.75
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*McCoy 19	8.95
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*McCoy Red Head 49	19.95
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O.K. Cub 049	4.95
O.K. .074	5.95
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*McCoy 60 Glow	22.50
*McCoy 60 Spark	27.50
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*McCoy 19	10.95
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*Thimble Drome 15	7.95
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Super-Duper Zilch (C)	8.95
Stuntwagon (C)	7.50
Key (B-C)	4.95
A.J. Fireball (B-C)	6.95
Waco (B-C)	4.85
Howard Pete (B-C)	5.95
Monocoupe (B-C)	4.95
Mr. Mulligan (B-C)	4.95
Div. Station Wagon (B-C)	5.50
Hell-Razor (B)	6.50
*Jiggers (B)	3.45
Li'l Duper Zilch (B)	3.95
*The "Squaw" (A-B-C)	4.95
*Brave (B)	3.95
*Jester (B)	3.95
*Curtiss P-1A (B)	9.95
*Warrior (B)	3.95
*British BB-8 (B)	4.95
*Madman, Jr. (B)	6.95
*Invader (B)	7.95
Speedwagon 30 (B)	3.95
Stuntwagon 30 (B)	4.95
Nifty (B)	4.95
Zing (B)	4.95
Trainer (B)	3.95
Lockheed Sirius (B)	4.95
New Era (B)	3.95
Freshman "29" (B)	3.45
Sophomore "29" (B)	3.45
Phantom-Era (A-B-C)	2.95
Stuntmaster (A-B-C)	4.95
Minnow (A-B)	4.95
Cessna 195 (A-B)	4.95
Piper Cub (A-B)	4.95
Aerocar Sedan (A-B)	4.95
Beechcraft (A-B)	4.95
Piper Vagabond (A-B)	3.95
Dynamic (A-B)	3.50
Sportwing (A-B)	3.50
Minnow (A-B)	3.95
Glo-Bug (A-B)	3.95
Maverick (A-B)	1.00
*Jeepers (A-B)	2.95
*Invader (A)	3.95
*Father-Tripe (A)	3.50
*Papoose (A)	2.95
Hell-Razor (A)	3.95
Speedwagon 20 (A)	3.95
Baby Fury (A)	2.50
Whirlwind Jr. (A)	2.95
Super Solution (A)	2.25
Bee' Bee (A)	2.50
Howard "Ike" (A)	2.95
Buster (A)	3.50
Freshman "29" (A)	3.95
Sophomore "29"(A)	2.95
Speedster (½ A)	2.25
Freshman "9" (½ A)	3.45
Sophomore "9" (½ A)	3.45

"AA" Control Line Kits

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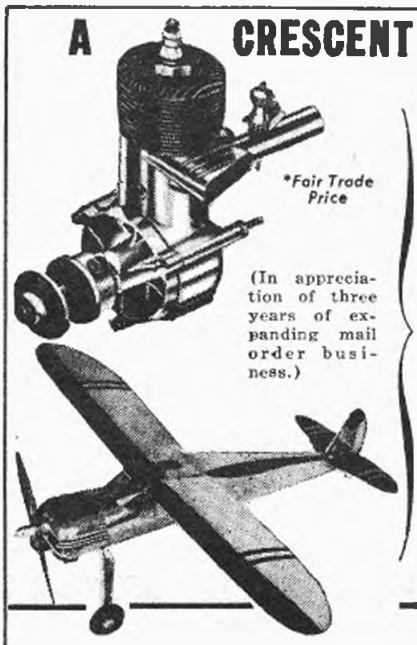
Wing-Dingus	2.00
Puddle Jumper	1.00
Infant Wagon	1.75
Baby Era	2.50
Baby Era Sipe	2.50
Wee Willie	1.95
Sweet Chariot	2.50
Baby Te-3	1.98
Flying Circus Jr.	1.50
Gnatsitch	1.25
Baby Ace	3.50



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Exclusive manufacturer's representative for Casalaire, Crescent offers this special while they last. Casalaire specifications: for C-D engines; formed metal fuselage; balsa and silkspan wing; 30" length; 45" wingspan. For U-Control or Free Flight. Sorry, no C.O.D.'s on this special.

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Spectacular New Speed Champ! Complete kit: Redi-Cast magnesium alloy bottom; carved pine fuselage top; shaped pine wing; shaped balsa fairing block; fuel-tank material; Flightex hinges; hardware; plans.

Class C-D . . . $6.95
Class B . . . $6.50
Class A . . . $5.95

Free Flight Kits

Luscombe Sedan (C-D)	7.50
Playboy Sr. (C)	6.00
Cumulus (A-B-C)	4.95
Playboy Jr. (B)	3.25
Zipper (B)	5.95
Powerhouse (B)	4.95
Super Brigadier (A-B)	3.95
*Zeek (A-B)	4.95
Zipper (A)	2.50
Powerhouse (A)	3.95

"AA" Free Flight Kits

*Dakota	2.25
*Civy Boy 24	1.50
*Civy Boy 34	1.95
*Small Fry	1.25
*Bambino	.95
Profile Powerhouse	1.00
Powerhouse "33"	1.50
Cleve. Minnow	1.00
The Shadow	1.50
Baby Phoenix	1.75
Jr. Phoenix	2.25

Accessories

U-Reely Control	8.50
U-Reely Remote	12.50
Metal Reel	1.25
*Plastic Control Handle	.75
*Wood Reel 4" dia.	.50
*Wood Handle	.50
*2-32½' Stranded wire	2.50
*2-60' Stranded wire	2.75
*2-70' Stranded wire	2.95
*2-3' Leads Ins.	.40
Spark Plugs (all makes)	.50
*AD&A Economy Glow Plug	.30
*O&R Glow Plugs (all)	.65
"K&B Infant"	
"Baby Spitfire"	
"Ok Cub"	
1/4 x 32	
1/4 x 32 Racing	
3/8 x 24	
3/8 x 24 Racing	
*Terp Jr. Glow Plug	.65
*Infant Glow Plug	.65
*Spitfire Glow Plug	.45
Arden Glow Plug	.85
Champion Glow Plug	.75
*Firecracker Coil	2.75
*Competitor Coil	1.85
Aero Ft. Wt. Coil	2.50
Aero Quality Coil	3.00
Metal Condenser	.30
*Booster Plug & Socket	.80
Toggle Switch	.80
Slide Switch	.25
Neoprene Tubing	
3/32" O.D. Ft.	.20
3/16" O.D. Ft.	.20
1/4" O.D. Ft.	.20
Ignition Wire Ft.	.03
Silk Yd.	1.25
Silkspan OO	.05
Silkspan GM	.10
Wet Strength Tissue—Red, Yellow, Blue Sheet	.10
Jap Tissue (White)	.05
Vibra-Tak	2.00
Elmic Timer (Diesel or Ign.)	1.95
D-E Fuel Shut-off	1.00
*Anderson Timer Valve	1.95
*Austin Timer	1.50
*Baby Timer	1.50
*Flex Needle Valve	1.00
Universal Needle Valve	.50
*Battery Box (all sizes)	.40
*Strap Hinges (8)	.20
*Cloth Hinges (8)	.12
*Bell Crank (Lg.-Sm.)	.25
*Control Horn	.25
*O&R 60 Metal Fuel Tank	1.75
*O&R 23 & 19 Fuel Tank	1.50
*Master Stunt Tanks:	
Small	1.20
Medium	1.25
Large	1.50
*Macco Tanks:	
Super 1x2x2½"	.85
Std. 1x2x2"	.75
Sol. ¾x1¼x2"	.65
Utility ¾x1¼x1¾"	.65
*Baker Tiny Tank (K.D.)	.35
*Mart-Lee Mufflers:	
Class A (4")	1.95
Class A & B (5")	2.95
Class C & D (5")	2.95
Class B-C-D (6½")	2.95
*Pow-Or-Team Props	.45
*Pow-Or-Pitch Props	.35
Tornado Props	.50
*Veco Props	.25
*Y&O Props:	
8 9", 10" dia	.50
11" & 12" dia in S, 6, 7 P	.60
*Baby Spitfire Prop	.25
"Infant" Power Prop	.20
*Spitfire Connector	.15
*Snap-or-Pack	.35
*O&R 60 Rotary Valve	6.00
*O&R 23 Rotary Valve	5.00
*O&R 6 oz. Flywheel	1.25
*O&R 9¾ oz. Flywheel	1.50
4-way plug wrench	.50
*Glue Gun	.75
*Turbo Fuel Can	.85
*Turbo Fuel Pump	.69
*Nap-The Pilot	.95
*Veco Wheels (Pr.): Airwheels—2½"- $2.50, 3½" $3.00, 4½" $3.50.	
Semi-pneumatic—2" 85c, 2½" $1.00, 3" $1.50.	
Streamline—1¾" 45c, 2¾" 60c, Balloon Sponge wheel: ⅞" 20c, 1" 25c, 1⅛" 25c, 1¼" 30c, 1⅜" 30c, 1½" 35c.	
*Streamlite Sponge wheel (pr.): 2½" $1.00, 2" 70c, 1¾" 60c, 1½" 50c, 1¼" 40c, 1" 35c.	

Tools

Moto-Sander & Polisher	14.85
Dremel Moto-Tool #2	23.50
Dremel Moto-Tool #1	17.50
Dremel Moto-Saw	5.95
X-acto '49er	25.00
X-acto Chest #86	10.00
X-acto Chest #87	15.00
X-acto Hand Drill	1.95
*Ungar Soldering Kit	2.25

Gas-Powered Boat Kits

Commander	8.50
Colonial	6.50
Vinyard Sea Cruiser	5.50
Harco Cruiser 25"	5.50
Chris Craft 26"	5.50
Chris Craft Express	5.50
Chris Craft Runabout	5.50
Owens Flagship 28"	5.50
Dumas Elec. Drive Unit	4.00
Buckeye Jr.	3.95
Eico Cruisette 27"	12.00
Eico Cruiser	4.95
Elec. Drive Unit	4.00

Misc. Boat Kits

Marion Sprague 12"	3.95
City of New York 12"	3.95
Flying Cloud 12"	3.98
Schooner Bluenose 22"	3.75
Sov. of Seas 23"	3.75
Cutty Sark 24"	3.75
Tug Boat 14½"	3.75
Clermont	3.75
Destroyer Phelon 24"	4.50
Coast Guard Campbell 22"	4.50
Rev. Cutter Hamilton 22"	4.50
Privateer Rambler 33½"	4.50
Oil Tanker 20½"	4.50
Constitution 22"	4.00
Fishing Trawler	6.00
USS Kearsarge 32"	9.00
Flying Cloud	9.00
Marion Sprague 29"	9.00
Santa Maria	15.00
Viking	9.00
PT-10	6.00
Gertrude Thebaud	14.25
Queen Eliz. w/elec. motor	4.95
Reuhl Racing Yacht	8.88

Racers

*O&R Racer (w/engine)	19.95
*O&R Racer (Less Engine)	4.98
*McCoy Midget (Complete w/engine)	14.95
*Thimble Drome w/engine:	
Lightning Bug .199	15.95
DeLuxe Chrome Plated	18.48
Champion .15	15.95
DeLuxe Chrome Plated	19.48
*Doodle Bug .09	15.95
DeLuxe Chrome Plated	19.48
*T. D. Jr. (w/engine)	12.88
*Champion Tether Model	3.98
*T.D. Geared Drive Unit	1.95
*Adapter for Drive Unit	1.95
*Challenger, Jr.	3.98
*Midget Car Drive	1.50

Misc. Kits

International Harvester	2.95
1900 Packard Roadster	2.50
1903 Rambler	2.95
1909 Model T Ford	2.95
1910 Model T Ford	2.50
1911 Maxwell	2.50
Oldsmobile	1.98
Stanley Steamer	2.95
Amoskeag Steamer	4.50
Clipper Clock	6.50
*Shadow Box	2.00
*Copper Craft	1.00
*Cigarette Cart	.39
Conestoga Wagon	2.85
*Hansom Cab	1.50
*Brougham	1.95
*Horseless Carriage	1.50
*Surrey w/fringe on top	1.75
*Victoria w. calash top	2.38
*Horse & Harness	1.50
*Chuck Wagon	1.95
*49'er Burro	2.50
*Covered Wagon	3.98
*Stage Coach	3.98
*Sportsman Convertible	1.00
*AVB Hot Rod	1.00
*JVB Hot Rod	1.00
*Jeepster	1.00
*DeLuxe Midget Racer	1.50
*Wishing Well	1.88
Constellation (plastic)	1.00
Thunderjet (Plastic)	1.00
F-80C Shoot. Star (plastic)	1.00
Republic Seabee (Plastic)	1.00
Mr. Mulligan (Plastic)	1.00
Thunder Jet (Plastic)	1.00
*Skyrocket (Plastic)	1.50
*Globemaster (Plastic)	2.00
*Skyraider (plastic)	2.00
*1909 Bi-plane (Plastic)	1.00

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Crescent MODEL SHOP

5661 West Pico Blvd., Los Angeles 35, Calif.

The next group represented this month is the free flight boys. In picture 5, we see a ship which won the Norwegian power duration record with 22 mins., 43 secs. on a 23-second motor run. The model was built in 1945 and served faithfully until a misfunction of the timer allowed it to fly away under power. Einar Brendeng (Hertzbergsgs 3-B III, Oslo, Norway) says that the engine is a .015 cu. in. diesel of Norwegian design, and the model has a span of 45", area 310 sq. in., total weight just a bit over 14 oz., and all balsa construction is featured with double Jap tissue covering.

The very unusual Wakefield model in picture No. 6 is the work of West Coaster Hal Roth (2222 Sawtelle Boulevard, Los Angeles 64, California) who agrees that this ship is a bit unusual. Specifications are as follows: wing area 209 sq. in.; weight 8-1/2 oz.; power 14 strands of black *Dunlop* rubber, 36" in length; prop 16" diameter, 24" pitch, and 28 sq. in. of blade area. The fuselage is constructed with a cross section following the NACA 4612 airfoil and is 31" in length and 2-3/4" wide. Mr. Roth hopes this airfoil fuselage will add considerable lift to the model. The wing is set at zero degree incidence, with the idea of forcing the fuselage to fly about 4° positive, so that it may develop the expected lift. The stabilizer is high above the fuselage to eliminate turbulence effect.

A jet job built by Edward Krum (432 Elm Street, Lawrence, Kansas) appears in photo No. 7. It is *Dyna-Jet* powered, and he uses it mainly as a jet controline trainer. He writes, "It is a very good model, and I have checked out half a dozen people with it. It is 'baby pink' in color—WOW!"

The work of a specialist in ultra-small solid models is seen in our eighth illustration. These tiny ship were built by Lloyd S. Jones (5243 Leghorn Avenue, Van Nuys, California), and they appear to be very accurate models, despite their small size. How many readers can identify the four models pictured? The size of these miniatures is apparent from a comparison with the ruler in the foreground. All the ships were made from three-view plans appearing in M. A. N. Mr. Jones has also tried his hand at building tiny flying scale gliders, most of which have a span of about 4".

The rubber-powered canard in snapshot 9 was built from specifications found in our popular column *"Design Forum."* It was built by William R. Lindemann (43 Carteret Street, Bloomfield, New Jersey) who states that even though he has been a controline modeler for years, he decided to build this simple job as a spare-time project. The pusher has been found to be extremely stable and has a fast flat climb and glide. Wingspan is 36", and the area is 150 sq. in.

It is obvious, from a look at the wing construction, why Bob Dagand (6002 Carlton Way, Hollywood 28, California) calls the ship in picture No. 10 *Kid Ritz*. This is a Class A model, with an *Arden .199* engine, and it was very successful during the 1949 contest season. Bob, who is now president of the *Thermal Thumbers*, states that interest in Wakefield modeling is especially high in his area as is indoor flying at the Santa Ana Air Base.

The impressive-looking three-motor plane in No. 11 is called the *Great Frankenstine* and is the work of Billy Weissbrodt (2567 North Cramer Street, Milwaukee, Wisconsin). This tri-motor stunt model was designed and built by Billy and his father, and they have found it to fly very nicely at 60 mph on 70' lines. The ship loops and flies inverted. Weight is 12-3/4 lbs., with a wingspan of 72", and the model is powered by three *Cyclone* engines, operating on glow plug. The ship is arranged so that the two outside motors cut first, and landings are usually made with the center motor still running. The model is so big that it has to be transported to the flying field on top of a car.

The equipment of a Belgian radio control enthusiast appears in our last illustration which shows a 5' plane of conventional construction powered by a 2.88 cc. diesel. The receiver is a homemade job, employing an RK 61 tube, and the transmitter mounted on the small aluminum box seen in the photo operates in the 54 mc. band. This equipment is the work of Jean Bocque (Rue Potapere 104, Brussels, Belgium) who states that he has found it quite satisfactory; he has learned a great deal of radio control flying through the articles featured in MODEL AIRPLANE NEWS.

NEWS OF MODELERS

PEN-PAL SEEKERS: M. M. Bishop, 293 Holsmeat Road, Sheldon, Birmingham 26, Warwickshire, England . . . Brian Palmer, 284 Hobs-Moat Road, Sheldon, Birmingham 26, Warwickshire, England.

EXCHANGE MOTORS: Tony Hayles, 43 Birbeck Road, Tottenham, London, N. 17, England . . . Ivan Gause, Stenstromsgatan 1A, Gothenburg, Sweden, has a brand-new *ETA 29* engine which he would like to exchange for an English diesel E.D. *Mark I* "Bee" (.062 cu.in.) or both a *McCoy 19* and an Anderson *Baby Spitfire* . . . Laurie Baker, 31 Cross Lane West, Gravesend, Kent, England.

SPECIAL REQUESTS: A. E. Arnosti, 4744 North Larkin Street, Milwaukee 11, Wisconsin, wanted to dispose of some back issues of M. A. N., and we printed his request in the November, 1949, issue. Mr. Arnosti now wishes to thank everyone—letters were sent to him from England to the Philippines—and his storage problem is solved! . . . Charles Vitale, 633 East Eleventh Street, New York 9, New York, is interested in obtaining plans of the Piper *Super Cruiser* which was put out by Capitol, who are no longer in business. So far no one has been able to help him.

CLUB NEWS

California

The *First All Speed Team* have a new competitive event called "Cross Country Team Racing." The idea is to fly two or more models at the same time over a course of 150' in length and 75' in width. Models must R. O. G. from the starting line, the winner being the first one to cross the finish line. Each model will be given a chance to fly in three heat races during the meet. Planes having the highest total points (won in these heat races) will be eligible to fly in the main or semi-main events. The rules are: *1.* Any size or design of model is acceptable, but it must have a permanent landing gear; *2.* The model may be powered with or by rubber, CO2 (one tube only), solid fuel jet (one unit only), ½A gas (.000 to .050); *3.* All models will compete in one age and class grouping; *4.* ONLY *one* model per contestant.

Albert Latour, of the *San Francisco Pterodactyls*, won top honors in the Class A hand-launched glider event for March. He also established a new club record in the micro division. Albert's best flight of 33 secs. broke the record of 21 secs. set by Frank Pagano in March, 1945. Don Telles was the winner of the *Jr.* division.

It is now possible to fly any Sunday of the month in the great San Joaquin Valley. *Taft* flies on the first Sunday, *Bakersfield* on the second, *Visalia* on the third, and the *Fresno Club* holds its famous monthly contests on the last Sunday of the month. These are all free flight meets, and combined with the numerous monthly meets of the U-control fellows throughout the Valley, every one has all the flying he could want. U-control, incidentally, is held on the second Sunday.

The *Arcata Top Hatters*, of Arcata, have been reorganized under the direction of Dalee Dolson; the *Hatters* show promise of some real activity up in the North Coast section of California.

We join the WEST COAST MODEL NEWS in saluting two club publications that celebrated their anniversaries with the April issue. The two newsy papers are: the AERONEER, published by June and Jack Dyer, which begins its eighth year with the May number, and the FRESNO MODEL NEWS, which goes into the tenth year of publication with its April issue, and is edited by Ocie Randall who has had the job for the past seven years.

Maine

The TALE-SPINNER, published by the *Augusta Flying Maniacs*, is now entering its

third year. Only once has the editorial staff been late to press; that was due to an unforeseen event and two months' news was combined into one issue. Editor Howard Smith wants more news; send results of meets, formation of clubs, comments, etc., to him at 93 Bangor Street, Augusta, Maine.

Here are the winners of the Speedee-Bilt Contest which was held in the Augusta area: *Class I*—Howard Smith; *Class II*—Matthias Marquardt; and *Class III*—Dick Lahaye.

New York

Richard Oscar Paul is trying to reorganize the *New York Model Aeroplane Engineers* club and has made arrangements to hold club meetings at the Public Library

COMING CONTESTS

June 11, ILL.—Chicago, Class AA, *U-Liners'* Annual Meet; CD—R. F. Antrim, Jr., 10752 S. Washtenaw, Chicago 43.

June 11, OHIO—Akron, Class A, *Society of Model Plane Engineers'* Meet for rubber powered models; CD—F. G. Alexander, 25 Mull Ave., Akron.

June 11, W. VA.—Beckley, Class A, 21st Contest, *Beckley Modeleers*, all classes of U—Sp; CD—R. Smiley, P. O. Box 749, Beckley.

June 11, N. Y.—Bethpage, Long Island, Class AAAA, New York Mirror Model Flying Fair, F, PAA, RC, U—Sp and St. CD—Thomas A. Herbert, 259 Mamaroneck Ave., White Plains.

June 11, PA.—Pittsburgh, Class AA, *Pittsburgh Model Airplane Control-Liners'* contest, U—Sp, St, S; CD—L. Stoutenburg, Jr., 21 So. Emily St., Pittsburgh 5.

June 17 & 18, VA.—Norfolk, Class AAA 2nd Annual Middle Atlantic Championship Model Airplane Meet. G, R, F, U; CD—S. A. Shoemaker, 211 Maycox Ave., Norfolk.

June 18, IND.—Hammond, Class AA, *Aero-Hanks'* U-control Meet, Sp, St, S; CD—W. R. Lake, c/o W. Toczek, RR 1, Griffith.

June 18, WISC.—Beloit Class AA, 4th Annual *Thermal Dusters* Model Airplane Contest, U—Sp, St, S, J. CD—M. F. Koebernick, 1337 Dewy Ave., Beloit.

June 18, CONN.—Bristol, Class AA, Bell City Invitation Meet, TR, St, S; CD—George Eddy, 73 Stearns St., Bristol.

June 23-24-25, MICH.—Detroit, Class AAA, (pending), Annual Michigan Exchange Club's Model Aircraft Meet, I—R, R, F, U—Sp, and PAA. CD—Frank Sposite, c/o H. J. Clemens, 423 Penobscot Building, Detroit.

June 24, CANADA—Toronto, Ontario, *Canadian Gas Model Club* T. Eaton Contest at the De-Havilland Airport.

June 24 & 25, ALA.—Birmingham, Class AAA 8th Annual State Miniature Air Carnival, F, U, S; CD—Brown Hill, No. 4 Bonita Dr., Birmingham 9.

June 25, N. Y.—Bronx, Class AA, Model Knights Flying Fair, U speed, St, Beauty; CD—Art Hasselbach, 247 McDowell Place, Bronx.

June 25, CALIF.—Fresno, *Gas Model Airplane Club* record trials, all classes of F; CD—Ocie Randall, 716 Waterman Ave., Fresno.

June 25, TEXAS—Tyler, Class A, 3rd Annual East Texas Model Meet, U, St, S, Beauty; CD—D. W. Hogan, c/o Brooks Matney, 313 S. Bois d'Arc, Tyler.

June 25, Washington, D.C.—5th Annual Model Air Show at Andrews Air Force Base, sponsored by National Capital Model Air Show, Inc., CD—William Pennoyer, 813 7th St., Washington; no entry fee; over 30 events, and PAA.

June 25, PA.—Pittsburgh, Class AA, *Pittsburgh Model Airplane Control-Liners'* Goodyear Meet; CD—same as June 11.

July 2, N. J.—Jamesburg, 3rd Annual Metropolitan Model Airplane Championship, *Richmond Model Flying Club*, Forsgate Airpark; F, G, Beauty. Info: 129 King St., Staten Island 8.

July 4, MONT.—Butte, 1st Annual ½A Flea Circus, U; CD—Bob Carroll, Box 1000, Anaconda.

July 9, N. C.—Winston-Salem, Free Flight Meet; CD—Loyd Hathaway, City Recreation Dept., Winston-Salem.

July 9, PA.—Pittsburgh, Class AA, *Pittsburgh Model Airplane Control-Liners'* Contest, U—Sp, St., S. CD—same as June 11.

July 9, ILL.—Rock Island, *Illinois-Iowa Aeronautical Association's* 5th Annual Air Derby (25-mile endurance race for U models).

July 16, ILL.—Moline, *Illinois-Iowa Aeronautical Association*, closed U meet.

July 23, FINLAND—Wakefield Finals.

July 25 to 30, TEXAS—Dallas, Class AAAA, 19th Nationals; CD—John Clemens, 2114 Greenville Ave., Dallas.

U—Controline; F—Free Flight Gas; R—Free Flight rubber; G—Glider; RC—Radio Control; W—Water Events (ROW); S—Scale; I—Indoor; T—Towline; PAA—PAA-Load; Sp—Speed; St—Stunt; TR—Team Racing; J—Jet Speed; HL—Hand launched; Class—shows size of meet and signifies AMA sanction; AMA—Academy sanctioned.

in Flushing. New members are welcome. Those interested are asked to contact Mr. Paul at 121-42 Sixth Avenue, College Point, Long Island, New York.

The *Flying Bisons* held a very successful race for Class ½A airplanes on March 27, at the 65th State Armory. Since the models were timed from take-off, speeds for the half mile were lower than typical speeds when timed for ten fastest laps. Nevertheless the speeds were good and so was the competition, with most of the members participating. Harold Keller, club president, took first with 24.63 secs. for the half mile and his speed was 62 mph. Thanks to Norris Maltby for sending us this news.

Ohio

We have just learned that the *Rubber City Aeronauts* has been incorporated and will be known hereafter as the *Rubber City Aeronauts, Inc.* Naturally because of this change, new officers will be elected and the by-laws altered, and as soon as we receive this information, we'll let you know. However, we thought you would like to hear about the High Point winners for last year. It was a policy of the old *Aeronauts* to give a High Point Award to the flier in each age group who won the most points in all the contests held during the calendar year by the *Rubber City Aeronauts*, the *Model Engineers*, and the *Model Wings*. Dick Fox had 68 in the *Open* group; Gene Kemmerline 34—*Senior;* John Ward 87—*Junior;* and Paul Ward 32—*Novice*.

The Celina and Coldwater, Ohio, fellows recently met together one evening and formed a club—the *Lake Field Yellowjackets*. There are at the present time ten members including the three officers, James Andres, president; Dick Resh, vice president, and Philip Andres, secretary-treasurer. The Lake Field owners are going to help the club as much as possible; they have already given the *Yellowjackets* a meeting place and a flying field. Anyone who lives near Celina or Coldwater and who would like to join this new club should contact Philip Andres, R.R. 1, Box 106, Coldwater, Ohio.

Texas

The size of the flying site at Ridglea Hills has been reduced considerably, and it looks as though the flying days are about over for the *Fort Worth Aero Modelers Association* members. Half of the area they have been using is now being fenced in for cattle grazing. Any one who intends to fly there in the future is urged to be considerate and not to damage the fence. However, Hicks field can be used and seems like the best place at present, but the *Aero Modelers* are hoping to find a place which is more convenient. W. C. (Bill) De Lorme, who writes the *Fort Worth Aero Modelers Association's* "Newsletter," would like to receive a post card or letter telling him what is new with other clubs; write him at his home address, 4100 Pershing, Fort Worth, Texas.

Dallas Invasion

(*Continued from page 24*)

July, because of their wonderful cooperation on the past two National Meets held at the Naval Air Station, Olathe, Kansas. The Navy doesn't do things in any small way either. When they say that the modelers will be welcomed, they mean they *really* will be welcomed, by every man from the Commanding Officer down.

Some of the Navy men that you will particularly remember when you leave Dallas after the Victory Dinner are the dynamic Commanding Officer, Captain Nations, Executive Officer Commander Miles, Public Information Officer Commander Holton, and a couple of good "leg men," Lieut. Commander Pierson, and Lieut. Stockdale. These fellows have given much of their time to the advance planning and are just as eager to see the modelers as the modelers are to get to the Dallas Naval Air Station.

If you are planning to attend the '50 Natonals—(and who isn't!)—you would probably like to know a little of what to expect. The Naval Air Station is just a few minutes from the center of Dallas, being some 8 miles from the downtown district. It is located on the highway going from Dallas to Fort Worth, which, by the way, is about 30 miles west of Dallas. The Naval Air Station is actually at Grand Prairie, Texas, a town that mushroomed up around the wartime North American Aviation plant, which supplied *Mustangs* and B-24 bombers during the war. The plant was sold to Chance-Vought and is now producing Navy fighter planes. Chance-Vought adjoins the Naval Air Station flying field, and they use the Navy runways for testing their airplanes. The Chance-Vought Company is going to shut down during the meet in order that modelers may have a monopoly of the field. The cafeteria at Chance-Vought will furnish all the meals for the contestants at a very nominal charge; also they will make it possible for their parents and friends to eat with them at a slightly higher charge.

If the contestant wishes to be the Navy's guest, several barracks are being opened especially for that purpose. These are standard Navy barracks, and will afford more conveniences and privacies than the drill hall used at Olathe. Double-deck bunks will be used (get your order in early for lower berths), and linen will be furnished with the bunk at a charge of two dollars for the entire contest period. These barracks, incidentally, are quite close to the actual flying sites.

Nimitz Hall, the king-size drill hall, will house the exposition of Model and Hobby Progress, with exhibits by all the well-known model manufacturers, the air lines, and related industries. The Navy will furnish the centerpiece for the exhibit with a display of some 40' x 100' in size. From last reports, the Navy was planning to have a huge model of an aircraft carrier with planes and all right smack in the middle of the exhibit. The Navy will also furnish full scale aircraft displays on the parking

ramp, to include jet shipboard fighters, helicopters, cut-away engines, etc.

Before a modeler flies his plane(s) in a contest he usually wants to know what his chances are of getting his plane back. Everything possible will be done by the Navy personnel to retrieve the models. It is a pleasure to announce a new wrinkle in aiding modelers to find their ships! Each contestant will be furnished with a readable map of the surrounding countryside, showing the gates of the field, roads and landmarks. This will be a tremendous aid, but should the plane still go out of sight, the modeler simply marks on the map where the model was last seen, puts his name and description of the plane and engine in the space provided, and turns the map into the Lost Plane Committee. This procedure will greatly increase his chances of getting it back since the information will be relayed immediately to Navy radio jeeps, stationed several miles away, in line with prevailing winds. As further help, a huge enlargement of the map will be displayed in the hangar that will be used as a workshop. The map is to be made directly from a photo to be taken by Commander Holton from approximately 10,000'.

For the convenience of contestants entering both free flight and R.O.W. events, it is planned to have them run from adjacent locations by the shore of Mountain Creek Lake which borders the Naval Air Station on the south. This will not only be much handier for contestants, but the same processing facilities can handle both groups.

Controline flights will be made on eight circles to be set up on one of the runways. It will be the section of the meet held closest to the hangars and barracks. The Navy's own event "Carrier Flight" is expected to be a three-ring-circus in itself. That day even the officials will want to "spectate." If you haven't read the rules on this new event, you can get them from Contest Headquarters at 2114 Greenville Avenue, Dallas.

For the controline pylon-stumblers, all flying circles will be so constructed that the models can fly *downhill* all the way around! This should increase everyone's speed by at least 10 mph (at least by the time you tell about it back home). The secret probably shouldn't be let out, but that downhill-flying is the secret of Dallas' long list of champion controline speed merchants like Beasley, Clem, Stanglin, Krider, and the others.

Team racing has been scheduled this year. However, it must still prove itself as an event for large meets like the Nationals. This is a direct challenge to the devotees of team racing (Keith Storey and company please note) to really put on a show this year.

The indoor event will be held in the huge Will Rogers Memorial Coliseum in Fort Worth. It is scheduled for Friday, July 28, and transportation will be furnished to those contestants needing it. By the way, the ceiling is in excess of 60', and the building is large enough to hold a hockey game and about 10,000 spectators. It will certainly hold a lot of microfilm and balsa wood!

A meeting for contestants will be held the morning of the first day of flying, July 26, in order that all contestants and officials understand all the rules before any flying begins. To make sure everyone attends, the flight cards will be passed out there *after* the meeting. This will give the contestants and officials a good chance to size each other up before the shootin' starts!

It was stated two years in a row that "Kansas was out of the wind belt," and then for a couple of days each year at the Nationals, we had to nail the painted white stripe in the middle of the road down to keep it from blowing away! In the summer in Texas, the wind blows only in one direction, *straight up*! Thermals are the technical name for such winds. We have reserved 1,500 thermals for the early contestants, so don't arrive late and be caught without one.

Radio control is always a popular event at the Nationals, and it was learned that R.C. enthusiasm in the Southwest is at fever pitch. Some excellent local radio flights have been witnessed, so the out-of-town R.C.'ers better sharpen up their short waves. Someone has asked Contest Headquarters (should be Hindquarters!) if it will be okay to ride their megacycles to the radio control event! Strictly static!

For some odd reason, the modelers always want to know about the prizes. Well, the regular traditional Perpetual Trophies will be awarded this year, and a host of beautiful new trophies designed especially for the 1950 National Model Airplane Championships will be added to them. Many special trophies and awards will be made for special events or accomplishments. Tops among these will be the new June Pierce Memorial Sportsmanship Award. The trophies and awards will be displayed publicly during the entire meet at the Navy Exhibit in Nimitz Hall. Contestants can pick their trophy out in advance that way!

The awards will be presented at the Victory Dinner on Sunday evening, July 30, and we plan to cure one of the biggest ailments of all previous Nationals. The results of the meet will be ready within a few minutes of the end of flying in the last event, so that there is no boring delay waiting for those results.

Besides the local management of the contest there will be a gang of those old standbys who always go to the Nationals and pitch right in to do so much of the technical legwork and masterminding. These people give their time and efforts for free, but seldom receive any thanks. It has been wonderful to see the letters roll in from folks like Red Hillegas, C. O. Wright, Jim McLelland, Ray Mathews, Keith Storey, Harry McCall, and many others, offering all sorts of help. The sponsors really appreciate this expression of sportsmanship, and hope that the modelers will express their appreciation to officials who help out this way.

Besides the contest itself, Dallas is a big wide-awake city of some 500,000 population, with every sort of entertainment imaginable, and a jaunt to Texas would make a wonderful vacation. It will be the biggest Nationals ever, and held in the biggest State, so *For Fun in '50*, it's the Nationals in Dallas!

Your Club Can Hold a Contest

(*Continued from page 22*)

publicity campaign. Using smooth white cardboard and water colors, paint several colorful, eye-catching posters announcing your coming contest. State where and when the competition is to be held, tell what type of contest it will be, who is eligible to enter, and, most important of all, be sure that you cordially invite the public to attend. This is the primary job of these posters: to lure spectators to this first contest. Once they have attended one, they'll come back to watch another contest.

After this is done, go to the editor of your local newspaper and tell him about your contest. He will be more than glad to give all the details of the contest in a short item in his paper. Editors are always looking for something with news value. And last, but not least, use word of mouth publicity—it's the best yet! Tell your friends about the contest; ask them to tell their friends.

When you are this far along with your contest preparations, you're bound to be feeling pretty good, but you aren't through yet. Oh, no! Now, you have to get out and hustle up some prizes. After all, what would a contest amount to without prizes?

There are several places where small prizes can readily be obtained. Approach your club sponsor and ask him to donate a small model plane kit or something of a similar nature. Your local model dealer is good for another prize, possibly even a model motor, provided, of course, that he isn't also your club sponsor. Your Chamber of Commerce will donate a prize and most likely your local merchants and businessmen will. The mayor, the chief of police, the local Lions' Club, the Rotary Club, the Elks' Club, and others too numerous to mention, may be glad to give bottles of dope, small model kits, modeling tools, and other such inexpensive modeling paraphernalia. If you would like to purchase a few trophies, try Russell Bros. in Des Moines, Iowa.

Now that you have your flying field, publicity, prizes, rules, and all necessary printed forms, what else? Well, for one thing, you still need your contest officials—three judges and one timer for every ten contestants.

The timer doesn't present much of a problem. He can be recruited from among your club members. Select a members who isn't actively participating in the contest.

The judges may be chosen from local townsmen, merchants, and businessmen. Their duties will consist principally of figuring each contestant's score and awarding the prizes. Of course, if you plan to include a solid scale model event, then it will also be part of the judges' job to grade each model according to finish, detail, and exactness to scale. If possible, choose judges who are well known both to the contestants and the spectators.

If you feel that your contest will be large enough to warrant use of a public address system, now is the time to arrange for it. Try renting one from a local electrical company. Or, perhaps your local high school has one that they would be willing to lend you. If not, maybe you can borrow one from a local radio station or auditorium.

And now for that long-awaited Big Day. Arise early and, long before contest time, go to your flying field and rope off a sort of grandstand area on one side of your field. Since this roped-off area is especially for spectators, be sure that it is in such a position that it will afford a good view of all the contest events, since the success of this contest, and of all your future contests, will depend largely upon the amount of spectator enthusiasm.

If you desire, you may have a local bottling company or a local merchant place a drink cooler on the field so that soft drinks may be supplied to both spectators and contestants. By the same token, hamburgers and hot dogs can be sold during the day of the contest. This, incidentally, is a good way for your club to make more than enough money to cover the expense of the contest. However, unless you are expecting a large number of spectators and contestants, it won't be practical or profitable for the club to offer refreshments.

When the contestants begin arriving at the field, have every one fill out an entry blank for each event he intends to enter. By doing this early, you will obtain an accurate idea of just how the contest is going to shape up, the total number of contestants, the number of entrants in each event, etc.

When all the contestants have had their planes weighed and checked, you are ready to start the fireworks. Remember to live up to all that publicity that has been spread around, and make an impressive beginning. What better way is there to impress spectators and contestants alike than with a gassie event? They'll thrill, one and all, to the mighty roar of the midget motors. Try it and see. Schedule the other contest events in such a manner that spectator interest will be kept at a high pitch throughout the entire contest. The ideal sequence of events is as follows: (1) Gas, R.O.G., Classes ½A, A, B, C; (2) Rubber, Stick, H-L, Classes C, D; (3) Rubber, Stick, R.O.G., Classes C, D; (4) Gliders, Towline, Classes C, D, E; (5) Rubber, Cabin, R.O.G., Classes C, D; (6) Gliders, H-L, Classes B, C, D; (7) Gas, U-Control, Classes ½A, A, B, C; and (8) Experimental Craft—helicopters, jets, ornithopters, autogiros, etc. The above sequence of events has, through actual use, proved itself best for retaining the interest of laymen and non-modelers.

The timer's work begins the instant the rubber is wound, the towline attached, or the motor started. The split second that the model leaves the ground or the contestant's hand, or the towline disengages, the official must be ready to begin timing. The instant the plane again touches earth, he must be ready to halt timing. He must then enter the exact flight time in the score book for that particular contestant. If possible, he should also immediately enter each flight time on a large score sheet easily visible to all contestants and spectators.

The judges are responsible for seeing that no rules are violated. After all events have been completed, it is also their duty to figure each contestant's score according to AMA regulations. (Towline Glider, Rubber, and Free Flight Gas—the average elapsed time of three flights. Hand-Launched Gliders—the longest of nine flights. U-control, Speed—miles per hour based on a predetermined number of laps. U-control, Stunt, and Experimental Craft—number of points based on a predetermined method of judging known to all contestants.)

After the judges have computed all the scores, and basing their decisions solely upon their figures, they should then announce the winners. Prizes are awarded to these winners either by the judges or by someone especially appointed for this duty.

Let's have more contests, fellows. That's how you build better models and where you really get your fun out of modeling. It's easy. *Any* club can hold a contest. Your club can hold a contest, too!

World War I

(*Continued from page* 19)

up the war with 37 victories. He was transferred to No. 41 Squadron in July, 1918, on the strength of his outstanding ability to use his R. E. 8 as a pursuit plane. The records show he downed six of the latest type German pursuits with his single forward firing gun in an R. E. 8!

Fuselage Structure. If we were to strip an R. E. 8 fuselage down to its bare framework, the shape of the basic structure would bear absolutely no resemblance to the finished article. The usual four longerons and numerous uprights and crossbracing struts formed the basic structure. These members were made of spruce and ash, routed to an "I" section where permissible between connecting fittings. The members were tied together with stamped steel sockets and fittings, everything was bolted into place, and the entire structure was tied together with steel wire tie rods.

From a starting point just below the thrust line, the top longerons ran uphill at an average of 5° all the way to the stern post. The lower longerons, which joined the upper longerons in a horizontal knife edge at the nose, descended in line to the first landing gear strut, flattened out between that point and the rear lower spar; then it started uphill to meet the short stern post.

Engine bearers were made of hard wood, tied into the fuselage structure through a series of steel stampings bolted into place. The bearers were sloped upwards towards the front at 4° to the horizontal, to give the required amount of upthrust. This was the standard thrust setting. The engine, however, was actually mounted on engine bearer fittings which permitted adjustment of thrust.

Power plant of the R. E. 8 was an R.A.F. 4A of 150 hp. An air-cooled V-12 type, it was patterned after the Renault and was a design of the Royal Aircraft Factory, as was the R. E. 8. A predominant feature of this engine was its huge top-side air scoop which forced air between the cylinder banks. Another distinguishing feature was the overhead exhaust stack provided for each bank.

The engine section of the fuselage was cowled in accordance with the custom of the day. The extreme nose was fitted with a formed aluminum "bonnet" which fitted neatly around the propeller shaft. Each side, back to the landing gear, was covered with a flat sheet cowl of aluminum, attached with spring loaded twist fittings. The lower, or bottom surface, was cowled in formed aluminum which also was quickly removable. No attempt was made to make cowling joints smooth, or to remove surface irregularities.

The sides and bottom of the fuselage from there aft were fabric covered. While methods of applying fuselage fabric varied slightly from order to order, the fabric generally was laced to the upper longerons on the left and right sides, the lacing being considered sufficient to hold it in place on the bottom.

Immediately in front of the pilot's cockpit, the fuel tank formed the rounded upper surface of the fuselage. It was shaped to conform to the contour at this point, and was held in place with steel straps anchored to the right- and left-upper longerons.

Both pilot's and observer's cockpit coamings were formed of sheet aluminum. The fairing in front of the pilot came equipped with the instrument board, and the latter member was used structurally. The usual instruments were fitted—air-speed indicator, tachometer, compass, oil pressure gauge, clock, altimeter and bank and turn indicator. This panel in the R. E. 8 was one of the most complete and systematic of any World War I airplane.

Pilot's controls were conventional, and the observer was equipped with a duplicate set. Armament consisted of a synchronized Vickers machine gun firing forward from its steel tube and sheet mount on the left side of the fuselage, and a single Lewis gun, mounted on a Scarff ring surrounding the observer's cockpit.

Certain R. E. 8 models were equipped with crude radio and, of course, a trailing antennae which could be reeled in when not in use. Lights for night flying were added to some models. Cockpit lights were fitted to many.

Fuselage fairing rearward from the cockpits was made of stringers over formers. Covering was of fabric.

Landing Gear. The undercarriage struts were made of streamlined spruce in right- and left-hand "V" pairs. The apex of each "V" was nicely faired where the struts joined. The axels, held in place by shock-absorbing rubber cord, worked in slotted steel plates. Landing gear tread was 5' 9-3/4" on tire centers. A compression spring type tail skid was attached to the fuselage stern post. S. E. 5 type tail skids were attached to some models, making them steerable.

Flight Surfaces. The broad, sturly wings of the R. E. 8 were made in right- and left-hand panels, upper and lower. Each panel was built up of two "I" beam spars with plywood ribs cap-stripped with spruce. Each upper panel contained 17 full chord ribs, while the lower panels had 11 ribs each. Wood strip leading and trailing edges formed the outlines.

Ailerons were provided in all four wing panels and were hinged to the rear wing spar. Lower ailerons were interchangeable with those in the upper wing—in part. Actually, the lower ailerons and the outward portion of the upper ailerons were the same. The upper ailerons were of greater span—the difference was made up by an additional rectangular panel fitted inboard of the standardized member. The two components thus forming the upper ailerons were fastened by a steel clamp along the joint line. Upper and lower ailerons were in turn connected by a heavy hinged strut.

Upper wing panels were attached to the upper center section by means of safetied

pins and stamped steel fittings. The upper center section varied in production models as follows: one version was cut away over the pilot's cockpit; a second version was cut out and equipped with a celluloid overhead window; a third version was windowed, but of full chord, without the cutout.

Lower wing panels were attached to wing stubs which also were produced in solid and windowed varieties.

Because of the long overhang of the upper wing panels, additional bracing was provided on their upper surfaces. An "A" shaped cabane, made of steel tubing, was used for this purpose. Four wires which joined at the cabane's apex, terminated at spar fittings which projected through the upper wing surface.

Tail assembly of the R. E. 8 was conventional. Its frames were made of wood except for the main spars of the components. None of the surfaces were balanced aerodynamically. The horizontal stabilizer was adjustable to provide trim for climbing, level flight and landing, and for varying load conditions. The fixed empennage members were wire braced.

That, then, is the famous R. E. 8 of World War I fame. There were many superior types, but in the aggregate the "Harry Tate" established some remarkable service performances that will endear it to W. W. I fliers and fans alike as a very eligible member of the aviation hall of fame.

What About Professionalism?

(*Continued from page 23*)

the inner sentiments involved are hard to dissolve into cold statistics. We found out that the modelers welcome you at the contests; they like to see you put on a big show. They like to see you win, even if they become losers by your winning. They have the true sportsman's attitude. We find that there are several in your own group, the pros, who do not exhibit towards the "average modelers" the same spirit of sportsmanship these non-pros hold open to you.

We have not included the feelings of the club advisors who speak for entire groups and organizations in our survey of answers. If we include these letters, we find over *ninety per cent* of the modelers to be unhappy about some incident of particularly bad sportsmanship. May we give you a typical quote:

"I have seen a certain 'professional,' one of the top record makers and kit manufacturers in the East, put on some of the worst displays of poor sportsmanship that I have ever seen. I have seen him accept timings that even he knew were in error, whip like no one else would dare, act disagreeable to everyone on the field, back up his car to the prize tent to get his loot long before prizes were announced, when parking near this tent was announced as being forbidden to other contestants. On one occasion, he even pushed his huge starter out on the flying circle while another flier was using the circle, which wrecked the contestant's model, but this 'professional' never apologized or even bothered to ask the extent of damage."

And another quote:

"I have one experience to relate. It concerns Mr. X and a model meet held last summer in conjunction with a North Eastern Fair. After a monstrous build-up over the loud-speaker, Mr. X flew his class D speed model, and was clocked by several onlookers at 12.5 secs., or approximately 123 mph. The *official timer concurred* with our clocking. The flight was announced as 144 mph. After a short discussion with the officials, the timer left the field. Later in the day a flight of 137 was turned in, but evidently Mr. X was hard-up for trophies, for he only smirked when asked about taking the first place trophy unfairly. He took it from a fifteen-year-old."

That's the type of thing the model builder is against, that's what his sense of fairness rebels at. How about laying the professional issue aside with a few well chosen thoughts.

1. Let's obey the AMA rules to the letter, this means one hundred per cent in all respects.
2. Let's be gentlemen and compete fairly, taking no advantage of the amateur.
3. Above all, let's be *good* sports!

As for anyone who may have felt hurt by some of the comments brought out in this forum, all we can say is, if the shoe doesn't fit you, send it to the fellow it does fit.

Yours for better sportsmanship,
Jack Bayha

This concludes our forum; we hope it has helped half as much as so many readers seemed to feel. We also hope that it has not harmed the hobby one-millionth as much as one or two readers felt. Perhaps the things brought to light by this series will aid in eliminating some of the less desirable professional activities. If so, we have accomplished something.

Team Racing

(*Continued from page 15*)

in order to reduce drag. Another interesting feature are the spinners used on some of the ships; these spinners are usually made from a worn handle of an X-acto knife.

Lines. After the accident mentioned earlier, it was decided that wire must be used in place of thread. As a result, .006" diameter wire is used by all.

The models are timed from take-off in order to duplicate full scale races. When two models are flown together, race horse starts are employed, with the slowest model in the forward take-off position.

The advantages of "Miniature Team Racing" are numerous and much is to be learned from this type of model. In addition to showing that a perfect combination of fuel, propeller, engine, and airplane are needed for top performance, these models also prove valuable as speed trainers.

Curtiss Condor Bomber

(*Continued from page 35*)

to the fuselage while the top wing is drying. The nacelles are next; these are cut from soft balsa, and on the original model they are left solid. Trim the firewall to size and cement in place; then drill the holes for the gunner positions.

Cut the landing gear wires and form them to shape. Drill 1/4" holes into wing and motor nacelles at the points where the wires enter. Then cut 1/4" dowelling into short sections (1/2" long is about right), and drill a 1/16" hole lengthwise through each section. Push the landing gear wires through the dowels, bend the wire over at the upper end, and cement well. When dry, the entire assembly of wire, dowels, and wheels may be cemented onto the airplane. This form of construction is sturdy but not too heavy.

The strutting can now be put in the lower wing. Birch dowel serves well for this purpose. Drill holes in the upper wing to take the dowels and cement the wing in place. The wings should be covered and doped first, as this will save you a lot of work getting in and around the struts. A coat of light dope, followed by a good grade of fuel proofer will finish off the wings. The wing wires can be added next; these may be made from a discarded set of controline flying wires. Cut each wire a bit longer than needed; then force the ends into the wings and apply a drop of cement to secure them.

Now mount the engines in place; we found the little K & B *Infants* ideal, as they gave the model very nice flight characteristics. We used the metering system to assure that both engines run the same length of time. However, even if one engine runs a little longer than the other, it does no damage because the model is big enough to fly on only one engine without going into a sharp turn or rpm.

This model was originally built with two English *K Hawk* diesels, operating from a single tank in the fuselage. This arrangement worked nicely, as both motors always cut out together. However, it was felt advisable to install American motors, which are obtainable everywhere in the country, and *Baby Spitfires* were tried next. The results were spectacular, but the ship was just too hot to handle, at least for free flight. With these engines, it flies beautifully as a controliner though, and modifications are shown on the plans for such use.

Next, the *Infants* were installed, and proved just right. When the model was first flown with these, the aluminum props that are furnished with the engines were used. The propellers were bent until there was very *little* pitch so that the thrust was low. As the ship was tested and adjusted, more and more pitch was put in the blades, until they were at the optimum angle for highest thrust. Later, a pair of *Cub Special* props were tried out, (they are shown in the illustrations) and operate very nicely. In all three engine installations, both props turned the same direction.

When decorating the model, remember that lightness is imperative. Dye the covering or use colored tissue rather than build up weight with heavy colored dope. The wing insignia can be cut from colored tissue and tacked to the wing with thinner. The thinner will soften the dope, which re-hardens to make the trim a permanent part of the covering. The lettering also can be cut from colored tissue, or you can use *Trim-Film* for a really brilliant decorating job.

Do not try power flight until the glide is flat; our model was a little tail heavy, so add weight if needed. Then start the engines and launch as you would a sport model (not as you would a contest job—that straight-up stuff is okay if you are after every last second in climb, but here we want the model to fly as much like the real ship as possible).

As noted before, with larger engines, the *Condor* will fly as well as a controline model; in this case, the plane could be colored-doped, the motors cowled in, and you would have a real threat in any beauty contest.

Bellanca Cruisemaster

(*Continued from page 21*)

produce Bellanca's airplane designs. Bellanca designed a large, five-place cabin monoplane powered by the famous Wright *Whirlwind* engine of 200 hp. This first Wright-Bellanca won the Highest Efficiency Prize at the 1925 National Air Races at Philadelphia, Pa., exhibiting an efficiency 53% higher than its nearest competitor! The second Wright-Bellanca, completed in 1926, was destined to become one of the most famous airplanes in aviation history—*Miss Columbia*. The airplane was purchased by Charles A. Levine, wealthy but non-flying sportsman, who hired various pilots to fly him. *Columbia* first burst into the headlines on May 14, 1927, when Clarence Chamberlin and Bert Acosta set a world's endurance record of 51 hrs., 11 mins., 20 secs. over Roosevelt Field, Long Island, New York.

It occurred to Levine that, even at 100 mph, this meant the *Columbia* had actually traveled more than 5,000 miles without stopping, and the idea of a transatlantic flight was born. The Orteig Prize of $25,000 was attracting dozens of pilots to Roosevelt Field preparatory to an attempt. Levine brought his *Columbia* to a state of readiness and then cast about for a pilot to fly it across the Atlantic. Day after day he changed his mind. First, Chamberlin was going to fly Levine; then, Levine was going to stay behind. For a while Lloyd Bertaud was scheduled to be the pilot, but the plans were again changed. In the midst of this procrastination, young Charles A. Lindbergh slipped quietly into Roosevelt Field, got his *Spirit of St. Louis* in readiness, and proceeded to take off for Paris on May 20, less than a week after *Columbia* had demonstrated its ability to fly 5,000 miles non-stop!

Levine was chagrined by this sudden turn of events right under his nose, and quickly ordered his plane made ready—but again he quibbled over the plans. Finally it was agreed that Chamberlin would make the attempt solo and on June 4, 1927, two weeks after Lindbergh's historic flight, Chamberlin taxied the Wright-Bellanca *Miss Columbia* out ready for the take-off. Suddenly, Levine, hatless and in a business suit, raced out to the airplane and climbed aboard! Chamberlin, his patience exhausted, gunned the throttle and took to the air and did not touch land again until 42 hrs. and 45 mins. later in a wheat field near Eisleben, Germany, 3,911 miles from the take-off point: a new world's distance record. And Levine suddenly found fame as the first passenger to fly the Atlantic!

With this world success of the *Miss Columbia*, Bellanca resigned from Wright and formed his own company, first called the Bellanca Aircraft Corporation of America at Richmond Hill, New York, and finally, on Dec. 31, 1927, changed to the Bellanca Aircraft Corporation, replacing the former company.

The second Bellanca to fly the Atlantic was the *Pathfinder* which, on July 10, 1929, carried Roger Q. Williams and Lewis A.

Yancey from Old Orchard, Maine, to Santander, Spain—a distance of 3,400 miles in 31 hrs., 30 mins. On October 10, 1930, Capt. J. Erroll Boyd and Lieut. Harry P. Connor flew *Miss Columbia* from Harbor Grace, Newfoundland, on an attempted world's long-distance record. Unfortunately, a clogged fuel line brought the ship down—safely—on Tresco Island in the Scilly Isles (about 25 miles off the coast of England) after a flight of 2,650 miles in 23 hrs., 40 mins. *Miss Columbia* thus became the first airplane to fly the Atlantic *twice*. The famed ship continued her record-breaking with non-stop flights from New York to Bermuda and New York to Haiti but her fabulous career came to an ignominous end in a hanger fire at Newcastle, Pa., in 1935.

In the years between 1927 and 1936 Bellanca airplanes smashed trans-ocean records right and left: Boardman and Polando flew 5,014 miles from New York to Istanbul, Turkey, setting a distance record that remained unbroken for many years; Pangborn and Herndon flew the Pacific from Japan to Washington in *Miss Veedol*; Capt. James Mollison stormed across the Atlantic in the Bellanca *Flash* at a record-breaking speed of 257 mph—the list is long and star-studded.

Following the production of a brilliant series of five- and seven-place cabin monoplanes with such famous names as the *Pacemaker*, *Skyrocket*, *Airbus*, *Flash*, *Aircruiser* and others, Bellanca entered the personal aircraft field in 1938 with the *Junior*, seating two side-by-side in front and a third passenger in the rear. Powered by a 75 or 90 hp LeBlond engine, the trim little ship was notable for the installation of a retractable landing gear on a personal-type aircraft. Production of this high-performance monoplane continued until 1941 when Bellanca, along with all other aircraft manufacturers, "went to war."

In an effort to produce a postwar personal aircraft that exactly fit the needs of the private pilot, Bellanca instituted its famous "Bellanca Aircraft Quiz" which developed the specifications for the "ideal" postwar personal aircraft. Tabulation of the thousands of answers revealed a preference for a 3-4 place low-wing monoplane with 140 mpm top speed and 125 mph cruise, a range of 500 miles, and a retractable landing gear. The result was the Bellanca *Cruisair*, which beat these performance requirements by a considerable margin while retaining all the desired mechanical features. Production climbed rapidly and the *Cruisair Senior* powered by a 150 hp Franklin air-cooled engine became a familiar sight at personal aircraft gatherings throughout the nation.

But Bellanca surveys continued to indicate that increased performance was the major demand of those who buy and fly airplanes, and it was to answer this request that the Bellanca *Cruisemaster* was introduced early this year. Our Plane of the Month follows the familiar *Cruisair* lines but in its nose is a big Lycoming O-435-A developing 190 hp at 2,550 rpm. The new 1950 model also features many new improvements over the earlier model, particularly in equipment. Air Force-Navy standard replica controls are used, the landing gear lever being in the shape of a wheel and the flap knob in an airfoil shape, both controls being located at the base of the front seat for safety and ease of access. For safety also there is an auxiliary manually-operated pump which guarantees hydraulic pressure should the electromatic actuator fail to operate properly. In the event that a hydraulic line is fractured, the landing gear snaps into the extended and locked position upon release from the "up" position with a gentle pull-out of the airplane.

The *Cruisemaster* has a plastic-bonded laminated spruce spar, spruce ribs and laminated spruce skin, to give all the strength and weather-resistance of all-metal construction. The cabin is roomy and comfortable for four people and carries ash trays, dome light, loud speaker combination, cigarette lighter, large cabin windows and ample ventilation for summer flying plus plenty of heat for winter flying.

A choice of propellers is offered, either the automatic controllable Aeromatic or the hydraulically-operated Hartzell propeller. Engine equipment includes a Delco-Remy starter, an AC model GP-8897 fuel pump, and a Heat Exchangers, Inc., oil cooler. Electrical equipment is made up of a Delco-Remy generator, a Bowers B-34 12-volt, 34-ampere-hour battery, and General Electric landing light in the left wing. The main gear is composed of Goodrich wheels, brakes, and 6.00-6 six-ply tires with regular tubes. The tail wheel is either a Firestone 6.0 x 2.0 swivel or a Maule 6.00 x 2.50 swivel type.

Normal fuel capacity of the 1950 *Cruisemaster* is 40 gallons in the main wing tanks but an auxiliary fuel tank with 25 gallons capacity may also be added. Oil capacity is 3 gallons.

Bellanca's 30-year fame for efficiency has been built into the *Cruisemaster*, for the new model lands at only 43 mph yet cruises at a full 180 mph, the *only* production four-place airplane on the market with this high cruising speed! When flown solo, the *Cruisemaster* has a rate-of-climb of 2,000 ft./min. and with full gross weight it climbs at 1,400 ft./min., outperforming any other four-place airplane. The Civil Aeronautics Administration has approved the airplane for a diving speed of 226 mph, higher than any other personal or executive airplane presently being manufactured!

The *Cruisemaster* has a span of 34' 2", is 23' long and 6' 2-1/2" high. It weighs 1,525 lbs. empty and 2,600 lbs. fully loaded, giving it a wing loading of 16 lbs./sq. ft. and a power loading of 13.68 lbs./hp. It has a service ceiling of 22,500' and a range of 680 miles on 40 gallons of fuel, or 17 miles per gallon—a mileage you wouldn't consider bad for your family automobile.

With all this performance, plus a complete set of flight instruments, engine instruments, VHF transmitter and receiver, M/HF receiver, 75 Mc beacon receiver, rotatable loop and complete soundproofing, the 1950 Bellanca *Cruisemaster* is priced at $9,500 fly-away New Castle, Del., which is comfortably under the tag on comparable four-place executive aircraft with less performance. Packed into the new craft is "GM" Bellanca's nearly forty year's of aircraft design and manufacturing experience, which is a priceless asset for any airplane to have, be it the *Miss Columbia* or the 1950 *Cruisemaster!*

Design Forum

(*Continued from page 25*)

structure, and he has carried on successive experiments over a period of many years. The huge B-49 army flying wing bomber is the result of these experiments. It is exceedingly fast for its power and weight and approaches the maximum of aerodynamic efficiency. On this basis, you may wonder why we do not build all airplanes according to this design. Like everything else, there always seems to be a "fly in the ointment" when we begin to approach Utopia. In this case the "fly" is stability.

The chief faults with the flying wing are two-fold. First, the distance between the center of gravity and the longitudinal control surfaces is small compared to the speed and inertia of the airplane. Attempts have been made to reduce the effect of this condition by providing a negative angle-of-attack at the wingtips, in other words, by giving the wings less angle at the tips than at the center. This stabilizes the center of pressure and tends to keep the whole airplane longitudinally stable. However, any rotational accelerations about the lateral axis, generated under nosing-up or nosing-down conditions, are very large compared to the longitudinal moment arm, M in Fig. 1; the distance from the center of gravity to the longitudinal control surfaces is a measure of the corrective forces.

On occasions these flying wings "tumble" upon the slightest provocation, that is they roll completely over about their lateral axis, either nosing-down or nosing-upward sharply to complete the roll. Correcting forces of which the longitudinal moment arm is a measure are much too small, compared to the velocity and weight-inspired longitudinal rolling-inertias. We do not know of a flying wing which has not exhibited this tendency. Obviously the cure for such a condition is to increase the moment arm, M in Fig. 1. To do this, tail surfaces must be placed well rearward of the center of gravity—so apparently we are back to our original conception of an airplane.

There is a way, however, that this may be done and yet retain the characteristics of a flying wing. The answer has been put into workable form in the many planes Mr. Vincent Burnelli has designed and built since 1916. He was the first in this country, to our knowledge, to attempt to solve this problem of fuselage and tail drag. He has accomplished this by building a box-like, thick and wide body or fuselage with the form of a wing. Its vertical longitudinal cross section, in effect, *is* a wing section. Fig. 2 shows this type of plane. In this design the body gives lift in the same manner as the wing; this differs from the conventional airplane fuselage, *which gives only drag and no lift.* With this lifting body, the wings can be made smaller, because in full flight the body lifts approximately 40% of the total airplane load. Longitudinal stability is obtained by placing tail surfaces at the ends of thin rearwardly extending booms. The booms are light and give little drag.

All of these factors pertain to tailless models as well as large airplanes. In fact it is Mr. George Wucivic's (Sixty-eighth Street, West Allis 14, Wisconsin) concern about the design of flying wing models that has prompted this analysis and discussion. On the whole, flying-wing models have been generally erratic in flight and have only been made practical by *increasing the tail moment arm* in some way. Some have produced stable flying wings by constructing them with excessive sweepback, as in Fig. 3. This has reduced the span relative to the longitudinal moment arm and has corrected longitudinal instability to a large degree, when the trailing edges are turned upward to simulate the effect of a negative tail. Many model builders have reached this point in their design of flying wings and have felt that they have licked the problem only to learn, with some consternation, that there is still another one to solve—the problem of *directional stability.* It exists in the design of full-scale flying wings, such as the Northrop, as well as models.

If you will look at a flying wing and try to visualize what happens when it begins to rotate directionally (about its vertical axis), you may sense the difficulty. How are you going to make it turn to the right or left when there is no rudder—and, what is more important, how are you going to *stop it from turning* or spinning about one wingtip, when *this directional turning action has become excessive and there is no conventional rudder to stop it?* Rudders and fins in some form have been placed at the wingtips on most flying wings in attempts to obtain effective rudder and fin action. Most of them have been set with "toe in," as indicated in Fig. 1. This creates a drag on the wingtip which is traveling fastest, (the outer wingtip when circling) and which retards or reduces this turning effect. *All of these methods of directional control, however, have been insufficient* or have been obtained at the expense of some other desirable factor.

Perhaps you have flown a model flying wing; if so, during some particular flight you may have noticed that the plane suddenly starts to "spin in" like a maple seed, the pivotal point being *one wingtip.* This action is characteristic of a flying wing, and it is due to the fact that during flight the plane has executed some maneuver in which the *angle-of-attack on one wingtip has become excessive.* This is quite common, especially where the wings have dihedral as well as sweepback. With this *increase in angle-of-attack* on one tip, the drag has suddenly become much greater at this wingtip. Lift does not increase proportionally since, because of turning, this inner wingtip is moving slower than the outer tip. In other words, your plane has started into a tight circle, or spin, and is either held in this spin or the spin is in-

creased because of the increased drag on the inner wingtip. The outer wingtip is moving at a smaller angle-of-attack because of the combination of dihedral and side-slipping motion of the plane. The arrows in Fig. 1 indicate the rotation. Once this action has started, *there is no resulting action to retard it.*

Now for example, place a fin at the end of an imaginary fuselage as indicated by the dotted lines in Fig. 1; visualize the plane following the action just described, pivoting about wingtip A. Now we see that the fin must pass through the air at an angle, presenting one side to the air flowing against it and which flow results from this motion. This has a dampening effect and, in normal airplanes with fins at the end of the fuselage, tends to reduce and stop spinning action about one wingtip.

Another good tailless design, of course, is the Delta wing, shown in Fig. 3, where wings are swept-back at a large angle, with span not greater than one and one-half times the distance from the forward point on the leading edge to the most rearward trailing edge point. Perhaps some young genius will find some other way to solve this problem, but the problems of instability are so tremendous where no tail is used, and where span is large compared to the flying wing moment arm M, some auxiliary device providing large stabilizing effect must be used.

Mr. James T. Horlon, of Cornwall St., Dundalk, Maryland, writes us presenting a problem which touches on the cause of flying wing instability. Although it concerns a conventional airplane, this problem first presented itself to Mr. Horlon in rubber-powered models with folding propellers. He noticed that models with long rubber motors and long fuselages have pitching tendencies that are difficult to eliminate. As he states, "Once pitching or nosing-up or nosing-down begins in such models it continues for a long period before it is dampened-out completely." After some study Mr. Horlon reached the conclusion that it was due to the distributed weight of the rubber motor which caused large inertias and acceleration about the center of gravity in longitudinal and directional rotation.

This unquestionably is the case. For many years it has been known that long rubber motors create this condition. It is clearly illustrated in the design of long nosed stick models in the May issue, Page 13, Fig. 3. You will notice that as the length of the nose increases and greater inertia results from the extended weights of the frame and motor, the stabilizer area must be increased. This is one way of curing this pitching tendency; that is, increase the stabilizer area. Usually these long-nosed models require stabilizer area of 50% of the wing area, and in many cases even more than this for complete stability. Gas models notably require less stabilizer area than rubber models, for the simple erason that the weights are concentrated and not distributed, as Mr. Horlon describes. The full-scale airplane is another example where concentrated weights result in smaller stabilizer area.

Of course, another way to cure the problem is to reduce the inertia of the long rubber motors; this may be done only by shortening the motor. Mr. Horlon suggests this means of correcting the difficulty as shown in Fig. 4, a design which he proposes. Here the rubber motor extends to a point slightly rearward of the wing and not the full length of the fuselage. This reduces longitudinal inertias so that, with any given tail area, corrective forces are increased relative to the disturbing inertia forces of the motor. The only trouble in such a case is that the motor is shortened and the number of possible turns that may be put into it has been reduced, with a resulting reduction in propeller duration.

We welcome all ideas and questions; send yours to "*Design Forum*," MODEL AIRPLANE NEWS, 551 Fifth Avenue, New York 17, New York.

Report From the West

(*Continued from page 8*)

Brigadier through its paces for the spectators. Those spins, dives, and rolls were terrific. What holds those wings on, Bill? Dick Schumacher was giving Bill a hand with the checking of equipment. Dick flies DC4's for Western Air Lines as well as the radio control ships. The wind came up before Bill could put his 30-oz. *Rudervator*-controled original through its paces, so we missed a good second feature. This ship was powered with an *Arden* .099 and carried tricycle gear. Bill has made several hundred flights with this ship.

Butler gave us the dope on the AAA Radio Control Meet held at the Santa Ana Emergency Airstrip on April 16. Capt. Hank Bourgeous C-Ded this contest. Dr. Joe Poco walked off with first place. Joe's ship was a revamped Piper *Cub*, powered with a *Spitfire* engine. He carried a 3-channel *Rockwood* set and had rudder control along with 2-speed engine control. Second place went to Harold Bonner, of Los Angeles, with his modified *Rudder Bug*. Harold's ship was powered with an *Ohlsson 29* engine and carried an RK 61 receiver. Colby Evetts came in third with his original two-receiver job. He had rudder, elevator, and engine control and also carried the popular RK 61 receivers. Wouldn't be surprised but what radio control flying is here to *stay!*

The Wakefield Eliminations that were held at Fontana Airport brought out quite a few of the rubber boys. The weather was cold, damp, and generally poor. It seems that your reporter can't run one of these new-fangled cameras. Sorry to say that 21 pictures were taken and every one was out of focus. "Drat!" Guess we'll have to get the old Brownie out of mothballs again. There were a few thermals floating around, and each of the six winners caught one. The downdrafts were causing quite a bit of discussion around the field. We saw one fine power flight by Dick Everett's ship. After the motor run, the prop folded and the ship was in sight 9-1/2 mins. His next flight was excellent as far as the climb went, but when that prop folded and the glide started, one of those *!!"! downdrafts climbed aboard and really sunk the job. Dick was not alone, as several of the other boys had the same luck on all of their flights. Hal Roth, corresponding secretary of the *Thermal Thumbers*, had the contest director duties. Final results: 1. Bill Poesch, 11:18.8; 2. L. Salisbury, 11:11.9; 3. E. Slobod, 9:27.9. The six winners will go to the San Francisco area to compete in the finals. Out of all of the contestants who compete up there, two will be chosen to go to Finland.

Harvey "Pop" Robbers tells us that the flying conditions for the Wakefield Semi-Final Trials held at Warm Spring Airport were perfect. There was very little wind and very slight thermals resulted. There were only four five-minute flights turned in, and each by a different contestant. This contest started at 9:00 a.m. and everyone was ready for his second flight at 10:38 a.m. The third round started at 11:33 a.m. and the contest was completed at 12:35 p.m. Twenty fliers competed. There is a possibility that the finals may be held at Mather Field, Sacramento. Final results: 1. Joseph Foster, 646.5 secs.; 2. Edward Foster, 537.3 secs.; 3. Manuel Andrade, 523.9 secs. Jim Walker, "Mr. U-control" himself, and West Coast manufacturer of an excellent line of merchandise, has come through with another of his beautiful trophies for the Mirror Model Flying Fair. It seems that Jim is going to donate a large perpetual trophy for the stunt event. In keeping with this, three smaller trophies will be made up, each representing a leg of some sort. The competitor winning three legs would get permanent possession of the big trophy. Sounds like another of Jim's swell ideas. We are sure that the modelers will appreciate this.

The old weather man has frowned on the San Diego *Aeroneers* for three years running. He finally cracked a slight grin and gave the San Diego club a few morning hours to get their Tenth Annual Western States Championship meet rolling. The contest started by 8:00 a.m., and by 8:30 there were no less than 20 free flight models in the same thermal. From all appearances, one would have thought there was something dead out in the hills—the ships were circling around like a bunch of buzzards. Ten-minute flights were really common. The wind came up about 11:00 a.m. and O.O.S. flights started. It was amazing that there were so few crack-ups, considering the gusts that popped up now and then.

Tom Nishimoto, *Bakersfield Gas Model Club Association* member, had a field day. Tom's ships seemed to hang in those thermals everytime they got off; he managed to grab first in Class B and second in Class C and compile enough points to take the Sweepstakes hardware, along with his other trophies and merchandise.

Young Jack Bollinger, Junior contestant, clipped all of his competitors for enough points to take home the Junior Sweepstakes Trophy. Jack had a mighty fine *Powerhouse* job with an *Arden 19* doing "power duty."

One of the contestants, Ray Mathews, dropped in from Oklahoma City. Ray is a vice president in the AMA and belongs to the Oklahoma City Model *Aviation Club*. He was flying a *Fubar*, a product of Wally Simmers. Ray went over the top on his first attempt with a ten-minute dethermalized flight.

Mrs. Don Hoyle had her hands full at the entry table and deserves a "plug" for her excellent work that helped make the contest the success that it was. Genial Bill Sweet, of South Gate, had the "mike" duties and did his usual grand job. Bill's help is always appreciated. Bill Butler, of Inglewood, and E. J. Brown, of San Diego, gave the crowd of spectators plenty of excitement with their fine radio control jobs. The flights they made were exceptional, even in the stiff wind that was blowing.

The Junior times in all classes were combined for Sweepstakes and awards.

Final results: *Class ½A*—1. Ron St. Jean 15:05; 2. Bill Creany 13:34; 3. Dick Everett 10:12: *Class A*—1. Dick Everett 18:14; 2. Russ Snyder 15:40; 3. Jack Oxley 14:35; *Class B*—1. Tom Nishimoto 23:30; 2. Russ Snyder 19:49; 3. F. Swaney 19:48; *Class C*—1. Tommy Moffitt 26:39; 2. Tom Nishimoto 24:30; 3. Denny Davis 23:01; *Junior Class*—1. Les Bartlett 14:10; 2. J. Bollinger 12:24; 3. Bob Turner 11:17.

Remember everyone, this is your column, so let's hear from you. We would like to hear from *all* of the Western modelers about what's going on in their neck of the woods. Address all communications to: Jim Saftig, 4063 Highland Avenue, San Diego 5, California.

Engine Review

(*Continued from page 38*)

Getting dirt into your engine may cause a series of chain reactions that are not always easy to diagnose. Dirt causes extreme wear on the backplate and rotor valve, the starting point of most engine troubles; crankcase compression disappears, the engine is hard to start and will not lean out or run smoothly. Worn aluminum particles travel into the bearings, fouling up the balls and races. Then to leave the engine, the particles must go up through the cylinder, where they act as a grinding compound. Loss of head compression soon follows. An easy way to check for such wear is to watch the exhaust while the engine runs. If it is black and quite dirty, you have a very hard wear point in some part of the engine.

The fuel you use should have an adequate amount of oil in it to insure sufficient lubrication. The author has always used a three-to-one mixture. That is, three parts methanol to one part castor oil. All types of fuel should contain at least 25% degummed castor oil. You might say it is the life blood of the engine and cannot be done away with. *Testor's 39* contains this balance of oil to methanol and can be used with safety in new and old engines alike.

In aircraft applications, the spinner, spinner backplate, and propeller must be balanced for peak efficiency and vibration free

(*Turn to page 62*)

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MODEL AIRPLANE NEWS

running. With the extension on the *McCoy*, these parts are located far enough in front of the maximum width section of the engine to allow good streamlining and better flight characteristics. It, therefore, becomes important that this unit be in perfect balance. Any vibration at this point will materially cut down your rpm and speed, to say nothing of the added strain on your model. Costly repairs can result from such improper balance.

The spinner backplate, to begin with, should be turned on a lathe to insure perfect concentricity. The heavier it is, the more pounding it will take and the tighter you can assemble the propeller and spinner. A 1/8" thickness should be used on the larger engines. This can be reduced for the smaller ones. Most of the metal spinners on the market are made by the spun aluminum method and may be relied upon for the necessary trueness.

An easy way to check the alignment of these parts is to mount the engine in a vise or on your test stand, with the spinner and backplate attached but without the propeller. Remove the spark plug. Place a ruler along the motor bearers so that the forward edge just touches the rearmost side of the backplate. Rotate the spinner slowly, checking the clearance. It should run absolutely true. If it does not, the extension spool, or the backplate, may be damaged or bent. Now move the pointer to the outside rim of the backplate and repeat the operation. This will tell you whether or not the hole is located exactly in the center. If both these tests indicate trueness, you can be certain this unit will give smooth operation.

The cooling of two-cycle engines is very important. In airplanes and cars, the forced air cowl has proven to give more efficiency, greater speed, and easier engine wear. Hot spots and sleeve distortion may occur with an engine that is not cowled.

An interesting development in the past few years has been the attempt to give the carburetor as much cool air, as it can possibly use, but not through mechanical forcing. Special air scoops, on the side of the airplane, or car, that pack the inside of the fuselage with cool air will do the trick. Conventional designs often allow hot air or exhaust gases to be used by the engine—a very poor practice. This problem is greatly reduced by the front rotary valve as cool air can be handled through the regular cowl intake.

New developments for longer life and greater efficiency. There has always been a great desire of the modeler and of the manufacturer to make his engine as reliable as possible by overcoming the natural two-cycle handicaps. The problems we have mentioned are those of a general nature or cover misuse of the engine. Now we should consider the practical improvements that have been made on the typical racing engines, the new *McCoy Red Heads*.

First of all, you will find a new front end. A stronger, more durable casting, containing two ball bearings (No. 19), will give your engine more power and smoother runs. This frontplate is designed especially for *Hot Point* operation with its greater stresses and strains on the crankcase and front assembly. The addition of two ball bearings will give all the *McCoy Red Heads* the increased performance and operation you have been looking for.

As everyone knows, the disk rotor is very important to engine performance. In the past, dirt and improper settings have often caused this unit to give the modelers quite a bit of trouble. On all the new *Red Heads* there is an improved rotor that will eliminate this problem almost entirely. The disk itself, is chrome impregnated by an electrolytic process (No. 18).

Another very promising development is the hardened sleeve (No. 13). It has been toughened up to withstand the normal wear and misuse it may get from the new hot fuels. The sleeve has a built-in resistance to the foreign matter that may enter and ruin your engine. It will probably take a little longer for the rings to seat themselves in the sleeve before your engine becomes completely broken in, but when they do, the engine will last a much longer time and give you better performance.

The piston and rings have also been modified to take full advantage of the hardened sleeve. By a centerless grinding process, the piston is made perfectly concentric (No. 8)—this will cut down any undue friction between the piston and the sleeve and insure better crankcase compression. The rings, through the cooperation of *The Perfect Circle Company*, have been improved to fit the new sleeve more accurately, with less ring gap, so that you will have greater compression and more power for each stroke (No. 9).

If you are interested in fuel economy and longer runs on the same amount of fuel, this new combination will give it to you. Through a better compression seal in both the head and crankcase, less fuel will be wasted or inefficiently thrown out the exhaust port. If you are going to use your engine for racing, this new, more powerful engine will turn faster and give you much higher speeds. The improved combination will also withstand the continual fast running and long hard use you want to obtain from an engine. Even with hot fuels and high rpm, you will get consistent performance and a chance to effectively experiment for those record-breaking flights.

Twin Boom Jetex

(*Continued from page* 31)

our jet job flies fast, it is necessary to make certain, when cementing and lining up all surfaces, that they are true and strong. If any surface is out of line, such as booms with wing and tail, one wingtip higher than the other, or too much turn in rudders, a crash may result.

MOUNTING JET ENGINE. Cement the asbestos pad under wing between booms. Note side view of plan; mounted engine must have about 3° upthrust for proper climb and glide at end of power run. Either shim to lower the back of the engine with washers when mounting, or use a small taper piece 1/16" x 1/2" x 1/8" for the same effect. Jet engine is lined up straight with booms, that is, there is no side thrust only upthrust.

FLIGHT ADJUSTMENTS. About 3/8" from trailing edge, cut rudders lightly with razor blade, bend and re-cement; turn both not more than 1/16" in the same direction. Very little turn should be used in flight tests.

Glide model without the solid jet charge. Balance with modeling clay at both noses equally until a smooth flat glide is attained. Then load charge into engine, snap onto engine mount and you are ready to fly. Upthrust will take care of the additional nose weight of fuel charge in a power climb, and the model will assume its normal glide when the charge burns out. Launch model as illustrated.

Should a friend who smokes be around, have him hold a lighted cigarette to the tip of the wick. If a match is used instead, make sure that the flame is held close to wick under asbestos protective covering and not near the doped wing.

As the jet starts to hiss, count to three slowly, then launch with both hands evenly, with a slight push upwards. For the next 18 to 20 secs. your *Twin Boom Jetex* model will climb steeply and steadily in a wide circle until it is very high up. Motor power run and the normal glide will give a flight of 2 mins., plus any thermals that may happen along.

It is this writer's belief that the coming 1950 Nationals should have in its program a free flight *Jetex* powered event. Anyhow, your interest in building this ship, plus some of your own design models will certainly aid progress toward such a goal.

Flash

(*Continued from page* 7)

its present 141,500 lbs.) and the cruise speed to 360 mph.

THE TYPE OF military secrecy and publicity that drives reporters and faithful readers wild occurred recently when General Hoyt S. Vandenburg, Air Force Chief of Staff, stated that the Air Force would announce soon a new development in jet

fighters that greatly increased their range. Engineers scratched their heads for two weeks; then stared aghast when the Air Force released pictures of the Republic F-84 Thunderjet fighter with two extra fuel tanks under its belly! In addition to the standard wingtip tanks, the two additional tanks are mounted on vertical pylons suspended from the wing at the root. Each of the four tanks contains 230 gallons, or a total of 920 in all. The new tankage gives the F-84 a range of more than 2,500 miles, probably the greatest of any single-engine jet fighter in the world.

WE'LL BET YOU never heard of a 308 mph Douglas DC-3 but Chicago and Southern Air Lines has one! Of course, the airplane was aided by a 125 mph tailwind when when it hit that speed, but all's fair in love and air line flying. The phenomenal speed was recorded on a 119-mile trip between Springfield, Mo., and Mammoth Springs, Ark., and the final average for the trip was 247 miles per hour!

IT IS SAD to mourn the passing of the historic Bendix and Thompson Trophy Races as piston-engine events, but in this day of the jet fighter as the king of speed it would appear only logical. The National Air Races management has announced that war-surplus fighters will not be permitted in either of these events this year, the trophies being reserved for jets only, and that means the Air Force and the Navy. The Bendix Trophy Race began in 1931, when Jimmy Doolittle flew his Laird *Mystery Ship* from Los Angeles to Cleveland in 11 hrs., 16 mins., an average speed of 223 mph! But it was the grueling Thompson Trophy Race around the pylon-course that historically typified the National Air Races. This classic began in 1929 when Doug Davis won the first event at 194 mph. This was the event that crowned Roscoe Turner as speed king by his triple-victory. But the pylons will disappear for the jets, which will fly only 100 km. straight-a-way passes in attempts at new world records. And your reporter invites you to stand by for the North American *Sabre* to ring up a new record of better than 700 mph in the 1950 National Air Races!

AIR FORCE has proved that the track landing gear is applicable to planes of any size by successfully flying the B-36 bomber with complete tricycle track gear installation. The B-36 installation weighs 21,600 lbs. but reduces by two-thirds the runway pressure of the big plane. USAF has tested the track gear on a Curtiss P-40, Douglas A-20, Fairchild C-82, and the Boeing B-50 in succession. Recent test flight of a B-36 with track gear installed proves there is absolutely no size limit to the device.

INSIDE PENTAGON circles are buzzing over the report of official "referees" of Operation Portrex, the huge joint maneuvers held recently on Vieques Island. It seems that according to the official scores, Grumman F9F-2 fighters of Marine squadron VMF-115 "shot down" a total of 90 Republic F-84 fighters, with a loss to themselves of only 9 *Panthers*!

AIR FORCE realized several years ago that overseas bomber bases must be supplied by strategic cargo planes having about the same performance as the bombers in use and, as a result, the C-97 *Stratofreighter* is a cargo counterpart of the B-50 bomber and the giant Convair C-99 was developed as a counterpart of the B-36. Air Force abandonment of the C-99 has resulted in extensive study of the B-36 as its own cargo plane. Most recent development in this program is successful flight test of two huge pods suspended from the B-36 fuselage and capable of carrying two complete Pratt & Whitney R-4360 power plant assemblies in each, or four such power plants in all. The streamlined containers are 8' in diameter and 32' long and weigh about 25,000 lbs. fully loaded.

HAVE YOU EVER wished you could have one of those hot jet fighters for your own? Sure you have—admit it! But you probably haven't given much thought to how much it would cost to operate so here's some help: official Air Force figures show that the North American F-86 *Sabre* costs just $145.11 *an hour* to operate, the Lockheed F-80 costs $120.18 an hour and the Republic F-84 *Thunderjet* costs "only" $117 an hour to fly. That's pretty cheap flying at that because the Convair B-36 would set you back a mere $1,024.17 an hour just to keep in gas and oil! (Think of those 36-hour missions they have been flying in the B-36!) Or maybe you'd like to kite around in an "economical" piston-engine crate like the North American P-51 *Mustang* at only $62.92 an hour, or a Sikorsky H-5 helicopter at $40.54 an hour!

SEEMS LIKE a new use for the airplane crops up every day but here's the latest: the BOZEMAN DAILY CHRONICLE, Bozeman, Montana, is experimenting with aerial delivery of its papers. Recently a Sunday edition, wrapped in a small "sock" with a 6' red linen streamer attached, was dropped at houses along a 115-mile route by pilot Jim Stradley. The drops were made from a height of about 50', and Stradley reported a high percentage of "hits" right in the front yards of residents. One paper dropped on the roof of a house but Stradley circled again and dropped a second paper just 6' from the kitchen door.

WORLD'S FIRST turbo-prop-powered flying boat, the Convair XP5Y-1, has made its first test flight successfully. The 30-minute flight was made by Convair test pilot Sam Shannon from San Diego Bay. The huge but sleek flying boat is powered by four Allison T-40 turbo-prop engines developing 5,500 hp each and is expected to have a top speed of 400 mph. The craft has the new NACA "high length/beam ratio" hull, which reduces drag in the air and also improves water-handling characteristics. One of the pair of turbines in a T-40 engine can be operated while on the water to operate all the necessary equipment needed for comfort of the crew as well as provide energy for starting the seven other turbines.

STATISTICS ARE usually little comfort to those who fear for their safety in flight but Continental Air Lines has worked out some figures that are genuinely reassuring. According to CAL, air travel is 20 times safer than traveling in your own car. Their figures indicate that you can fly one million miles a year for 100 years before risking a fatal accident, or, if you were born aboard an air liner and flew constantly for the rest of your life you would have a life expectancy of 57 years. For these reasons air line trip insurance now costs no more than insurance on rail, bus or cab transportation! But we're still reminded of the pessimist who told the fatalist: "But what if the number comes up for the guy sitting next to you!?"

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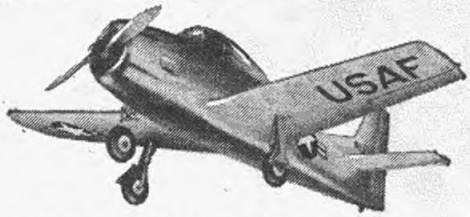

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18" Wingspan — For .074 to .099 Engines

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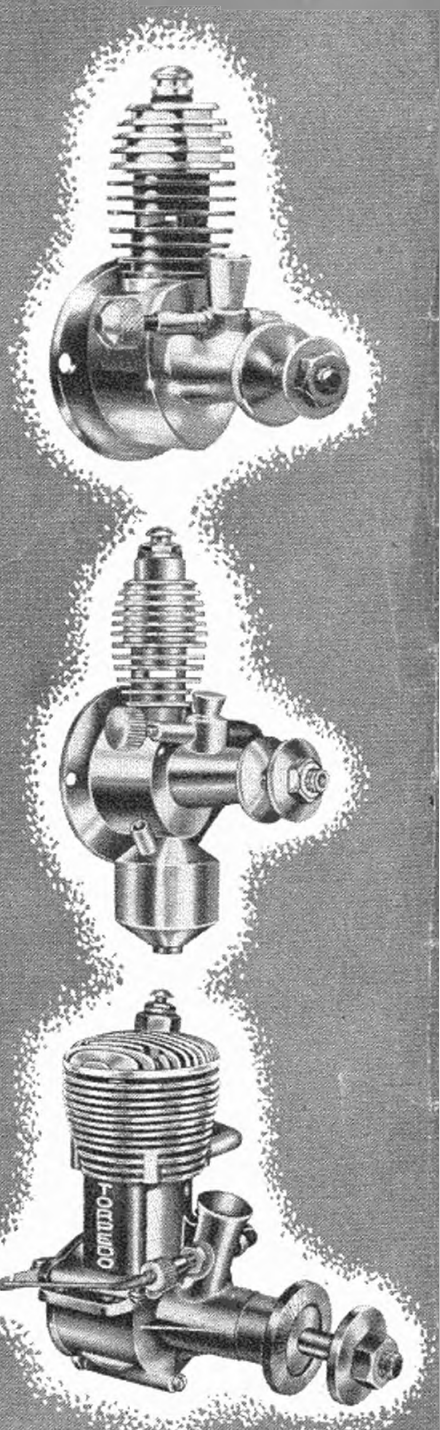

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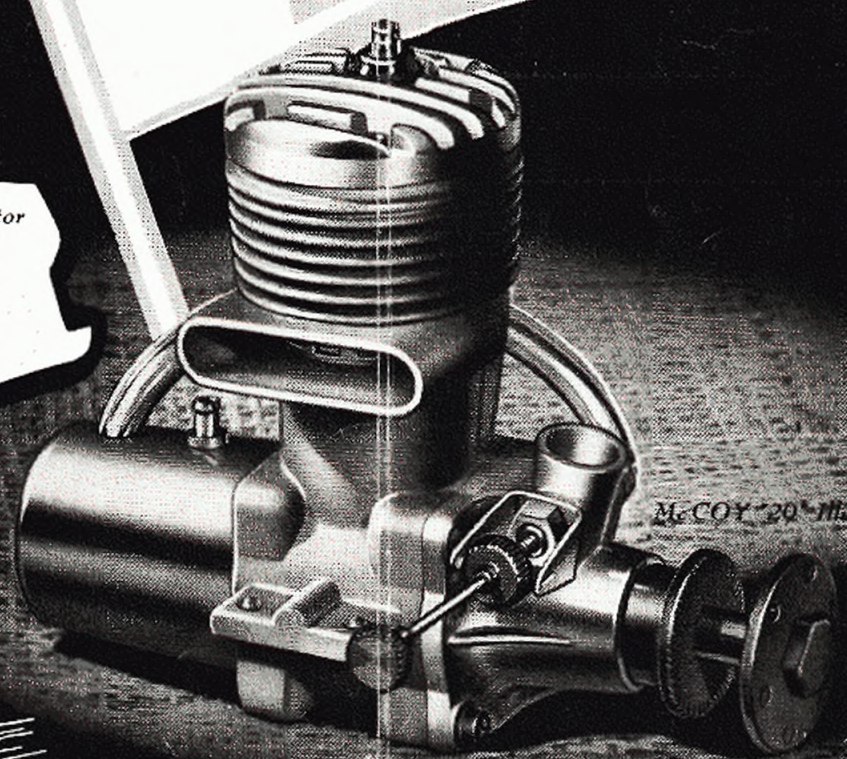

McCOY "29" Illustrated

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