

The MODEL BUILDER



SEPTEMBER 1972

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volume 2, number 11

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Arnold B. Johnson
Troutville, Virginia

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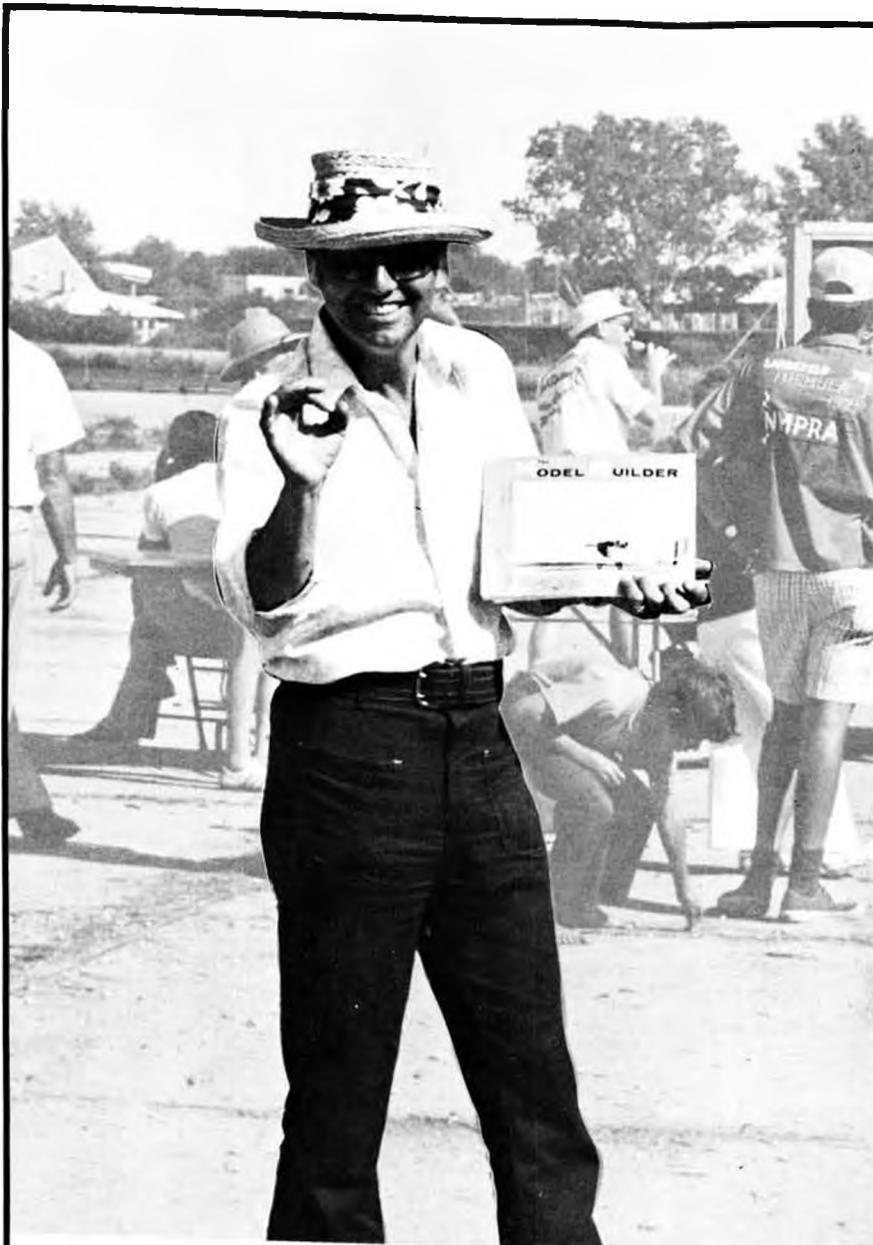
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Cover: Granger Williams, San Marcos, California, and his 1.6 inch scale model of the Deperdussin monoplane which won the 1913 Schneider Trophy. Granger researched the material and drew the 3-views presented in the June issue of The MODEL BUILDER. Wing area is 750 sq. in., weight is 6-1/2 lbs. with Bonner 4RS and Enya 60 engine. Photo by George Uveges.



By popular demand, a repeat of last year's . . . or . . . backside view of the Nats C Pattern winners. This year, the South has truly rizzed. If you don't know who they are, tune in next month.

from Bill Northrop's workbench . . .

● We must apologize for the lateness of this issue of *The Model Builder*. It's no way to run a railroad, we suppose . . . being chief cook and bottle washer of this here publication . . . to simply walk out the door, leave everything in a state of suspense, return eleven days later, and expect to pick up where we left off. Better than a third of a month, shot to hell.

On the other hand, we've been going to the AMA Nationals for 12 years now (except 1964), which isn't long to some modelers . . . Carl Goldberg has *never* missed one since the beginning . . . but

long enough that it has become a necessity of life, and when the time comes for that annual pilgrimage, we seem powerless to resist. Even the Managing Gen . . . whoops . . . General Manager, who swore she had too many Real Estate deals in the making to go anywhere, was all of a sudden stuffing a suitcase the night before departure time.

As working officials and/or press, we were offered free air transportation by the Navy, and since this *might* be the last time we could enjoy this privilege, we found ourselves at President Nixon's Western Airport, El Toro MCAS on Sat-

urday morning July 22, along with other personnel.

The flights to Chicago and back were pretty much without incident, albeit not necessarily as scheduled in relation to time or sequence of destinations. And of course, nearly everyone aboard was a modeler, so time, in spite of the relatively slow cruising speed of a DC-6 (about 180 to 190 mph), passed quickly . . . At least going out.

Coming back was a little different. First of all, departure time was changed from 10 a.m. to 5:30 p.m. We found out about it at 9 a.m. This was O.K.



A large portion of the (San Fernando) Valley Flyers, assembled at Sepulveda Basin for a "family" portrait. President Ron Schorr in striped flairs.

with Anita since she had wanted to get to Marshall Field to shop all week, but time hadn't permitted. We teamed up with R/C judges Mike Cooke and Chuck Bailey, rented a Vega, and stormed into Chicago and the Loop.

Finally aboard the plane and about ready to leave Glenview, John Worth came up the ramp and wished us all a good trip, pointing out that this was probably the last Navy-furnished flight for NATS officials . . . We don't know about the rest of the passengers, but after many years of R/C flying and having some wild experiences after announcing the last flight of the day, this writer long ago adopted the policy of taking the "next to last flight" . . . it just always seemed to work out better.

In this case, however, we arrived safely at El Toro just 13 hours later . . . by the previously mentioned deviations to time and sequence of destination . . . and returned to the unmade publishing bed of The Model Builder.

. . . Oh well, maybe next month we'll get organized.

THINGS TO DO

The Las Vegas Radio Controllers will hold their annual AMA sanctioned R/C contest on October 14 and 15, 1972. Events will be Class A, B, C, (N and E), and Stand-Off Scale. Location is the Mint Gun Club, outside of Las Vegas. Contact Bob Mearns, CD, 8301 Elton Ave., Las Vegas, Nev. 89107. Phone 702-878-5831.

* * *

The Road Runners Club of Orange County, California, is a group of R/C eighth scale car racing enthusiasts. They



Bob McVicker (lt) and Frank Garcher (rt), Midwest Products, with 4th place C/E Pattern winner at the 1972 Nats, Norm Page and his Mach I. Ship is soon to be kitted by Midwest.



AAmco (Andrews Aircraft Model Co.) has put a shot of adrenaline in its ever-popular Aeromaster biplane kit by making a conversion set that turns it into this semi-scale Bucker Jungmeister.



Tom Cone, a member of the Valley Flyers, with his Gee Bee R2. It's a scratch-built model, naturally. Any bets on whether or not it'll fly?

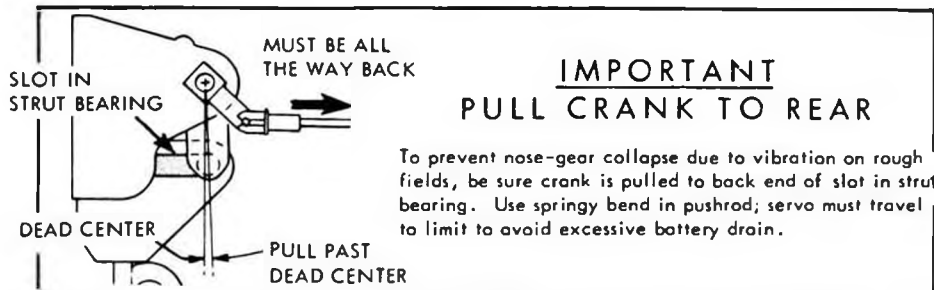


The Rockland County (New York) R/C Club will have its 2nd annual Flying Circus and Auction on Nov. 5. See text for further details.



Astro Flight, Inc. is now marketing this electric power plant for model aircraft. Astro 10 with flight pack sells for \$59.95.

K & B's new Veco .61R/C "Series 72" has many internal improvements and to encourage use of the Flow-Thru muffler, will be sold only as a complete package, with muffler, for \$74.95.



Problems from nose gear collapse on the Goldberg retracts can usually be traced to improper rigging of the servo-to-retract lever linkage. Check the text for further clarification of this point.

have a standing schedule of monthly races; club members only on second Sundays, and open races on third Sundays. Events are divided into expert, novice, and amateur.

The race course is located at the Cars of Stars Museum, Knott Ave. and Artesia Freeway. For further information, contact Dean Brown, 2143 Tynes Dr., Placentia, Ca. 92670.

* * *

The Rockland County (New York) Radio Control Club will hold its Second Annual "Flying Circus and Auction," at Ripples of Rockland, November 5, 1972. Though manufacturer's products will be displayed, the objective of the show is to "provide both entertainment and educational programs and displays in order to better acquaint active modelers and the general public (particularly the younger modelers) with R/C aero modeling."

Contact Ed Russell, 22 Parker Ave., New York City 10965. Phone 914-634-5406.

-
- FLASH!
-
- Results of the Scale World Championships, Toulouse, France.
-
- R/C: Hester 3rd, Roth 5th, Wischer 7th. USA Team 1st.
-
- U/C: Stott 4th, Meador 7th, Burnstine 14th. USA Team 4th.
-
- More information next month.
-

Ninth Annual Graupner International Pattern Competition, Gorizia, Italy.

Report by Fritz Fleischhacker.

On June 3 and 4, the International Graupner Meeting in class F3A took place for the 9th time already in Gorizia, Italy. Fortunately, every year more and more competitors take part in this traditional competition in the early summer. But this year it nearly could not take place as the rain was pouring down at lunch time and also the whole day before.

A total of 43 competitors from 6 countries were announced for this competition and it was necessary to fix the start for 7 a.m. (Italian summertime).

But according to mentality of Italian people, at 8 a.m. no model was in the air yet. Therefore, the competition was not finished before 8 p.m., in order to be able to fly all 3 rounds divided into 1½ each day.

This meeting was organized very well by Dori Facco and Paolo Zoppolato. Germany, Switzerland and Italy formed an international jury and also the five judges came from 5 different countries.

The surprise was that the world champion, Bruno Giezendanner was personally present at this meeting. Further started the Vice Champion, Wolfgang Matt (Liechtenstein) and Hanno Prettnner (Austria), who was 4th in the W.C. 71 at Doylestown. Other pilots also starting at the World Championships were present, such as: Graziano Pagni (Italy), Emil Giezendanner, Kurt Weixelbaumer (Austria) and Alfons Wester, who was only spectating. As nearly all the best champions from the world started, you can talk about a Mini-World-Championship 72. None of the three world champions were favored, as the various styles are too different, but when this meeting is finished you will know which style will be successful during the next years; the fast big style (Prettnner, Matt) or the slow small style (flown by Giezendanner).

The first one of the three best champions, Hanno Prettnner, started in the morning, and still had to fight against heavy wind. But Prettnner, well known as a perfect windflyer, also when the wind makes it difficult, managed the situation just perfectly and obtained 4565 points. In the afternoon, Wolfgang Matt could outnumber Hanno by 15 points, but the wind had ceased after the



Internationally known Hanno Prettner of Austria topped Wolfgang Matt and Bruno Giezendanner at 9th Graupner Internationals.



Ed Shipe of Vortex Model Engineering, and the company's latest product, the 50 inch Soling M, which already has a string of victories.

stop which was necessary because of the heavy rain at lunch time. Giezendanner started still before lunch time and did not make his Marabu spin three turns. The same misfortune had his brother Emil. Bruno reached 4445 points in this round. The further place was covered by Weixelbaumer in front of Graziano Pagni.

During the second round, soft wind was blowing and it was flown 90 degrees across the wind. Hanno Prettner could book this round on his account with an absolute exact flight. Prettner obtained 4675 points and was leading with 25 points in front of Matt who got 4640 points for his good flight. With 4545 points the classification of this run was set for Giezendanner. His flight was quite good, but probably because of the wind, the cross-points were not exact enough. The further succession was: Weixelbaumer (8205) in front of Wolfgang Schwarze (7945) from Germany.

Now the 3rd round followed, which would bring the decision. Hanno Prettner, the leader, was the first starter of the best champions. Nobody noticed the tension of his nerves. You could notice already during the World Championship, that he was the champion with the best nerves. For his concentrated and spotless flight he could obtain 4675 points again. Matt could not reach Prettner by five points only and received 4760 points. Now the places of the first three cham-

pions were fixed. The winner with 9350 points was Hanno Prettner, followed by Matt and world champion Giezendanner. Further, Wolfgang Schwarze (8685) in front of Weixelbaumer (8310) and Rudi Eiff (7965). Graziano Pagni (7945) and Emil Giezendanner (7830) were on place 7 and 8. The first three were placed within a range of 55 points which means 0.6 per cent!!

The winner Hanno Prettner flew his "Super-Sicroly," already well known from the World Championship, but now equipped with a Simprop Alpha 2007. The "Super Star 2" was the model flown by Wolfgang Matt, also equipped with a Simprop. The "Marabu" of Giezendanner had a Digifly control.

Astonishing was that Giezendanner has changed his style from the extreme slow one to the fast one, which was called "European style" by the Americans and Japanese during the World Championship in America. Both champions. Prettner and Matt fly this style excellently.

This meeting took place at the airport "Luciano Marni" in Gorizia. As the World Championship 73 will be held in Italy, it is practically certain that it will be held on the very place and this meeting was something like an unofficial general trial.

With kind RC-regards from Europe
Fritz Fleischhacker

OVER THE COUNTER

First introduced at the District of Columbia Radio Control (DCRC) Symposium in 1965, Lou Andrews' Aamco Aeromaster has no doubt long since become one of the most popular R/C kits of all time (I keep telling you kit guys, there ain't nuthin like a real sharp, semi-scale biplane. Lou has had it all to himself in this category!)

Aamco, 9 Centre St., Danvers, Mass. 01923, is now giving the Aeromaster another booster shot by offering a conversion kit which will convert it into a standoff scale model of the Beverly Howard's Bucker Jungmeister. The kit will include plans, parts for a different landing gear, material for new tail group changes, a molded windbreaker, and a molded cowl that can also be added to existing Aeromasters. Price to be announced.

* * *

Midwest Products has announced a new semi-scale R/C model of the famous Art Scholl Super Chipmunk. An ARF kit of injection molded foam, the 46 inch wingspan ship is intended for .10 to .19 engines and single or multi-channel radio systems. Price to be \$24.95.

* * *

Soarcraft is the name Hugh Stock, 12446 Palmtag Dr., Saratoga, Calif.

Continued on page 62



Why call a glider "Coleen?" Well, if you have a special friend by that name, and she's willing to share her time with a model airplane, why not?

COLEEN-12

By Randy Warner. The Coleen-12 is a designing lesson in how to get slim, smooth, graceful lines using standard building materials and construction methods. Two wings shown, for slope and light thermals.

PHOTOS BY KELLY PIKE & JIM HALDY

● First let me clear up one thing. Coleen is definitely not twelve years old. Nobody is that blind. This is merely the twelfth sailplane I have built since I've known her. Let's see, that makes for an average of one prang every month and a half. I think I'd better finish this article while there's still an airplane to write about.

The C-12 was originally built with the flat standard wing and it performs quite well as both a thermal and slope soarer. My longest thermal flight with that wing was fifty minutes, from the SLO Flyers field in San Luis Obispo. This occurred when a shear line developed directly over the field and I disappeared several times into a cloud cover reported by the

Army to be at 3500 feet. I would like to take this opportunity to thank the three or four fliers with binoculars who enabled me to fly the C-12 back for a smooth landing.

The higher performance polyhedral wing was constructed in preparation for the Western Soaring Championships that were held in what has to be the meadow muffin capital of the free world; Hemet, California. Hemet is the only place where I've had to scrape the runway off the fuselage after each landing. The wing did its job and got me my first real live trophy, for fifth place. I think Mark Smith got a complementary spatula for finishing first.

So much for the literary hilarity, let's build.

The C-12 uses mostly standard construction techniques so I'm just going to touch on some of the difficult points. I think the plans are pretty much self explanatory.

FUSELAGE

The only thing you have to watch on the fuselage is the radio installation cabin



At one of the most popular and scenic model and full size slope soaring sites in this country, the bluffs overlooking the Pacific Ocean at Torrey Pines, just north of San Diego, California.



With storm clouds approaching, Randy checks the thermal soaring wings with polyhedral.

construction. V-tails can and do present a few minor problems.

First, the canopy portion of the sides is outlined with a felt tipped pen before construction is started so you will have a point of reference when it comes time to cut the canopy away from the rest of the fuselage. Add the 3/8 triangular longerons. When these are dry, add the 1/8 x 3/8 balsa fuselage braces. Epoxy F-2, F-3, and F-4 to one of the sides and taper the longerons near the tail. Add the other fuselage side and pull the nose and tail together. Tack glue the two halves of F-1 together and glue in place. Add the bottom sheeting, skid, skid guard, and tow hook. Glue on the top sheeting and the nose block and let the whole mess dry completely.

Next, armed with a razor plane and a good supply of sandpaper, sand the fuselage until your arm falls off. Remember, you've got big longerons in the corners so you can make the fuselage appear to be quite round. After sanding, cut the canopy away and glue in the spruce cabin braces, using clothes pins to hold them to the fuselage sides. Make sure these are parallel because they determine the alignment of the sliding servo rails.

WINGS

The standard wing is the easiest to build so I'll start with that. First lay out the bottom sheeting and capstrips. Add the bottom spar and all ribs. Epoxy in the 3/16 brass wing tubes and add the



In this silhouette shot it appears that Randy is casually launching Coleen 12. Actually, he is just as casually reaching up to grab the ship after maneuvering it into position. Nice photography.

top spar. Add balsa leading edge and shear webs on both sides of the spar. Glue on the top sheeting and let dry well. Flip the plans over and repeat for the left wing. (Rub ordinary 3-in-1 oil on the plans, particularly at glue joints, so they will show through on the reverse side). Shape the leading edge, give the whole wing a good general sanding and cover.

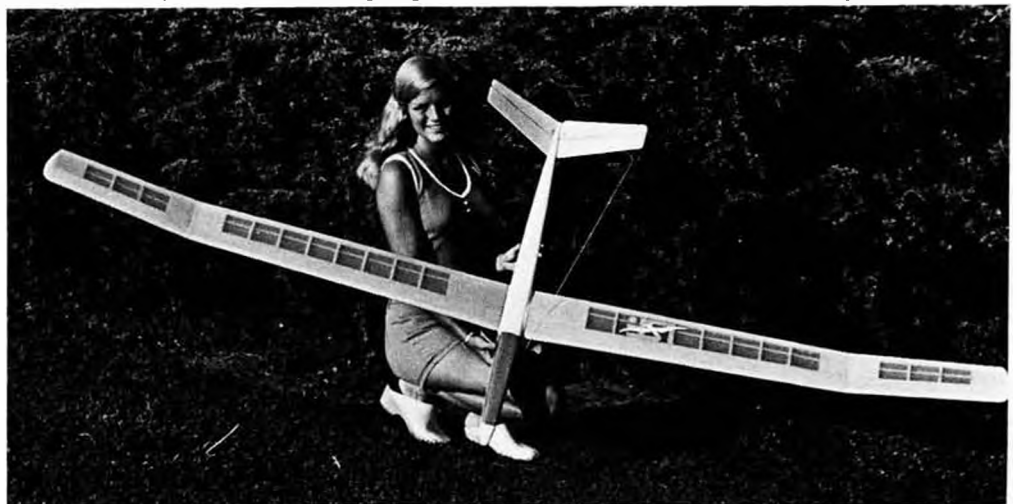
The polyhedral wing uses construction similar to the standard wing, but the undercamber provides the proverbial fly in the ointment. First, pin down the leading edge. Next, add all the ribs, pinning the trailing edges in each directly to the plans. Jack up the leading edge of each edge of each rib 1/2 inch to allow for the bottom leading edge sheeting. Add the top spar and top trailing edge

sheeting. When dry, flip the wing over and add the bottom spars and trailing edge sheeting. Epoxy in the wing tubes and add all shear webs. Next, add top and bottom leading edge sheeting and capstrips. Repeat this procedure for the left wing and both tip panels. When all is dry, bevel the ribs on the tip panels to the correct angle and glue the panels together. Epoxy a strip of nylon cloth around the dihedral junction to serve as a dihedral brace. Add tip blocks and finish similar to the standard wing.

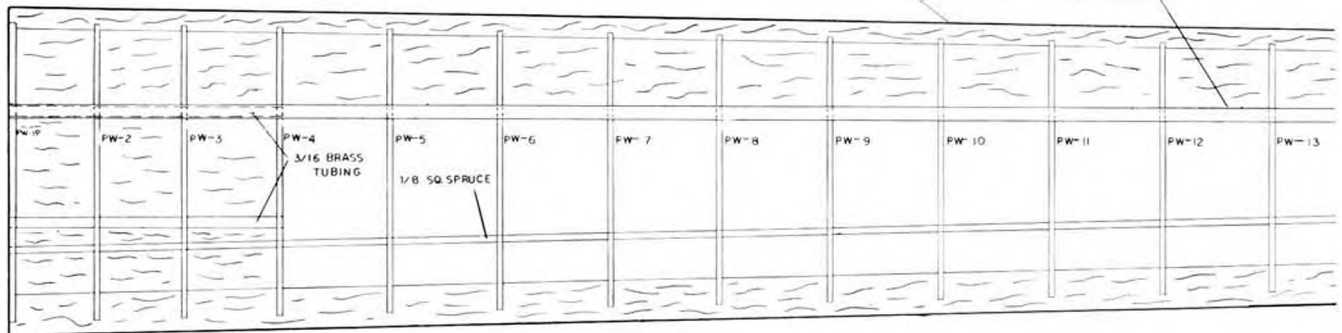
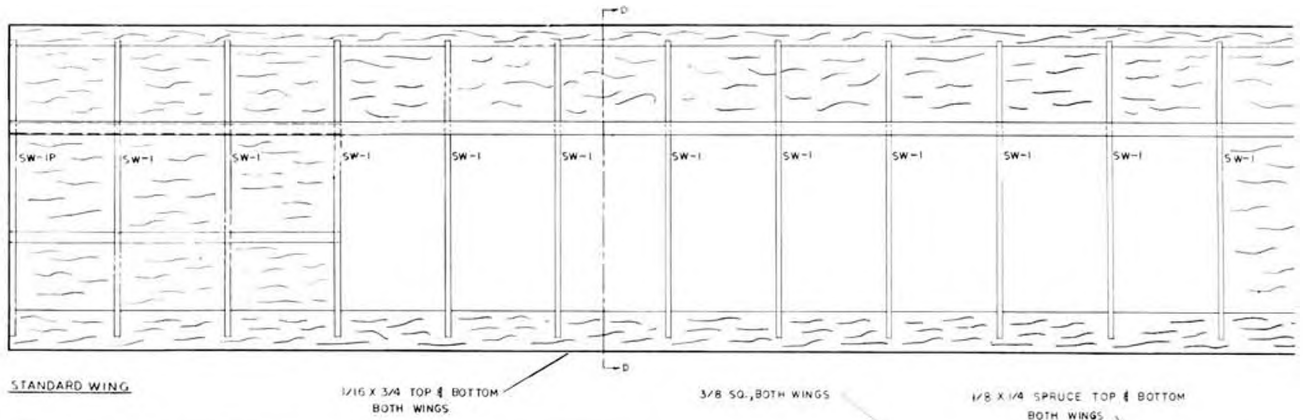
TAIL

The tail is simply made from 1/8 x 3/8 balsa strips and 1/8 sheet. When dry, bevel the panels, block up the tips to the proper height, epoxy together and cover.

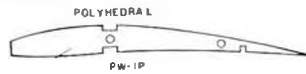
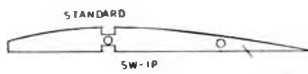
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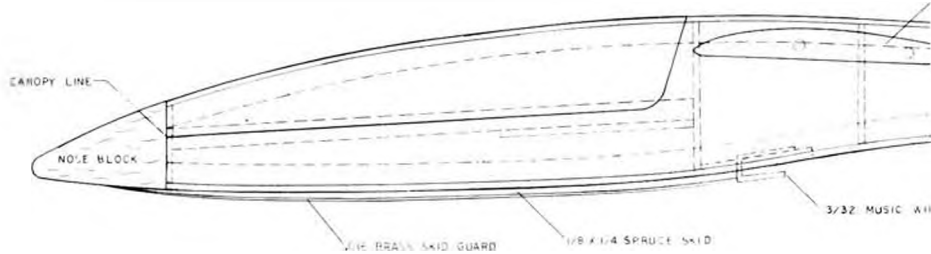
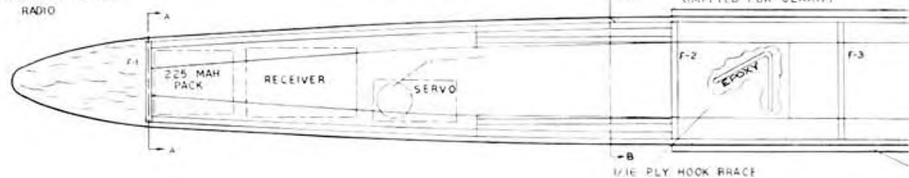
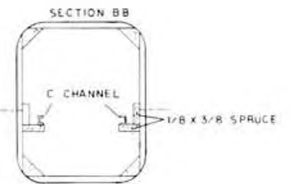
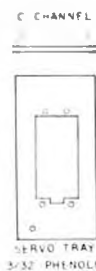
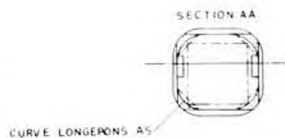
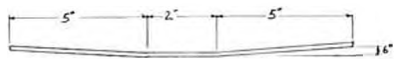
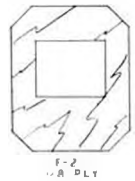
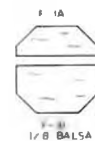
And here, if you care to notice the glider, is Coleen 12 with the undercambered polyhedral wing set. Not as pretty as the straight wings, but more efficient for flat-land thermal soaring events.



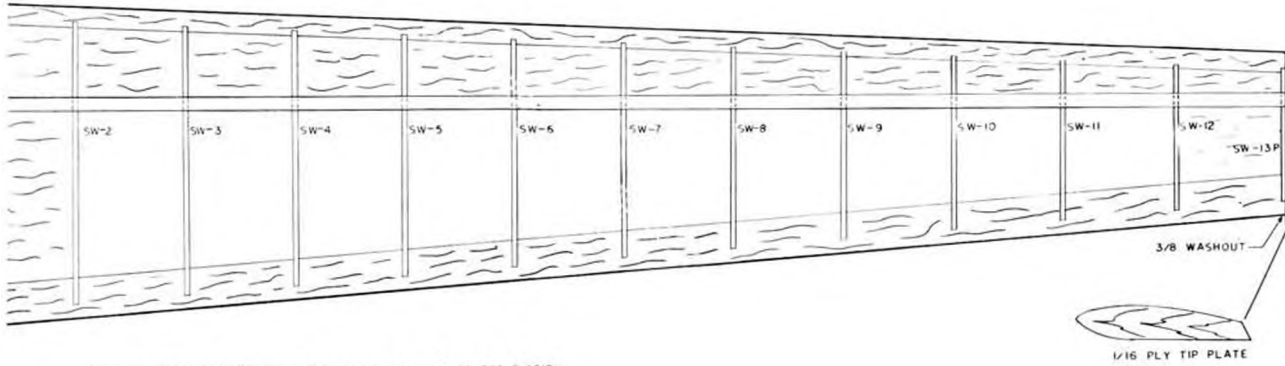
1/16 Balsa SHEAR WEBS ALL CAPSTRIPS 1/16 X 1/4 Balsa



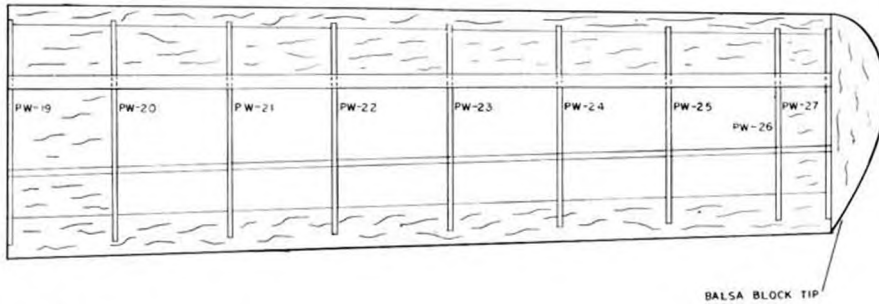
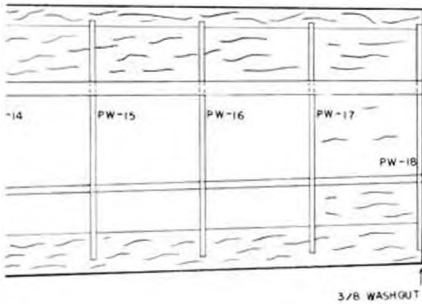
THESE RIBS 3/32 PLY ALL OTHERS 3/32 Balsa MANI USING TACK AND SAND METHOD



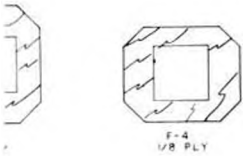
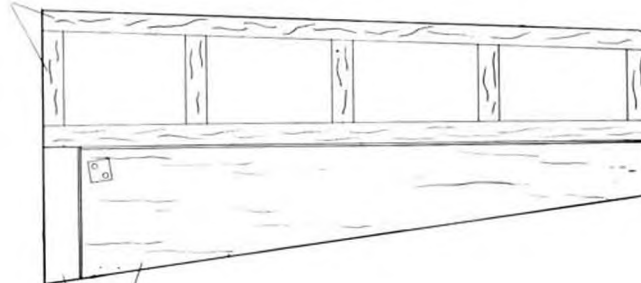
TAPER SPARS TO 1/16 X 3/8 AT TIP



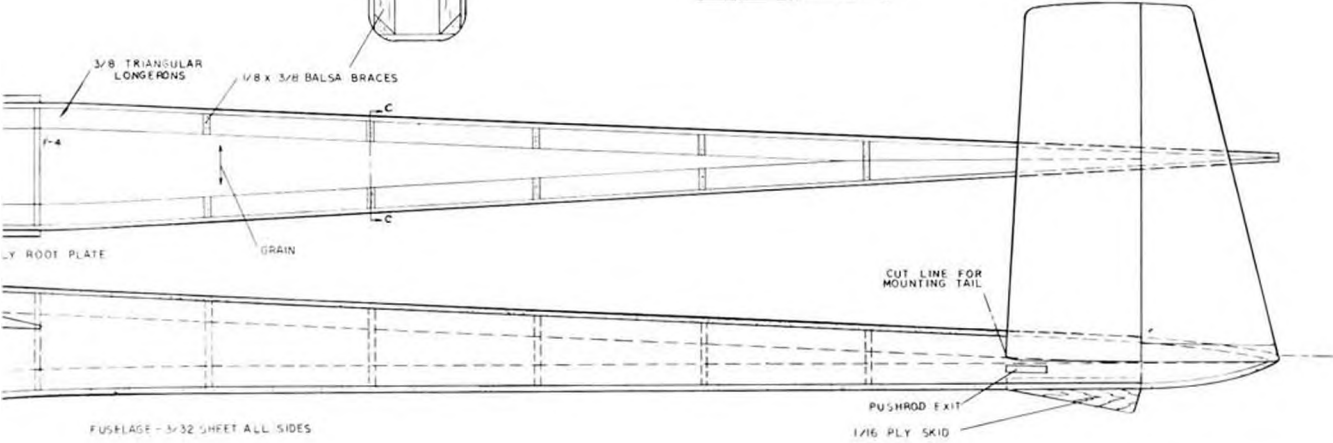
ALL TOP SHEETING, CAPSTRIPS AND SHEAR WEBS OMITTED FOR CLARITY



1/8 X 3/8 Balsa



SECTION CC
TYPICAL OF TAIL



FUSelage - 3/32 SHEET ALL SIDES

0 1 2 3 4 5 6
Inches

MODEL BUILDER magazine
1982 Del Rey Drive, San Jose, California 95128
Plan No: 9721

COLEEN 12
DESIGNED & DRAWN BY RANDY WARNER
WING SPAN: 56 INCHES
WING AREA: 504.50 INCHES

FULL SIZE PLANS AVAILABLE - SEE PAGE 64



LAKE ELSINORE . . . MODELER'S MECCA

By Art Snyder. . . .We were somewhat hesitant about publishing this article, but strictly from a selfish point of view. Lake Elsinore is truly a modeler's paradise; let's hope we can keep it that way

PHOTOS BY GEORGE UVEGES AND TONY NACCARATO



At water's edge, Bob Holland (Hornet) with his Zeugvogel glider, and the author holding his "Garbage Scow." In the shot at top of page, you see them in action, connected by a 100 foot towline.

● If I knew what "Umbrage" meant, I would take it at the description of Lake Elsinore by a columnist in a recent issue of one of the other model magazines. He wrote, "The Elsinore site, seen by us Easterners for the first time on TV recently (in connection with a motorcycle race), offers a muddy lake for ROW." What he saw, and we all saw, was the water hazard through which the bike riders trundled their cycles in a motocross event on a site roughly five miles from Lake Elsinore! California is pretty dry but we haven't had to resort to flying ROW out of mud puddles, yet!

The lead picture gives a rather better idea of the site. Lake Elsinore is a large, very shallow body of water surrounded on its seven-mile shoreline by a marina, several hundred motorcycles, private housing, public parks, motor courts, an airport, motorcycles, a jump-load of parachutists, a gaggle of campers, high-performance fliders, motorcycles, fishermen, more motorcycles, and tucked down in a corner of the South shore a group of idiots of various ages playing with toy airplanes propelled aloft by whatever means is conveniently available. In the main, this latter group is called "Sunday Fliers." The surface of the lake

usually swarms with other types of nuts called "Water Skiers." Interspersed between all are the hot-rodders with their 100 MPH drag boats, a few odd sailing types, and an occasional hovercraft. Californians are, admittedly, a little on the flaky side, but it would take a hell of a mud-hole to support the activities that are enjoyed at Elsinore on any given Saturday or Sunday from January 1 to December 31 . . . we don't bother with the "seasons" to which we often hear Easterners refer.

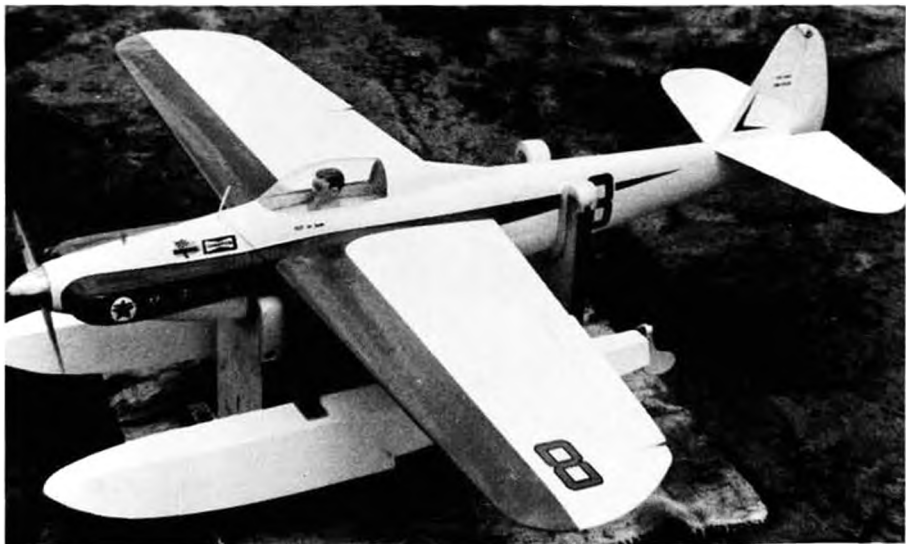
Actually, Elsinore is unique for model builders. Probably the most significant advantage lies in the weather. It is dependably ideal. Little if any wind . . . ten knots is a gale . . . plenty of sunshine when the coastal slopes are socked in. For the hydronuts the lake has a peculiar advantage; where else can you fly off the water without a pick-up boat ready to retrieve a drowned duckling? Like all true believers we walk on the water to rescue them . . . well perhaps "wade" is a more accurate word. It's a little embarrassing to have to get your ankles wet instead of taxiing back to the beach like the "older fellows," but it sure beats messing around with a boat. If you've gone that route you know what we mean . . . trailering, launching, firing up, and the reverse when it's time to go home. We just park the family jalopy at water's edge, fly the airplanes, and when it's time to go home, leave quietly. The secret of our good fortune lies in the conformation of the lake bottom which could be best compared to a meat platter. In the center the lake is probably ten or fifteen feet deep, and around the edges, one can wade out a couple of hundred yards without getting the knees wet. Even a deep-draft hydro model draws less than three inches, so we just wade out fifteen or twenty-feet for launches.

For the free-flighters, whose monthly contests at Elsinore get regular press notice, the South shoreline is something else again. It offers about a square mile of unobstructed flat land with adequate thermal conditions and such light winds that chasers are seldom needed. An OOS flight is much more likely to occur straight up than on the horizon.

You say you're not satisfied? You say you want more? They fly RC off the beach. The moist, fine sand at water's edge provides about as good a runway as one could ask for, and even if you're a beginner and come up short or off-center in your approach, setting her down in the water is no big deal — we've seen it happen — a dead-stick landing in the water and flying again



Joe Tschirgi's much-modified H or A-Ray, making a high-speed taxi run to the shore line. As you can see, Joe simply substitutes sled-type floats for the main gear when he decides to go seaplaning.



The author's nerve wrecker is this Bob Francis Shoestring Form I job on scale type Edo floats. Powered by a K & B .40, every landing is a series of touch-and-goes. Really a beautiful flyer.



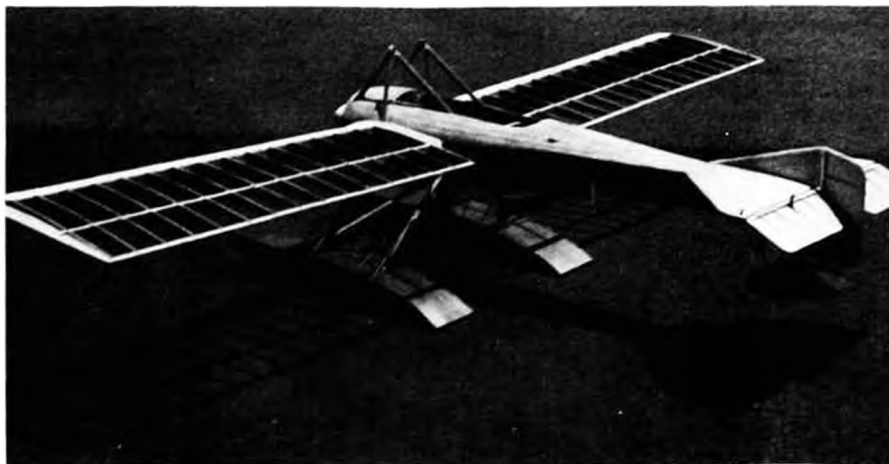
Dan Lutz and his beautiful K & B 40 powered Ohlsson Pacemaker. Ship handles very well on its three sled type floats, design dates back to 1937. Dan has lowered the dihedral for use of ailerons.



The "Elsinore Garbage Scow" is really a pretty flying boat, and it convincingly refutes the popular belief that in order to get off the water, a model must be overpowered. The ship weighs 12 pounds, has a seven foot span, and the engine is an Enya 60!



Bob Holland's R.E.M. controlled sport model. Note flex cable leads to water rudders.



Our cover plane without its cover! Granger Williams' Deperdussin monoplane. Float system is similar to that used by Dan Lutz on the Pacemaker.

without drying off the wheels. Or a hydro landing that winds up on the beach (this latter method is employed by the older, more experienced hydro nuts when landing dead-stick. Saves getting the feet wet, and the damp-fine sand doesn't even scratch the floats).

Comes now the League of Silent Flyers to complain about discrimination! No way!! Best high-start in the world is the "Elsinore Garbage Scow," my venerable seven-foot, twelve-pound, 60 powered flying boat. A hundred feet of 20 lb. mono-filament and a tow-release in the nose of your glider and I'll take you anywhere you want to go if you're not on 72.080. Lacking a tow-plane, the family jalopy tied to three hundred yards of towline will put you up in the thermals at 25 MPH in short order — and you'll have a 1:1 Cirrus for company (at a safe distance). Elsinore airport, a mile south of the lake, is a very active glider port with everything from two-place jitney-hoppers to the ultimate in high performance sailplanes.

For the Sunday flier, amateur or semi-professional, Lake Elsinore is just about the answer to total escape. The 75 mile drive from metropolitan Los Angeles takes less than an hour-and-a-half over the freeways. And even if you're only watching, there's a model type for every taste. Pattern jobs on single and twin floats, hydro-skis, sled floats, and scale Edos. Three channel trainers, Dan



Oh well, you can't expect everyone to be interested. Makes an interesting study, though. Gene Wallock's Comet Clipper quietly settles to the ground behind some young motorcyclists whose parents were teenagers when this ship was introduced to the world of model building.

Lutz's scale Widgeon, Joe Tschirgi's Brandenburg, a scale Catalina (without reflecting on the ability of the builder-flyer we have to admit that it snapped into the beach on take-off and hasn't been seen since), and Ohlsson Pace-makers, vintage 1937, that look and fly better than most contemporary airplanes. For a real thrill you should see Rex Raymond's twin-Webra flying boat that bomb's out of the water without so much as a hint of take-off run, does the full pattern at close to 100 MPH, and then, with full flaps, touches down like a feather. My current effort is a Bob Francis Formula I "Shoestring" with K&B front-rotor .40 on scale Edo twin-floats that runs a hundred yards before it reaches the required fifty knots to become airborne. Landings greased and landings dunked. Touch-and-goes by the hour. And for the old timer the most improbable thing of all, Super Privateers!! Believe it, they fly!! Take-off at ten knots, rising up out of the water like ghosts, and kite around at fifteen. With their size, weight, stability, and slow speed, they should make super glider tow planes.

At this point we digress from the Cook's tour of the natural wonders of Southern California to our opinions on how flying boats and seaplanes should be flown (Apologies to Dizzy Dean and not a typo). For those of you who claim as much or more experience than we do, prepare to vent your spleen. (McGovern, please note!)

For the novice a flying boat is not a seaplane and a seaplane is not a flying boat. A seaplane is a conventional airplane equipped with from one to three floats which enable it to land and take off from water. A flying boat, as the

Continued on page 50



The old meets the new! If you've never cranked for hours on a stubborn ignition engine, you can't fully appreciate an electric starter. Gene Wallock's Airo - Mighty Midget powered Comet Clipper.



Jim Adams, Santa Ana, California, launches his free flight Loening OL-9, built from Aeromodeller plans. Span is 48 inches, and power is a 1cc (.06 cu. in.) Taifun diesel.



Bill Gieskieng applies the "Electric Chicken-Stick" while Annie G holds her "Siren Dippitney"

PHOTOS BY BOB LIPORI & RON EVANS

the CADDO MILLS AFFAIR

Two reports, from opposite parts of the country, one a contestant, one a helper, on the FAI Team Finals at Caddo Mills, Texas. And if that leaves you up in the air, then we have a report on a reliable method of calculating just how high in the air you might be. By Ron Evans, Dave Schmidt, and John Ferrer.

● There are going to be some hard feelings about this latest F.F. selection. The site proved too small for the prevailing weather conditions, the advanced information regarding those conditions led many to believe that it was to be a "fair weather" competition, and most of the "Ramada Inn H.Q." talk was in

favor of changing the entire selection process. Before the specifics of the contest, let it be said that our Texan hosts WORKED to make it as good a meet as they could; no one can control the weather, and my heart goes out to those sweaty, sunburned timers with scorched eyeballs.

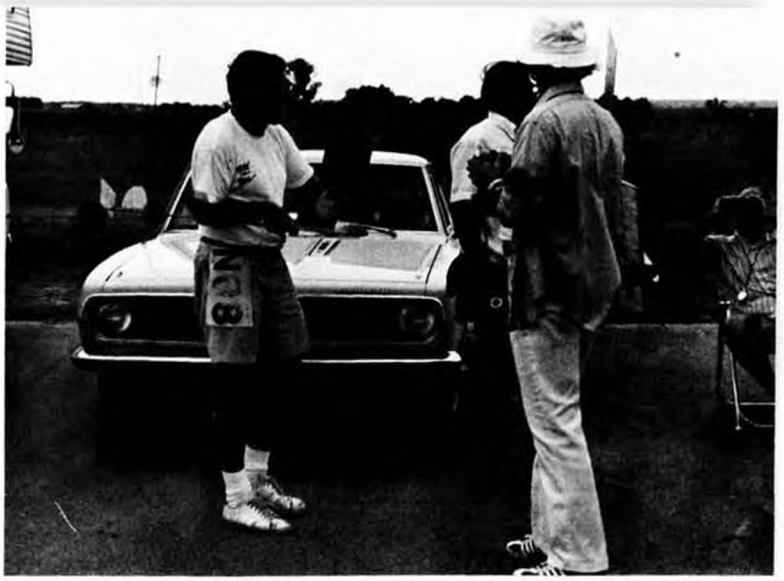
The two days preceding the actual meet were great for testing, aside from a thunderstorm or two. Calm, HOT, and booming thermals. But the first round, at 6:30 A.M. provided us with an indication of weather to come; the wind was blowing at least 15 MPH, and never seemed to go below that figure, even at night. It reached a peak of 26 MPH at 200 feet about noon of the second day, although I heard figures quoted which were much higher. The wind, combined with the Nordic-wing-snapping gusts, and small diameter violent thermals made maxes a chancey affair. The air seemed much smoother at the normal altitude reached by an FAI power ship, was bumpy at Wakefield height, and downright unpredictable at Nordic line altitude. It was not uncommon to see an A/2 bump and grind its way along for 1 or 2 minutes and finally spin into the ground, unable to self-stabilize itself within the lift. I suppose a blow-by-blow account of each flier's score will be redundant by the time this reaches print, (*Well, we ain't exactly Newsweek! WCN*) but a few personal observations may give an indi-



Tom McLaughlin (3rd. in Power) preps his clear mylar covered model. The ribs and structure are dyed for visibility. Tail design is quite a departure from the currently popular rear fin trend.



Roger Simpson's power ship shows German FAI influence. Sheeted wing built on full-span jig, with dihedral and warps all included.



Some of the Southern California group. Bob Isaacson with Nordic, Tom Hutchinson (looking away), and Sal Taibi with binoculars.

cation of the overall character of the meet.

George Xenakis had his model attacked by a hawk, and driven to the ground, where the hawk continued to dive at the ship.

Hugh Langevin found his 6 year old "Osprey" could handle the wind and turbulence better than any of the new Thomann F-4 (Airfoil) whips and used the older model to advantage. It was lost late on the second day, but returned in time to use on the last day. A special note here *must* go to Hugh's helper, sidekick, launcher, etc., Clyde White: As great a flier as Hugh is (4 Nordic teams!!) he maintains that none of it would have been possible without Clyde's help. When these two work, it is an exercise in top teamwork and mutual respect.

From a downwind position (looking

for Bob Lipori's Wake), we observed a model gliding in that impressed us both as being the *best* of the ships in handling the turbulence. Both Bob and I were sure it must be an FAI Power ship, since it handled the weather so well. It turned out to be a Wakefield, Bob White's in fact, and the landing was so smooth it wouldn't have broken an egg. What a fantastic glide!

Henry Spence, flew like a pro, with never a delay in launching... just plug it into the starter, hit the timer, and GO. Other fliers who tried to go along lost a few seconds fiddling with the needle valve, and most missed the good air, hence missed the max.

Frank Wolff is a bundle of nerves, and every flight is an adventure. But after winning Category Champ at the '71 Nats, winning Nordic at the same Nats, and now making the Power team, his pattern

becomes clear. He has an innate sense for the right time to fly, is super-consistent, and never gives up. The 12 seconds he dropped in the first round was his only non-max score.

Paul Crowley flew from the opposite side of the runway from the majority of A/2 fliers, entirely on his own... and made it pay off. He and Phil Klintworth made a fine team, and Paul's towing in that wind was among the best.

Jon Davis has to be the fussiest thermal detector on the field. He would wait 45 to 60 minutes with a wound motor, while obvious lift came through and others maxed, then at last would find a thermal he liked and launched. Again, your own strategy works best for YOU.

Bob Lipori made respectable scores on the first day, but ended up losing 2 models by the 3rd round, and was



Charlie Learoyd with stooge. Note winding tube in body to protect it from possible breaking motor. Canopies give away windy condition.



Bob Siffleet waiting for a chunk of lift... or for the wind to relax for a moment. Many contestants felt it exceeded FAI limits at times.



"Rain drops keep falling on my lens...." Henry Spence, with a max in every one of the 15 rounds, was power winner with perfect score!

left with a calm air Wake. He tried to fly it in the wind, and broke his last prop on a blown-over launch. He sat and accepted zeros for the whole second day, but after the 10th round we found his best windy weather model and he decided to resume flying, even though he had no chance to advance at all. By sheer will-power and determination he made 4 maxes and a 168 second flight (O.O.S.) on the last day, which was the top Wake score for the day, which moved him from near last place to 18th. He again lost the model on the last round, and it still sits in the Texas trees.

RESULTS

POWER

- 1) Henry Spence 2700 (15 maxes!!)
- 2) Frank Wolff 2688
- 3) Tom McLaughlin 2662

WAKEFIELD

- 1) Frank Parmenter 2561 (12 maxes)
- 2) Bob White 2530
- 3) Fred Pearce 2431

NORDIC

- 1) Hugh Langevin 2315 (10 maxes)
- 2) Paul Crowley 2222
- 3) Vince Croghan 2148

Above report by contestant Ron Evans. The following is by Dave Schmidt, a helper, and 16 year old son of our F/F editor.

● As an enthusiast of the FAI free flight events, I attended the United States FAI Finals in Caddo Mills, Texas. The meet was held over the 4th of July weekend, at a field thirty miles northeast of Dallas. I traveled with Bob Isaacson as his helper. Bob had qualified in Nordic at Taft. We



"What a difference a max makes...." Earl Thompson maxed 14 times in every one of the 15 rounds, was power winner with perfect score! Brother Marty helps clean.

arrived five days before the contest for practice flying. The field proved to be a nightmare. It consisted of three mile-long strips placed in a triangular fashion. Grass and stubble thrived in the center of the triangle. Directly downwind (the wind was predominantly from the southwest at 15 to 30 mph) were fields of short cotton, several fields of head-high corn, and further still, was a forest of trees. If the wind had been less than 10 mph there would have been no problem, but blowing like it did, you were either safely in the cotton or unfortunately in the trees. After days of high winds and some test flying, we came to the night of processing.

Processing was held at the Ramada Inn in Greenville, where we reported promptly at 7 p.m. The Contest Director, Casey Hornbeck, arrived at 8 p.m. to start things going, and here is where



Jon Davis with aluminum tube Wakefield. He appeared to have made the team, but a recount of scores put Fred Pearce in his place. Tough!



Tom Koster, Denmark, flew in the finals as a guest. Here he lends a hand to Jim Taylor, who is fueling up. Buzz Averill in background.

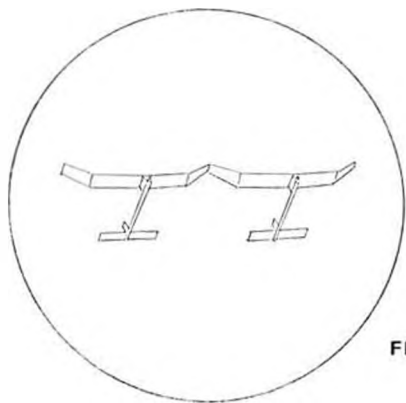


FIG. 1

Correctly adjusted view thru the stadiometer telescope

the rub comes in. There was practically no processing! There was no weighing of Nordics or power ships and no measuring of any kind. The officials just eyed the vouchers and left the flyers with their planes defaced with smudges which were supposedly the marks of the stamps . . . Hardly what one would expect at the U.S. FAI finals.

The first round was to begin at 6:30 a.m. on Saturday but did not commence until 7 a.m. Five rounds were flown on the first day. Round One was to have been a calm-air round simulating European conditions. But it blew all day, from 15-25 mph. With the continued wind, times were kept down from what was expected. Happenings such as George Xenakis' Nordic being attacked by a hawk in flight, and Thomas Koster planting his flapped Andromeda, marked the day. The officials did place a scoreboard at the apex of two of the three strips. At the end of the day, eight men had maxed out in power (Spence, Joyce, Taylor, Thompson, Gutai, Bicknell, Poorman and Kerr), one in Nordic (Bill Hangenberg), and no one in Wakefield.

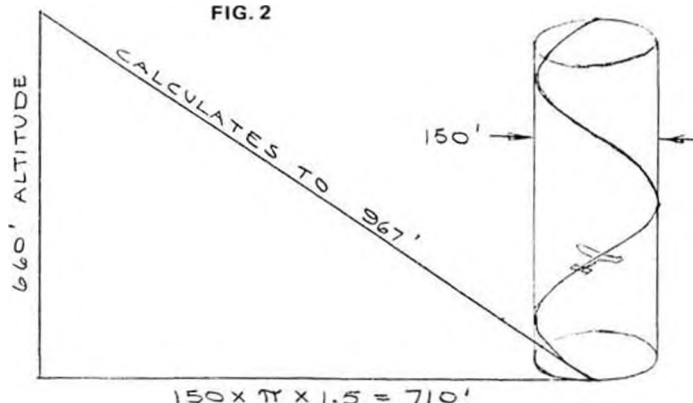
The second day began with a "Texas calm-air pseudo-European round"; that is, with the wind at 10 mph. Rounds seven through ten were flown in higher winds. But we were there to fly and fly we did. Even though wind velocities, at times, exceeded the maximum allowed by FAI ruling (28 mph).

Sunday was the worst day, as Nordics were being folded, spindled and mutilated left and right. Wakefield and power flyers were also taking a beating. Many high performance razor-edge trimmed power ships could not handle the weather. Koster of Denmark, who was flying as a guest, had many problems with his "Cream" in the wind. He could just not believe we were using these conditions in which to pick a team. Many of the flyers

agreed wholeheartedly.

With ten rounds completed at the end of the second day, trends were beginning to emerge. Two men were left in power with all maxes; Hank Spence and Earl Thompson, with Frank Wolff, Bob Bicknell, and Jim Taylor close behind. Wakefield was being dominated by Bob White, Frank Parmenter and Fred Pearce, and Nordic by Bob Isaacson, Bill Langenberg and Hugh Langevin. Between the 10th and 15th rounds, however, there were

FIG. 2



quite a few changes.

On Monday, the weather followed suit with Saturday and Sunday . . . Wind! Two or three Nordic flyers severely bent wing wires on the tow and were forced to fly with the wing tips nearly touching. Bill Langenberg did this once and thermalized for a near-max. A major shift in positions in the results occurred between the 12th and 15th rounds. Wakefield results were pretty solid all day except

Continued on page 48



PHOTO BY GEORGE BAHRMAN

John Ferrer demonstrates the way to use a stadiometer. It provides a fairly accurate measurement of your plane's altitude. R/C soarers, please note! Read all about it in this free flight column.



This glider has a dark green wing and bright white fuselage. When viewed through an amber polarized filter, the fuselage is much brighter than the darkened sky and the wing looks black. It's a highly visible combination. The author's daughter, Julie Ann, holding.

R/C SOARING

Again our Soaring editor steps down for a guest appearance. This time we have an interesting and revealing study in the matter of visibility. You may buy a new pair of sunglasses. By Hugo van Paassen

● Last fall I decided to take my trusty old slope soaring machine and get down to the business of making the required spot landings for Level 1 in the LSF program. It wasn't too long before some extensive rebuilding was in order. Some chance encounters with a tree, a tool box, and finally a lawn sprinkler head forced this move to the shop. Without giving it too much thought, I re-finished the entire plane in white. Manned gliders are white and white doesn't soak up too much heat under the hot sun. I also thought that white should be easy to see.

The first few hand launches went well enough and the gleaming white bird was quite visible on the dark green

grass. As the season progressed, the spot landings were checked off. Occasionally the lift was strong enough to keep this 12 oz./sq. ft. slope machine up for 5 minutes or more, and who can resist taking a "free ride". On one such occasion the lift was especially good. Now it really makes one's adrenalin flow to get your favorite bird way up there. It's even more exciting to blink your eyes and discover you've lost sight of it! Frantically you scan the sky for a glimpse of it. Sometimes you get lucky and have a chance to bring it back. More frequently you don't see the plane for the rest of that flight. In any event, a white plane can just disappear in a light hazy sky.

After two episodes of nearly losing

my plane, and several more in which somebody else did lose his plane, I thought it might be useful to find out what might be done to improve the visibility of a glider in the sky. A casual survey of a large number of R/C glider pilots turned up a variety of opinions, some of which conflicted. I was a bit surprised to discover that in the glider flying fraternity, many pilots hadn't really given too much thought to the visibility problem even though most of them had at least come close to losing sight of a plane they were flying.

I had the feeling that the various problems affecting visibility must have been investigated thoroughly by somebody. Airline pilots, traffic safety engineers, long range gun shooters, and of course R/C glider pilots, all have an interest in getting the best possible visibility. The following is a compilation of the various factors affecting visibility, and particularly the visibility of an R/C glider during daylight hours in a polluted metropolitan atmosphere. Some of these comments may be obvious, but the obvious is frequently overlooked.

There are at least five factors which strongly affect visibility under the conditions in which we are interested: The human eye, the source of illumination, the medium through which we are looking, the visual properties of the object we are trying to see, and finally, the background. It is possible to go into a great amount of detail on each of these subjects, but I'll try to limit this to a discussion of what affects seeing a glider.

The human eye is a remarkably complex optical detector. Like most complex systems, the eye has many potential defects, some of which can be corrected. One's visual acuity is what is measured when we have to read an eye chart. If your eyesight is less than perfect, you are going to have difficulty in seeing that glider when it's way up there. Most motor vehicle requirements allow one to operate a car without glasses, even with a considerable loss of visual acuity. The message here is: it is a good idea to have your eyes checked periodically, and if you need glasses, get them and wear them!

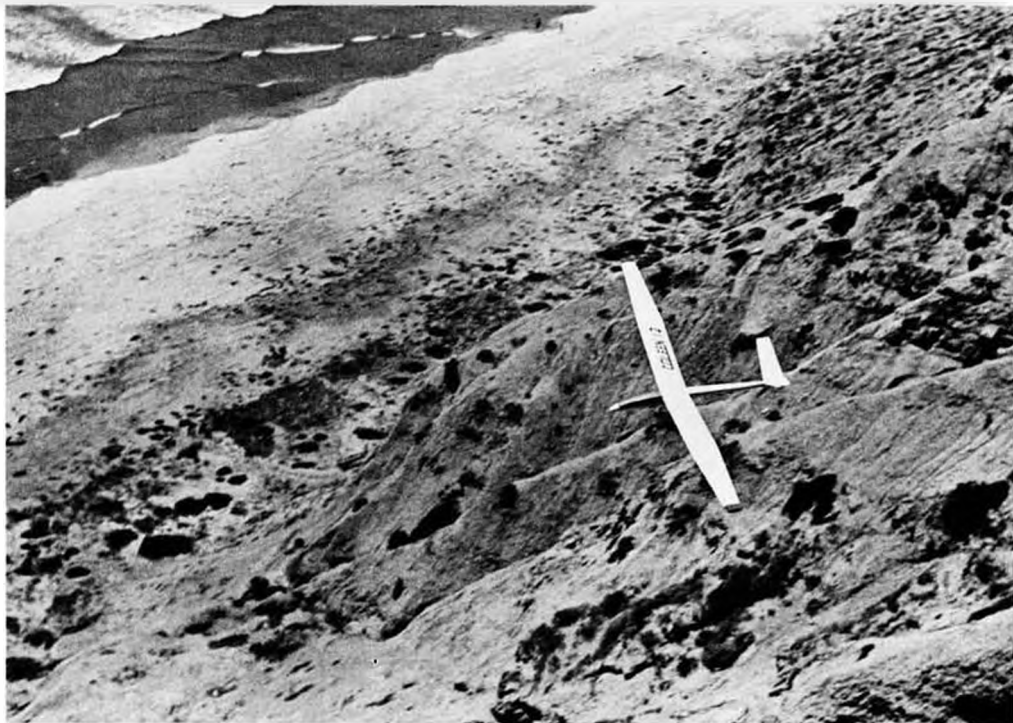
The light intensity where one is flying is frequently quite high. With the eyes looking into a bright sky for long periods of time, the light entering the eye is close to the level where some dam-

age or irritation can occur. This problem is even more severe if the ground is highly reflective as it is on the desert or overlooking the ocean. Sun glasses can be used to reduce the light level a bit so that eye strain and irritation are reduced. The glasses should allow about 20 percent of the light to pass. If they are darker than that, the iris of the eye will open, and in most cases, the effect of any lens imperfections in the eye will be magnified. The ideal glasses will be just dark enough to reduce eyestrain without opening the iris. In a camera the best image is obtained with the iris closed down to its minimum size. The same is true of the eye. The sun glasses are used to prevent overexposure.

The sun glasses should be of good quality (not necessarily expensive). The shading material should cover the sides, top, and bottom as well as the area immediately in front of the eye. If this is not done, the sunlight will illuminate the face near the eye, causing a reflection of the inside surface of the glasses. This image can be brighter than the image coming through the glasses! There is an "anti-reflection" coating which can be applied (at extra cost) to the glasses which helps reduce this problem. The ideal solution is prescription sun glasses which are the correct "density" (darkness) and color. Clip-on sun glasses, which attach to eye glasses, are adequate and usually a lot less expensive.

The human eye is equipped with two sets of light sensors (rods and cones). The rods are sensitive to a large range of light intensities and can resolve small images. The cones detect color at high intensity levels only. In low light levels you can see only shades of gray. Also the eye is most sensitive to yellow light. For reasons to be discussed later, yellow sun glasses might seem to be the best choice. However, if you have ever put on a set of yellow sun glasses on a bright day, you know that rather than giving an impression of reducing the light level, the light level looks as if it had increased markedly, so much so that most people tend to squint. One can in fact see very well with yellow sun glasses if trying to see detail, especially under hazy conditions. However, the impression that everything has gotten intolerably bright can be quite irritating and under prolonged usage can leave one with a bad headache.

The reason for this effect is inter-



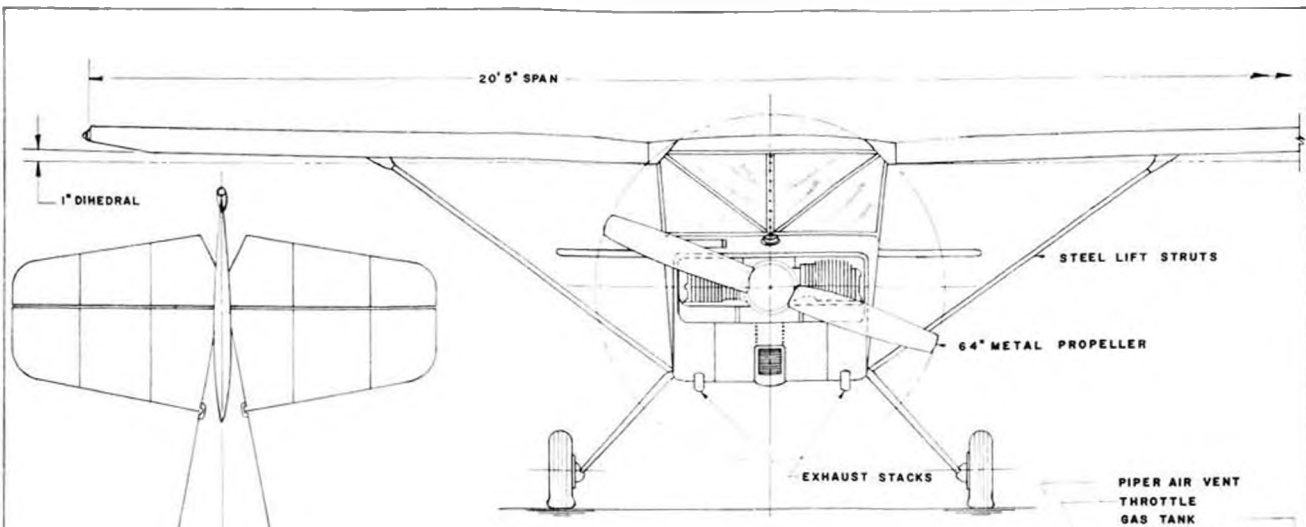
Randy Warner's glider, Coleen 12, all white on top, shows up well against the brown-hued cliffs at Torrey Pines. Only slope soaring can bring out this special need for top color contrast.

esting. An automatic mechanism in the normal healthy eye senses the light level reaching the retina (equivalent to film surface in a camera) and adjusts the iris (lens opening) to give comfortable seeing under varying light conditions. If only yellow light is admitted to the eye and the other colors removed, the sensor detects a reduced level of light and opens the iris somewhat. This sensor has the wrong color sensitivity and cannot tell that even the low level of yellow light is producing a strong visual image.

In order to compensate for this effect it has been found that it is more comfortable if we "fool" this sensor. The eye is relatively insensitive to both blue and red. If we look through a red filter the opposite effect is noticed. The sensor which controls the iris detects a light level and adjusts the iris accordingly. The image detectors in the eye do not respond to the red light as effectively (as yellow) and the subjective impression is that everything is abnormally dark. You find yourself peering through these red glasses as you might if you were trying to see something in the dark shadows. If one makes a filter which lets through both yellow and red, the visibility is just about as good as it was with the yellow alone, and the iris is adjusted to a proper level for prolonged comfortable viewing. Such glasses are currently being made and look amber in color. For a long time now, yellow sun glasses have been "de rigueur" in sharp shooting contests and certain fly-

ing circles. This should now change to amber sun glasses when it is learned that the headache and the squint can be avoided without losing visibility.

The second factor in visibility is the source of illumination, which in our case is the sun. Again, some of these comments may be obvious, but they should be considered. The light output from the sun is heavily filtered by the atmosphere so that only a relatively harmless amount of radiation reaches us. It takes several hours to do any serious damage to a human exterior unless you aim your eye at the sun. Even glancing at the sun for several seconds noticeably impairs one's vision for a minute or two, and surprisingly causes a small amount of permanent damage. Even with filters, such as exposed film, which lets pass only 0.1 percent of the light, eye damage is severe in only a few minutes. With normal sun glasses, or even smoked glass, one should actively avoid looking at the sun especially when it is well over the horizon. Fortunately for us, when the sun is close to the horizon the radiation is greatly reduced. If this were not so, and we looked into the sun at its noontime brightness the same as we look at sunsets or when we have to drive into the sun in the evening rush hour, most of us would be permanently blind. It may be obvious, but when that plane gets up near to where the sun is in the sky, get something opaque between your eye and the sun. The transmitter works pretty well. *Continued on page 56*



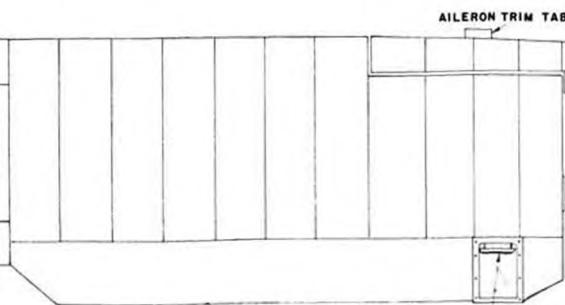
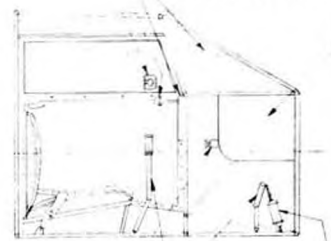
NESMITH COUGAR

PROTOTYPE MFGD. BY ROBERT E. NESMITH OF HOUSTON, TEXAS

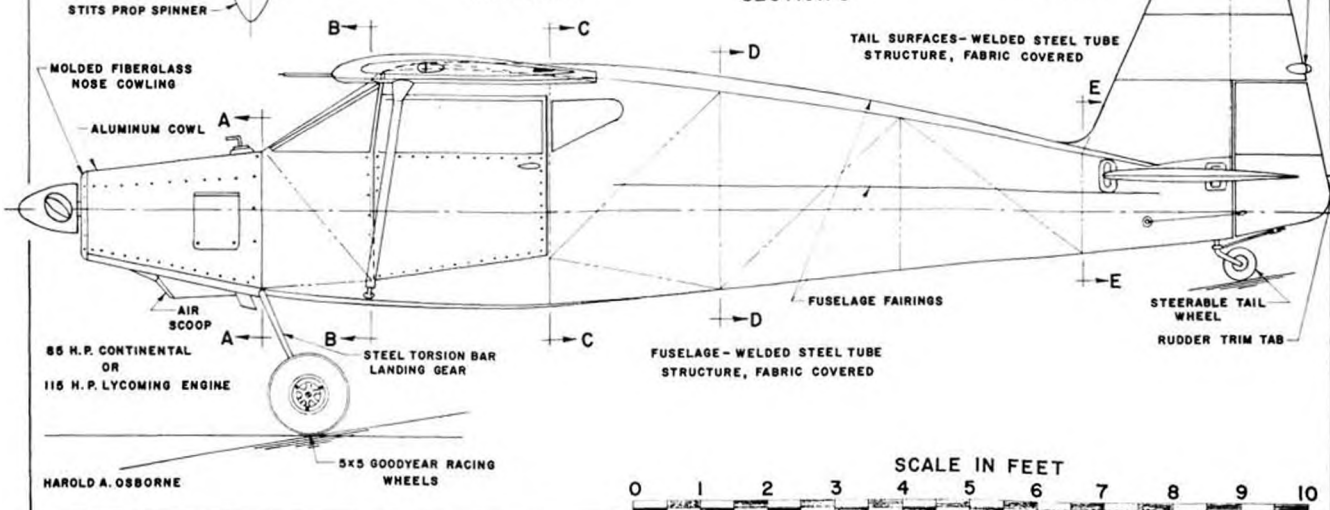
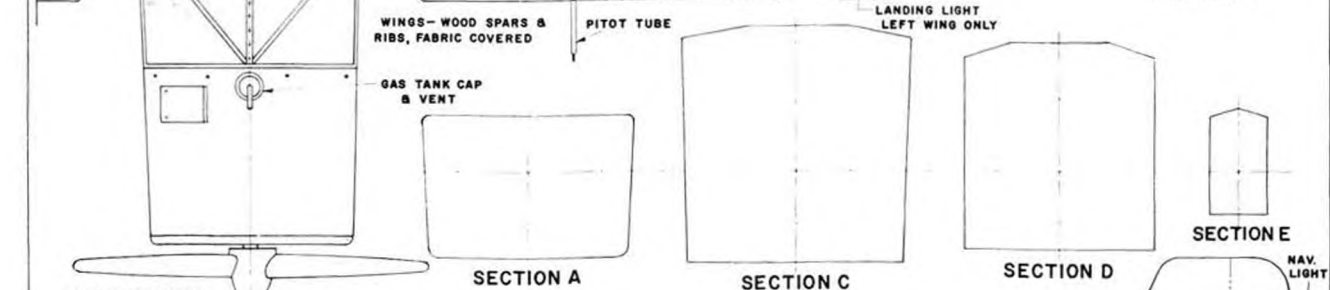
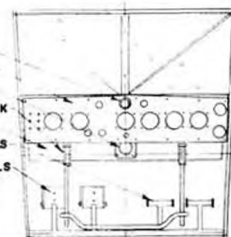
PERFORMANCE & SPECIFICATIONS

| | |
|-------------------------|------------------------------|
| SPAN- 20' 5" | MAX. SPEED- 182 M.P.H. |
| LENGTH- 18' 11" | CRUISE- 166 M.P.H. |
| HEIGHT- 5' 6" | STALLING SPEED- 59 M.P.H. |
| WING AREA- 82.5 SQ. FT. | CLIMB- 1300 FT. PER MIN. |
| EMPTY WT.- 624 LBS. | SERVICE CEILING- 13,000 FT. |
| USEFUL LOAD- 692 LBS. | RANGE- 760 MILES |
| GROSS WEIGHT- 1316 LBS. | TAKE OFF RUN- 310 FT. (SOLO) |
| FUEL CAPACITY- 26 GAL. | LANDING RUN- 460 FT. (SOLO) |

PIPER AIR VENT
THROTTLE
GAS TANK
INSTRUMENT PANEL
1/8" PLEXIGLAS SHIELD



THROTTLE
INST. PANEL
GAS GAUGE
CONTROL STICK
GAS TANK
RUDDER PEDALS
RUDDER PEDALS WITH BRAKES



HAROLD A. OSBORNE



One thing sure. You won't break many props with the Baby Boomer!



In spite of its "sporty" appearance, BB is a top performer.

BABY BOOMER

By Art Reiners.

● This model is simple and easy to build, it has a rather unique profile in flight, and it flies well in calm air or in a mild breeze. If you put in enough fuel for more than a fifteen second engine run, put on your track shoes. I have lost four so far, on out-of-sight flights (some people never learn).

There are no tricky adjustments on Baby Boomer; just keep the alignment true and the glide slightly nose heavy. There is no dethermalizer built into this model. Frankly, I haven't thought of a good one yet. Let us know if you come up with one.

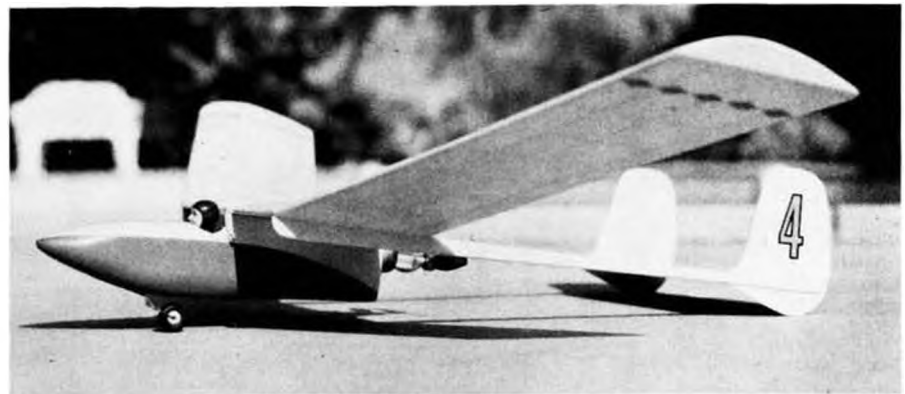
Since the wing is the only build-up portion of the airframe, I recommend it as the place to start. All wing ribs are the same, so cut out twenty-three of them. The W-2 ribs are 1/8 inch balsa material to provide more glueing surface for the booms. Be sure to notch the trailing edge to receive the ribs. Makes a stronger joint. Also, glue the dihedral gussets in after the dihedral has been set. Use plenty of glue at these joints.

I usually give the wing frame two coats of thinned butyrate dope before covering, and allow it to set overnight to dry completely. The covering is Japanese tissue or light-weight Silkspan, with two coats of clear dope to finish. Trim with colored tissue if desired.

The booms, fuselage, and tail may be completed while the wing is drying. Start with the stabilizer and rudders. Cut out stabilizer and cement to notch in bottom of booms. It is best to lay the booms and stabilizer on a flat surface and cement the booms onto the sta-

Continued on page 55

Here's a cute little sport free flight that is just a might deceiving; it has a nasty habit of flying away! Try one . . . you'll build two.



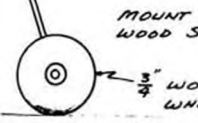
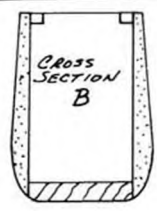
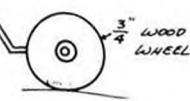
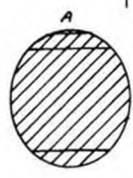
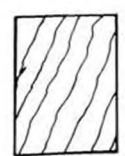
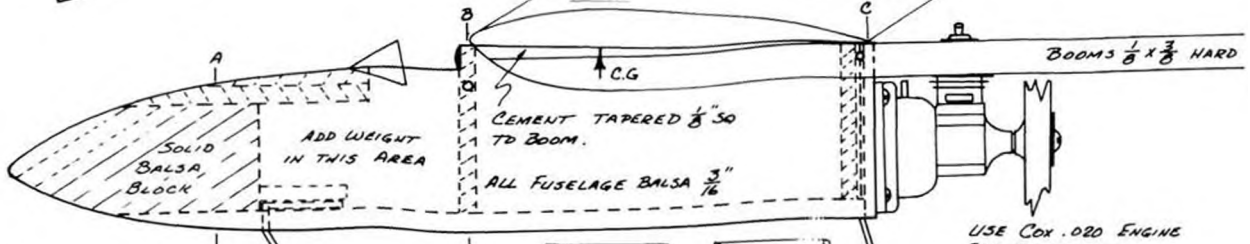
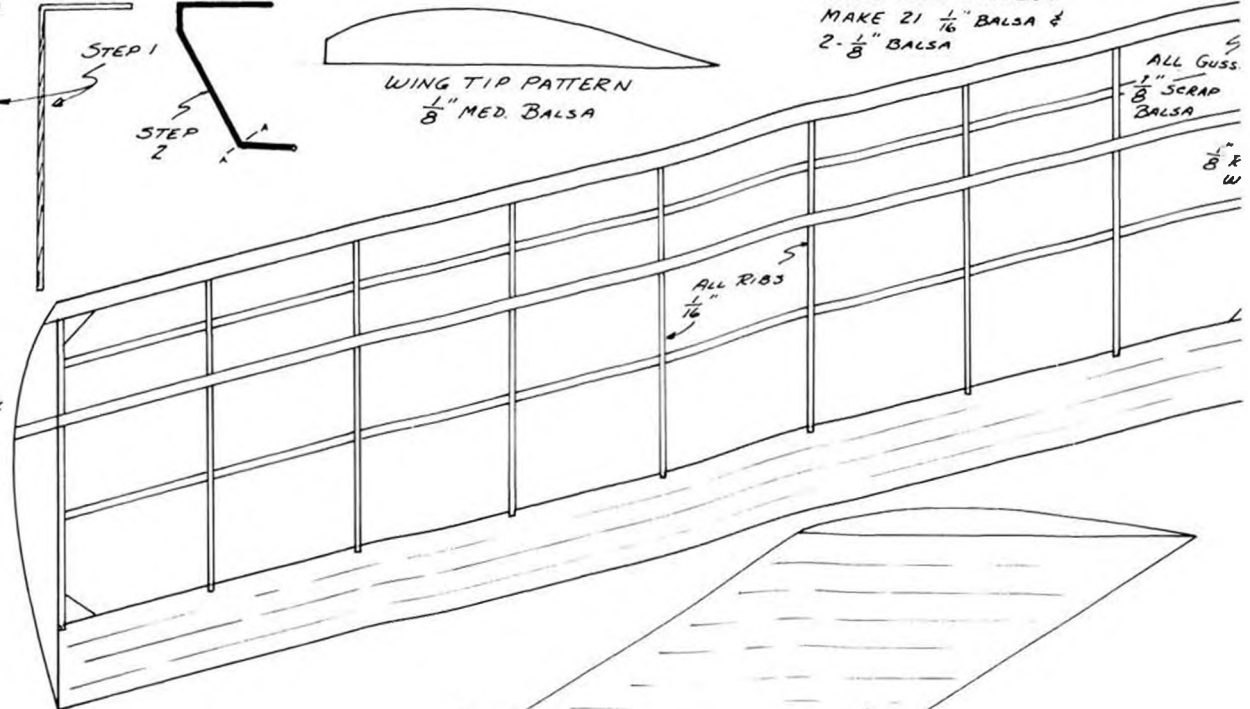
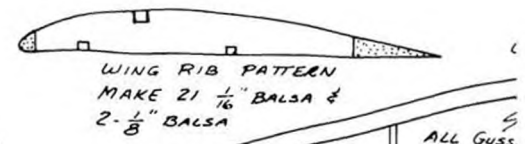
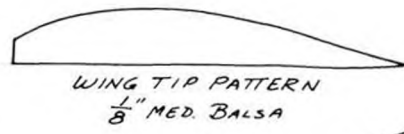
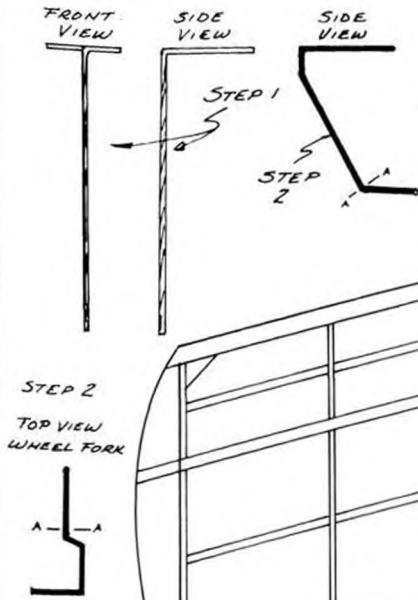
Another version featuring a single wheel. This one must be hand-launched. Be prepared to run!



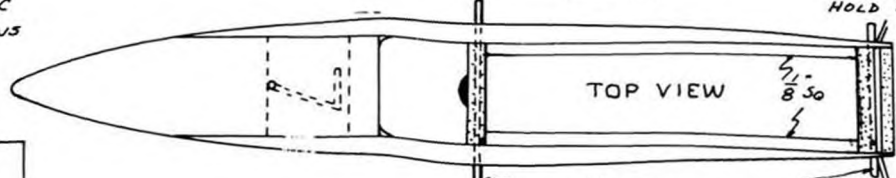
Steve (left) and Phil Reiners with No. 6 and an .049 version. No. 6 has joined several others in flying away, so you better rig some kind of dethermalizer, unless you own a shotgun!

SET LANDING GEAR INTO FUSELAGE AFTER CARVING AND COMPLETE AFTER GLUE DRY.

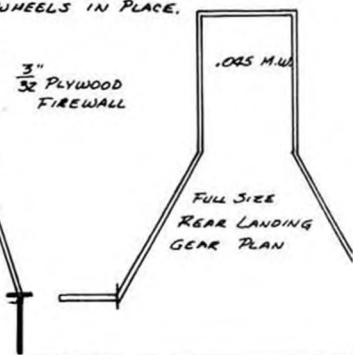
NOSE GEAR

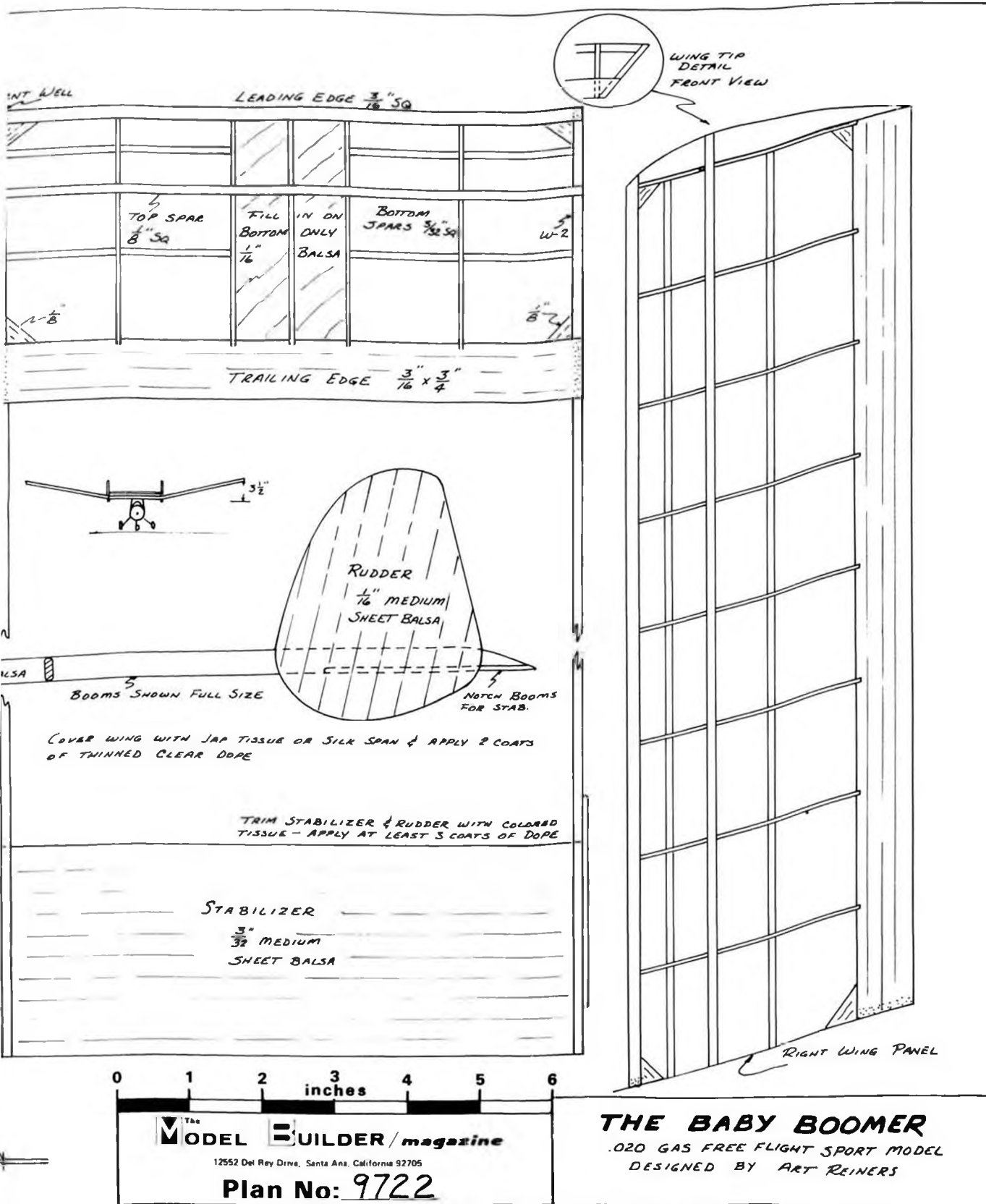


SOLDER WASHERS TO LANDING GEAR TO HOLD WHEELS IN PLACE.



USE 1/16\"/>





FULL SIZE PLANS AVAILABLE - SEE PAGE 64



"Whadya mean, Ralph Williams sold the pace car?" Race Director John Hale at the microphone. This was portion of entries at ROAR Nats.

1972 ROAR R/C CAR NATIONALS

By Gene Husting. . . .A complete run-down on the BIG one of the year for eighth scale R/C car racing enthusiasts. The faddists have come and gone, and this sport is building interest steadily.

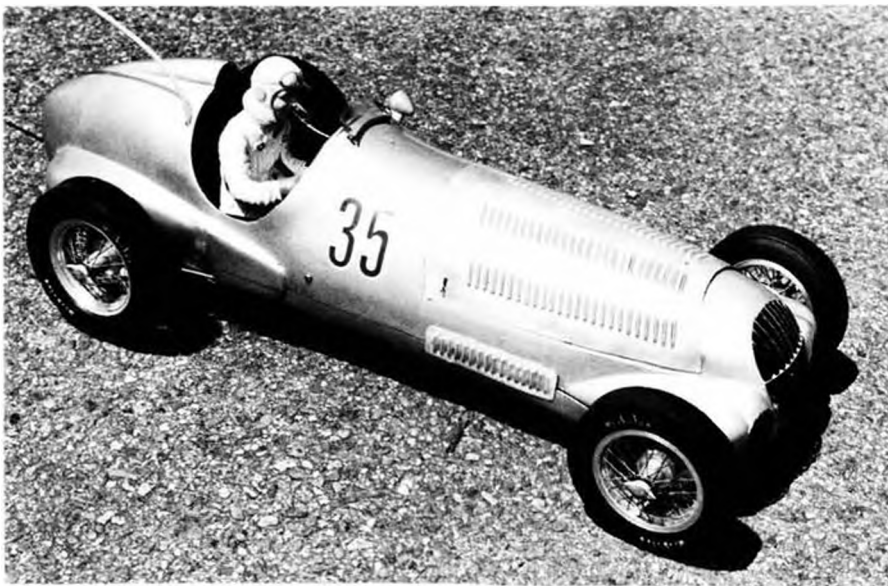
● The 1972 R.O.A.R. Nationals at the Briggs Cunningham track in Costa Mesa, California, was the largest R/C car race ever held, showing that the popularity of this new sport is ever increasing. There were 70 entries from all across our nation and Ted Lonshaw came all the way from England to compete and took two beautiful trophies back home with him. And can you believe . . . Stig Anderson came all the way from Switz-

erland . . . just to watch! There were also spectators from the Wiki-Wiki R/C car club in Hawaii. With this kind of interest, possibly next year, we could have a truly international event.

Were the races exciting? So much so that Dan Gurney stopped by to watch and stayed for three hours, sitting on the asphalt, watching the oval races. If Dan could have made it the next day for the road races, he undoubtedly would

have been there all day. We might just have a new enthusiast starting there. Can you imagine some of the innovations Dan might have for R/C cars?

The Nationals this year were split into two driver classifications; amateur and expert. There undoubtedly would have been many more entries if the novice class was included, but the problem of who is a novice or amateur on a national level was not solved. The program start-



Concours winner was this scratch built 1937 Type W125 Mercedes by Phil Foster, of Seattle, Washington. Scale cars had to qualify by completing a lap around the track.



1972 Grand National Champion, Roger Curtis. Associated Ferrari, painted by Jerry Thompson



Expert class road race winners (l to r): Ken Campbell, 3rd (Delta); Chuck Hallum, 1st (Associated); Roger Curtis, 2nd (Associated).



Amateur road race winners (l to r): Jim Cade, 3rd (Thorp); Bill Vanderziel, 1st (Associated); Glen Stone, 2nd (Scratch built).

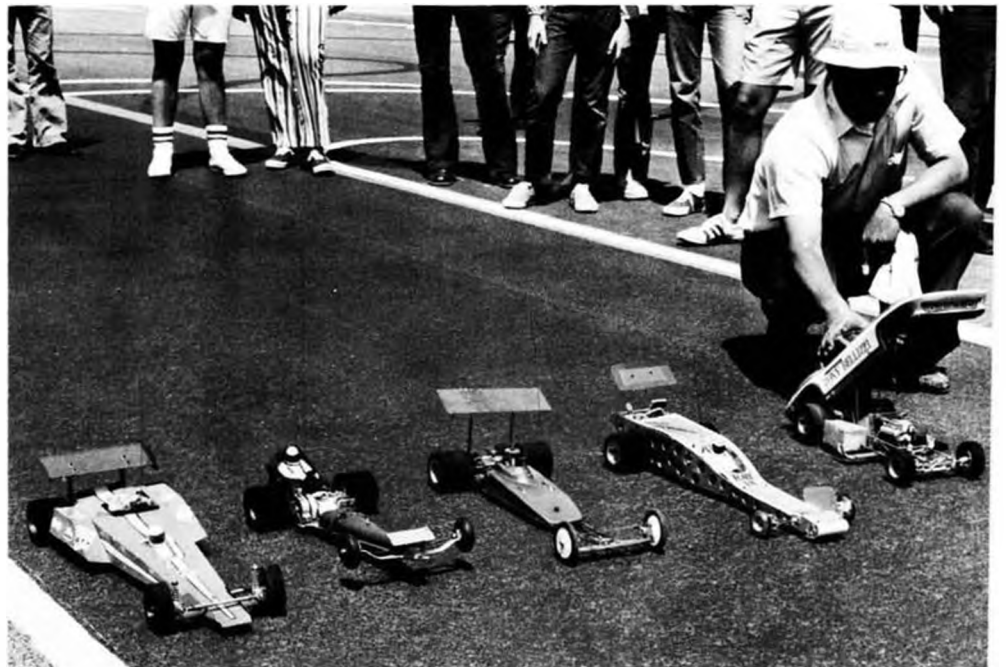
ed off with the amateur oval event. Every entrant was allowed two qualifying heats to qualify for the top 16 going into the main event. Every entrant was clocked in his heat and an average time was used to compute who would advance to the main. The best single time was used so that if an entrant failed to finish one heat, he could still use the time from his other heat. Our youngest competitor, 12 year old Bryan Bowles, driving a Thorp car, came in first with Jim Cade (Thorp) second and Don Amedo (Taurus) third. The victory was especially sweet for Bryan because his older brother, Kevin, also races and usually wins, but this time it was reversed.

The amateur road race event was up next and there was some very close racing which really had the spectators cheering. Bill Vanderziel, driving his Associated car, drove a great race against some strong competition and won his event. Glen Stone was second with his scratchbuilt car. Glen even built his own engine!. Jim Cade brought his Thorp car in third. The overall combined standings (oval and road race) showed Jim Cade as the 1972 Amateur National Champion with Bill Vanderziel second and Don Amedo third.

The experts were up next and it looked like there would be some very exciting racing ahead. The oval and road race courses were not painted on the track until the day before practice sessions started, so that the local racers would not have an unfair advantage over

the out-of-state competitors. There were two full days of practice, with everyone getting an equal amount of practice time on the new tracks. Every major brand of R/C car was well represented with a team of cars. The Marker Machine group, which is currently dominating the racing in the midwest, were represented by Del Fisher, Bud Schrendil, Dick Dobson and Bob Emmot. Delta was ably represented by Ken Campbell, who came out a week early to practice, and locals Bud Ihnen and Ron Bonnell. Mike Morrissey had a team of 3 amateurs and 3 experts with his new Taurus car. Thorp was strongly

represented by John Thorp, Gil Gundersen, Dick Sahara and Dick Camp. Jack Garcia and Dick Norsikian represented Nor/Kar. And the Associated team of Roger Curtis, Gene Husting and Matt Azzara, along with independent Chuck Hallum, was ready. The Associated group has been dominating the racing in So. Calif., placing first, second and third in the 1971 So. Calif. R/C Series and they are currently leading the 1972 So. Calif. R/C Series, placing first, second and third in the Points Standings, so they would have to be considered as favorites. *Continued on page 54*



Some of drag entries, with Gary Walker's Top Eliminator Delta dragster at far left. Tony Bellizzi displays his immaculate funny car at far right.



RUSS-CRAFT MODEL MUSEUM

Hobby shop owner Russ Barrera has undertaken a tremendous task, to assemble a live picture album of the history of model aviation. If you ever stop in, be prepared to stay awhile. Story by Bill Hannan

● Readers of *The MODEL BUILDER* who contemplate visiting Southern California, should try to include the Russ-Craft Model Museum on their list of "must see" attractions. Located in San Marcos, approximately half way between Oceanside and Escondido, Russ-Craft occupies a 4,000 square foot building, of which about 1,700 square feet are presently devoted to display area.

The facility consists of three overlapping operations: a model museum, a research library, and a hobby shop, which, of course, helps support the other functions. Offering the most comprehensive variety of hobby items in North San Diego County, the shop has a full line of model aircraft, boats, and other supplies.

In addition to kits from most manufacturers, Russ-Craft features many hard-to-locate things, such as Japanese tissue, Fascal covering material, and even some long-time discontinued items, such as machine-cut balsa wood prop blanks. Then, too, specialty items such as Pirelli rubber, Hannan plans, and Hungerford spoke wheels are available.

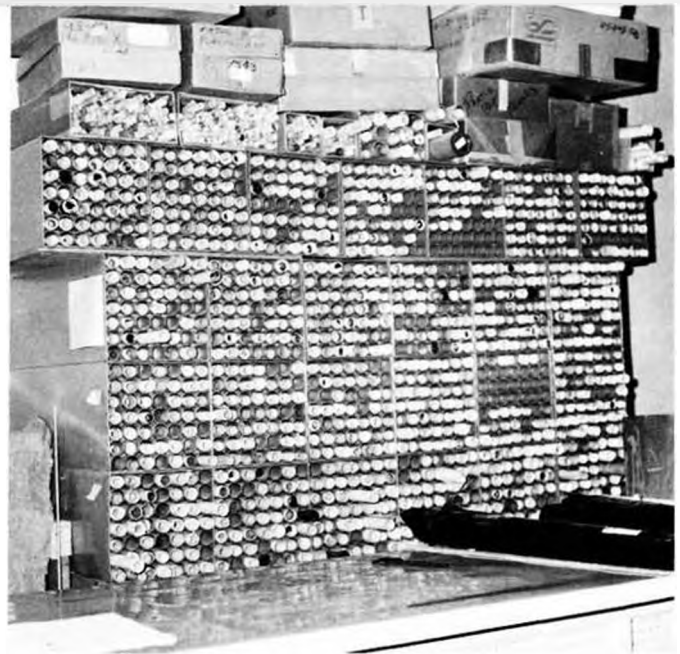
Owner/Manager Russ Barrera is a dyed-in-the-wool model aviation enthusiast, having been bitten by the balsa bug during 1927. A rare native Californian, Russ attended the Los Angeles Times Playground League classes, which taught the fundamentals of model building. At the time, that organization was directed by Irwin Ohlson, of O&R engine fame, and Norm Chandlee. Indicative of Russ's

preservation mindedness, is the fact that he still retains the scrapbook of plans acquired there back in 1929!

During World War II, Russ worked at Douglas Aircraft, and later entered into house-trailer construction, using for the first time the Russ-Craft name. In 1952, he became an active member of the Flightmasters, while they were meeting at the Inglewood, California city playground. Later, this group evolved into the now world famous North American Flightmasters, largest all-scale model aircraft club in existence. Without a doubt, Russ was the most vital "sparkplug" of the organization during their long history. In fact, the entire Barrera family participated in the club activities, including Russ's wife Lorraine, and their three



The Russ-Craft magazine library is enough to make any real modeler go out of his mind. Note also the early R/C equipment collection.



The focal point of the museum is this carefully filed plans library belonging to John Pond. Copies available for nominal cost. Write for list.

PHOTOS BY BILL NORTROP

daughters. Two of these daughters even managed to win places in Nationals events.

During 1958, Russ ran the helicopter event at the Nats, and in 1959 he ran all the scale judging, two F/F events, plus helicopter. In 1963, he was Scale CD at Los Alamitos; in 1970, F/F Scale Judge; in 1971 F/F Scale Event Director, and he again served in that capacity this year.

MUSEUM SECTION: The model museum forms the real nucleus of Russ-Craft, and its purpose, according to Russ, is to graphically depict the enormous progress that has taken place in model aviation over the years. Hopefully, it will eventually contain a chronological history in miniature, to show

newcomers what has gone on in the past. The museum presently contains a large number of historically significant models, some of which date back 30 or more years. All branches are represented, including free flight, static scale, control-line, and radio control. Just to single out a few examples, we might mention the early control line model (preceding Jim Walker's "invention") which features such sophisticated innovations as throttle control and retractable landing gear.

Other interesting control-liners in the collection are several team racers and scale models constructed and flown by the original F.A.S.T. club.

A particular prize is the microfilm

model built by World Champion Jiri Kalina, of Czechoslovakia, which was brought to this country by Clarence Mather. Also on display are towline gliders, speed models, scale models of many types, helicopters, and R.O.W. aircraft. Old-Timer fans will find a large selection of pre-war models, some still sporting their original ignition power plants. Stiglemeier's Wakefield model, flown in the 1938 contest is also on hand, and Russ hopes eventually to have reproductions of ALL the Wakefield winners. Any volunteers?

Newcomers to R/C modeling might be somewhat amazed by the 8 foot span Brown Junior powered 1937 model

Continued on page 46



More of the magazine collection, including, MAN, Flying Aces, Popular Aviation, and others. Most all of the gaps are filled.



Kits, still in the boxes, and long out of circulation. Some are in duplicate. What do you have to trade? Planes built from kits and mag plans.



... Being a column devoted to miscellaneous ramblings of an aeronautical nature ...
By Bill Hannan

WHAT'S IN A NAME?

● The World's largest flying scale model organization started out as the Inglewood Flightmasters, but became the North American Flightmasters, when that company assumed sponsorship. Later, with a company amalgamation, the club was transformed into the North American Rockwell Flightmasters. Now, according to the August, 1972 AIR PROGRESS, North American Rockwell may become

distributors for Russian Yak-40 transports. Assuming this occurs, will the model club then be dubbed the North American Rockwell YAKmasters?

* * *

The smiling gentleman in our photo is Captain Dave Stott, of the Bridgeport, Conn. FLYING ACES, one of the most enthusiastic model organizations going. The model is a HURRICANE, a sport design which appeared in the old and



Fulton Hungerford's Fokker 'SPIN' almost makes roof-top touch-and-go!

fondly remembered FLYING ACES magazine. In the cockpit is a silhouette of that immortal rascal, Phineas Pinkham.

The Bridgeport group helps to keep the spirit of FLYING ACES alive with their own newsletter written and illustrated in a style similar to its namesake. Captain Scott and Robert S. Thompson have served as sparkplugs for the club, and were the co-inventors of the Peanut

Continued on page 58



Our Pylon/4 reporter Fred Reese built this Demoiselle Peanut from Walt Mooney plans. It'll never lap a Minnow, but who cares?



An aerial view of the Fulton Hungerford spoke wheel production line, taken while the spiders were out to lunch.



Captain Dave Stott, Bridgeport, Conn. FLYING ACES club, and his Hurricane. (Hey, Bill! That's an Earl Stahl design, and we built one. Still have it stored away ... somewhere. WCN)



Hmmm . . . A little tongue in cheek to call it a "paper" glider, but on the other hand, what does paper come from? Wood pulp, of course!

A Paper (?) Glider

The most familiar aeronautical "shape" of all time; flown from grandstands, hotel windows, monuments, pyramids, and most any other high spot where a piece of paper has been available.

● According to the London Times, a small Egyptian glider model dating back to the 3rd or 4th century B.C., has recently been found. Although archeologists have expressed surprise and/or doubt, we don't find the news startling at all. What better place could a guy

find to test a glider than the top of a pyramid?

Which brings us to our little papyrus—er . . . I mean "paper" glider. This bird was designed specifically for the Brown Junior Micro-Jet power unit.

To our knowledge, only one Micro-Jet

model has previously been published, and it appeared in an article written by Bill Brown and the late Howard McEntee for the April, 1969 American Aircraft Modeler.

Our "Paper Glider" is, of course, plain ole' balsa wood, but its configuration is essentially the same as the type kids have been folding out of paper since the year one . . . Well maybe the year two. Back in 1867, Messrs. Butler and Edwards proposed a *jet propelled* full-size machine based on this same theme, so presumably they too had been paper-folders as youngsters.

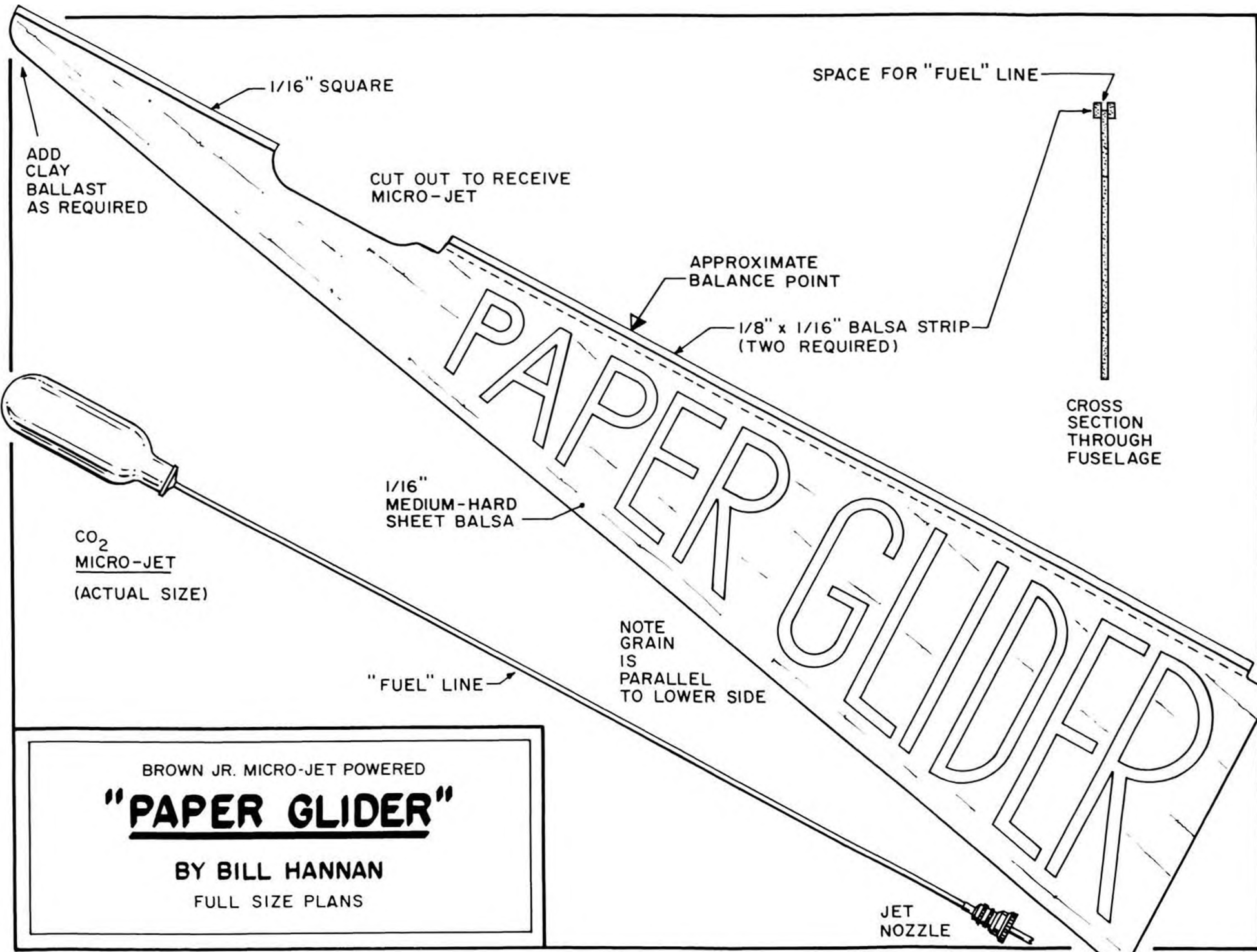
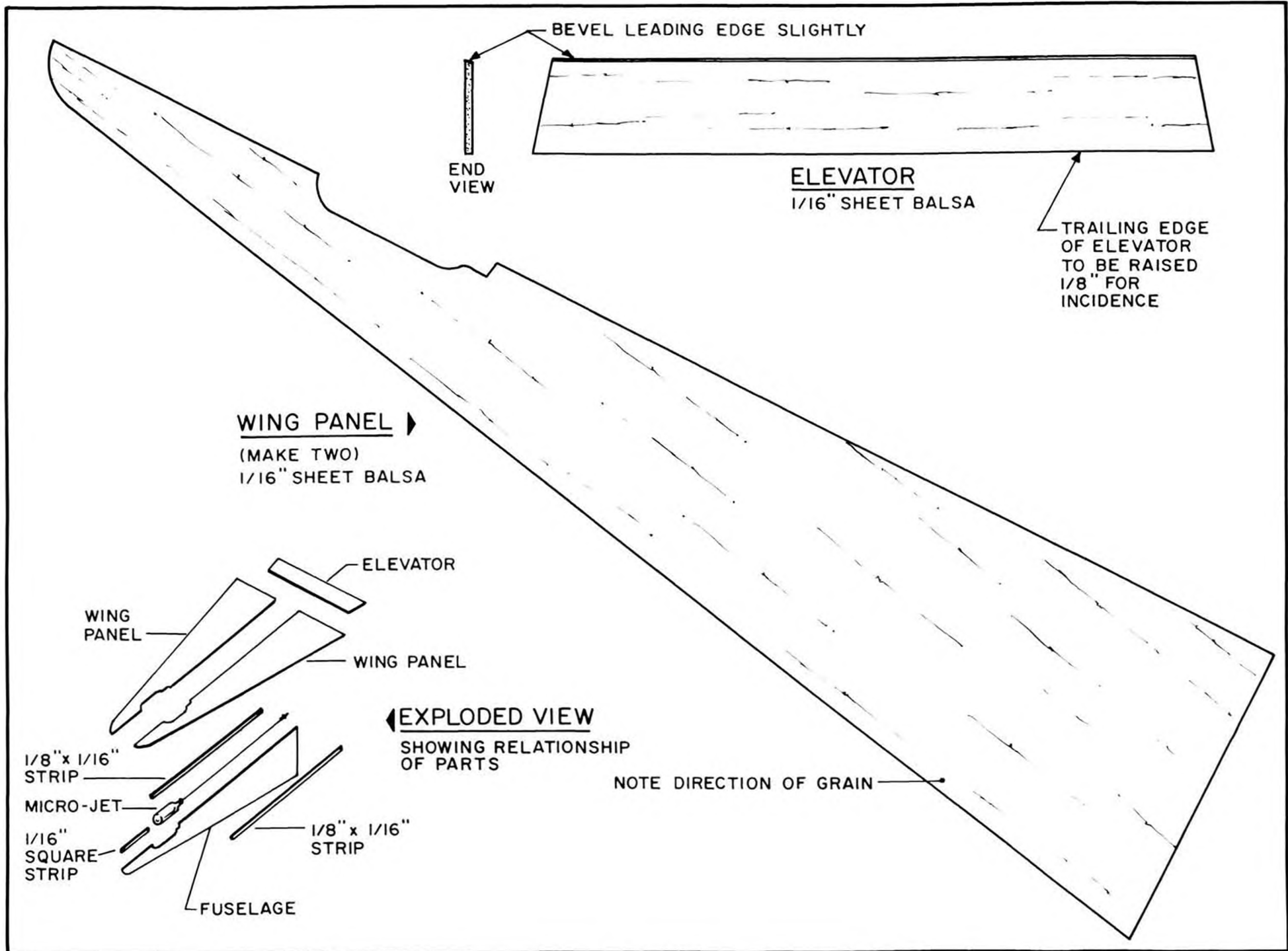
CONSTRUCTION: The entire model is built of 1/16 inch sheet balsa, which should be selected for its freedom from warps. The launch velocity is such that small twists could cause erratic and possibly destructive flight. Since the plans are presented full size, patterns may be traced onto thin paper and transferred directly to the sheet balsa. After cutting out the parts, sand them to smoothness, and round off the edges except those which will be joined together. The exploded view should provide all the needed assembly information.

We glued our wing panels together

Continued on page 59



Let's see now. Six feet long, fuselage built up 2 in. wide and silk covered, two main wheels just ahead of the CG, tail wheel at bottom rear corner, a .19 pusher at the fue/wing joint, thin built-up flat bottom wing with R/C elevons and throttle, maybe some rudder under the engine



BROWN JR. MICRO-JET POWERED

"PAPER GLIDER"

BY BILL HANNAN

FULL SIZE PLANS



After release by helper, contestant begins to taxi his plane through the start/finish gate prior to Taxi Demonstration and Takeoff.

SEAPLANE AEROBATICS IN JAPAN

By Ritsuri Honda.

Japan's FAI representative and World Championships R/C Pattern judge provides us with information on R/C seaplane activity in Japan and a rundown of the rules developed for competition.

● RC multi seaplane aerobatic contests began in the Tokyo area in 1965, sponsored by Japan Radio Control Association (JRA). The following year, Kwan-

sai Model Association (KMA) started this event in the Osaka area. In 1969, a 7-member committee for seaplane aerobatics, consisting of 3 delegates from

each association, was set up. The committee analyzed the results of the 5 year experience and data from various kinds of experiments. The rules were published in early 1970 and have been used successfully since then. These are notes on establishing the seaplane maneuvers and the model specifications.

1. MANEUVERS

The seaplane maneuvers must be considered in three ways: the maneuvers on the water, in the air, and the balancing of the values of each.

1.1. MANEUVERS ON THE WATER (W)

From the initiation of motion to airborne, a seaplane follows *plowing* and *planing* on the water. These stages of running on the water must be kept in mind as particular phenomena to a seaplane.

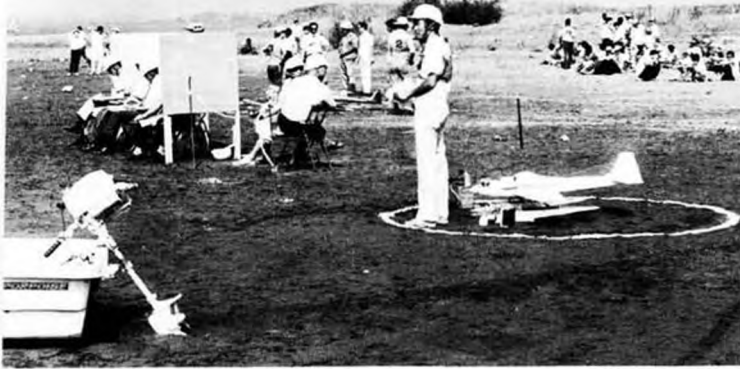
1.1.1. PLOWING

- a) The external factors which we discovered in our experiment that restrict "W" are the wind and propeller torque.
- b) "W" is limited within the two-dimensional plane.
- c) Therefore the maneuvers in all directions (concerning the wind and prop torque) on the two-dimensional plane (water) will be assigned.

PHOTOS BY RITSURI HONDA



Judging by this photo, there is more than just mild interest in R/C seaplane aerobatic competition in Japan. Rules have been developed to emphasize importance of handling while in water.



General layout for contest. Judges in booth facing flight area, next flier in ready box, stand-by pits behind judges, spectators in back.



Close up of ready-pit displays some interesting design approaches. Apparently there are quite a few float kits available.

- d) From the study mentioned above, a 360 degree turn in a clockwise direction and a 360 degree turn in a counterclockwise direction must be assigned.
- e) Taxi with plowing must be included, that is, taxi demonstration from the starting gate to the take-off spot and vice versa.
- f) The 360 degree turns and taxi from and to the gate mentioned above must be combined as *Proto-Taxi*.

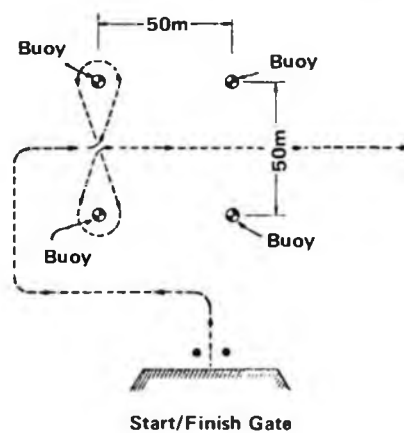
1.1.2. PLANING

- a) Planing is observed during Take-off and Landing.
- b) This will be set up as a separate maneuver, *Planing Touch and Go*.

1.2. MANEUVERS IN THE AIR

An unsymmetry of vertical distribution of drag and weight as to the thrust line, which is caused by the floats or hulls, will impose difficulty, reluctance or limit on performing maneuvers. The following maneuvers

TAKEOFF & LANDING SPOT LAYOUT



have been picked from the FAI RC Aerobatic rules.

1.2.1. AROUND THE PITCH AXIS

A combination of inside loops and outside loops is appropriate, that is, Double Immelman and Horizontal

Eight. The difference of drag caused by these maneuvers is great, and keeping symmetry and balance of these combined maneuvers will necessarily impose some reluctance on controlling the model. Inverted Straight Flight will be added due to this reason, too.

1.2.2. AROUND THE ROLL AXIS

Rolling maneuvers, Slow Roll and Four Point Roll, will be appropriate. Due to the float drag, rolls and shift of flight path will impose reluctance.

1.2.3. AROUND THE YAW AXIS

Spin was adopted, since increased moment of inertia due to floats or hulls will impose reluctance.

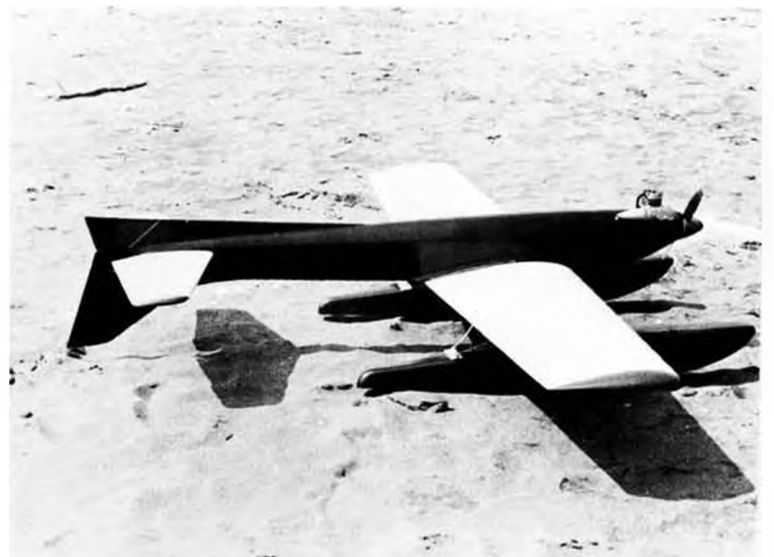
1.3. EQUALIZING "W" AND "A"

This concerns the number and distribution of maneuvers, and the scoring system. In order to keep a balance of value between "W" and "A", the following procedures were applied.

Continued on page 60



Eventual winning plane in this particular contest is fairly conventional set-up. Note water rudder connected to air rudder. Like Seahorse.



Latest, and quite successful design evolution is this bottom rudder configuration by Sei-ichi Tangiku. Kits are now available.



Jack McCracken, NAR Flightmasters president, watches his Gipsy Moth F/F take off. Note shallow strip which protects area from speedboat wake.

FREE FLIGHT ... SPORT & SCALE

It wasn't planned this way . . . everybody just came up with a water article at the same time . . . so here we go again! You'll have to admit, we're probably wetter than "All Wet!"

By Fernando Ramos

PHOTOS BY FERNANDO RAMOS

● About three years ago, the N.A.R. Flightmasters decided to hold, for the first time, a scale R.O.W. (rise off water) contest for Free Flight (rubber and gas) and R/C. At that time, many members felt that this would be just what was needed for summer contest flying. The flying site was absolutely no problem, since Lake Elsinore was only about an hour and a half away from the Los Angeles area, and about the same distance from San Diego. One of the great things about Lake Elsinore, in addition to its

geographical location, is that there are no obstructions of any kind such as trees, shrubs etc., which are a natural menace to model airplanes. One sees nothing but wide open spaces, plus plenty of water. Another interesting point regarding Lake Elsinore is that Skylark airport is located just south of the lake, where soaring and sky diving are prevalent. All one has to do is to look up at any time and see either a mushroom of colored parachutes dropping out of the skies, or see some grace-

ful gliders ridge-soaring near Saddleback mountain. One final comment about this unique flying site; the lake has very shallow banks, similar to the Great Salt Lake. You can walk far from shore without getting much deeper than the ankles. This, of course, makes model retrieving a simple task.

The R.O.W. rules were made very simple in order to have more participation, as well as making official flights possible. The rules simply state that a model must R.O.W. and sustain a flight



McCracken's versatile Gipsy Moth. It flies with rubber or Cox .049 power, and on wheels or floats . . . and it always looks brand new!



Walt Mooney's 24 inch Taylorcraft featured in last month's center-spread. Note clear plastic sub-fin required for stability.

time of four seconds (this includes from time of release) for an official flight. The flight is judged from takeoff to landing for realism and scored accordingly. After the flying part of the contest is over, the models which qualify are judged for scale fidelity.

Those of us who competed in the first R.O.W. contest found that we had a great deal to learn about getting a model to lift from the water, and that four seconds for an official turned out to be an eternity. Rubber models that did manage to R.O.W. would wallow through the air only to stall into the water. Gas models were not fairing much better, either. Their problems usually amounted to a great deal of taxiing, indicating insufficient power. The adhesion between water and floats is tremendous. Many fliers tried to stir the water or agitate it by throwing rocks. A more colorful method was to see a contestant with model in hand ready to go, dancing around and stirring up the water then quickly releasing the model. Usually, this did not help . . . not the dancing or the stirring up of the water, such as is sometimes practiced by full-size seaplanes. So, the number of successful flights that first year were few, to say the least. The enthusiasm, however, was very high, and another contest was scheduled toward the end of summer.

The second year of this event saw more varied types of airplanes modeled, and more successful flights. Everyone was learning. This last contest, which was held concurrently with the SCAMPS old timer R.O.W. contest, saw several hundred spectators enjoying all of the flying as well as the perfect, clear, calm weather.

The competition is very low key with "fun" the primary goal. Everybody has a good time, even those who do not qualify. To add to the enjoyment of this contest, there is a group of modelers who drive all the way from Las Vegas, Nevada, part of an active club known as the Vegas Vultures. Their assortment of planes is very impressive, as well as being architectural marvels. They bring models such as the Navy's NC4 and PBY, the push-pull Macchi-Castoldi, and Hanriot, to mention just a few. They keep the rest of us busy building between contests.

With the advent of the new Brown

Continued on page 62



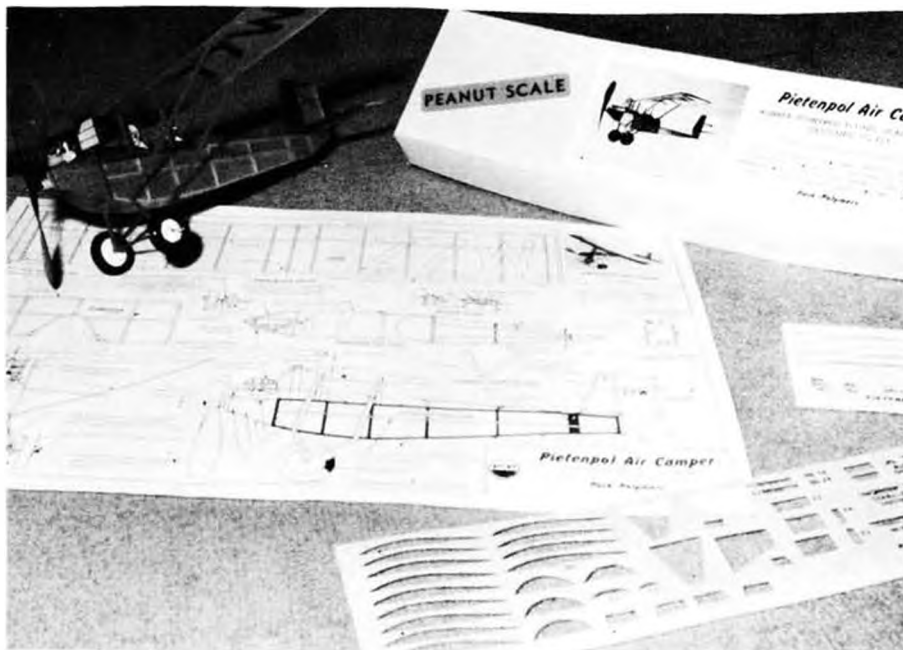
When the Mooneys turn out for a contest, they come to fly! Left to right, Carole and Walt, standing, Douglas Martin, Chrislea Bee, and Curtiss Ryan, kneeling. How's that for an aeronautical clan?



Fernando's Velie Monocoupe, built from modified Herb Clukey plans.



First place winner Aeronca K by Joe Bailey. Just remove that non-scale prop



Don Butman reports in this column on the pleasure of building the Pietenpol Air Camper from Peck-Polymers' Peanut scale kit. Parts are printed, not die-cut. Don's just a neat worker!



CONTROL-LINE

By Dick Mathis

● Propellers are nice things to have because: (1) They slow the engine down enough to keep it from welding itself shut, (2) Some people have determined that they are what ultimately makes the whole airplane move through the air, and (3) it would be hard to crank the engine by hand without one. So, if you decide a propeller is for you, it makes sense to get the best one for your airplane.

In my discussion about props, someone always asks, "Whatever happened to Rev-Up?" Well, their props are now back on the market in adequate quantity following recovery from a fire in the plant. I have always found Rev-Ups to be the most efficient prop for any class airplane, provided the proper selection is made from the wide variety available. For example, they make two kinds of 7-6. One is the "Custom" series and the other is the "Speed Series 400". The "Custom" has a wide blade and is made of gum wood and the "400" has a narrow blade. If you fly sport 15's, the Custom is perfect for you. If you are a Goodyear or FAI combat person, then the narrower "400" will really make your ship hop.

Why do Rev-Up's go so well? (1) Wood is more rigid than nylon, (2) they have very efficient blade shapes, (3) they are well balanced, (4) the blade airfoils are thinner, and (5) they have a very slick fuel proof finish. Same goes for big combat, rat race, stunt, etc. They make extra wide blades for stunt, extra strong props for rat race (thicker shanks) and so on. In a nutshell, they have the right prop for every specialized ukie use you

can think of. Even if you fly nothing more elaborate than a .35 Ringmaster, you can improve performance (try the 10-6 extra wide). You pay a little more, but you get a lot more in return.

On the subject of props, regardless of what kind you use (so long as they are wood), it helps to take a little 00 (fine) steel wool to the blade surfaces to give them a lustrous smoothness (that has a good sound — try mumbling it to yourself a few times and it will get your lips excited — "lustrous smoothness," "lustrous smoothness"). Another improvement is to sand the bottom leading edge of each blade (it goes without saying that if you do one blade, it is nice to do the other blade too, lest it be offended) so you have a slightly up-swept entry and a sharp leading edge. That helps pick up a few RPM's and makes things even more efficient.

A word about balancing, too. The stylish thing to do now is balance one's prop using an expensive balancing device

(2 to 5 bucks is expensive). The R/C boys are religious about this, I've noticed, as are many top ukie flyers. The idea is that balancing causes less vibration and gives more power due to smoother loading of the motor. Before you try balancing (which in my opinion is basically senseless on a one cylinder model airplane engine because it is inherently unbalanced), try this: If the thing seems to be vibrating too much, loosen the prop and rotate it 180 degrees and try running it again. I'll bet it smooths out just fine. A lot less trouble, and probably closer to being balanced than if you meticulously trim the prop. All you've done is counteracted the basic imbalance of the engine with the imbalance of the prop — and it works!

Continuing this exciting discussion, I'm reminded of my Dad's stories of his first postwar attempts at speed flying. He reasoned that the prop was like a screw in the air and that if you wanted

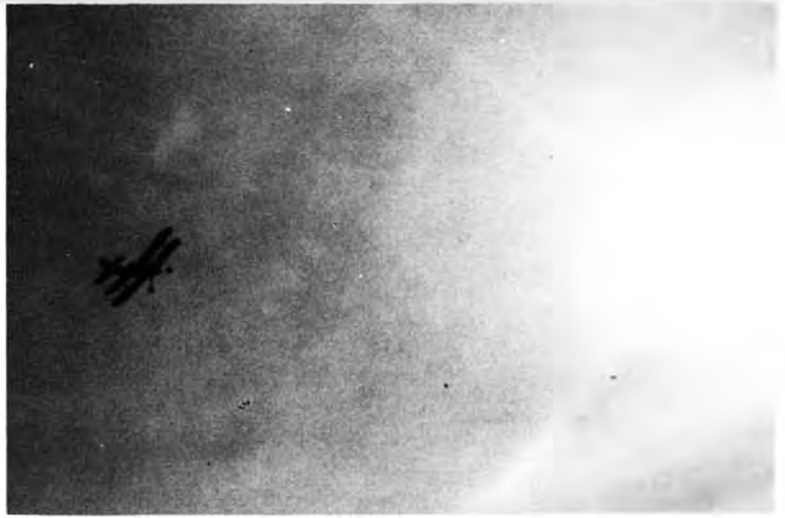
Continued on page 61



Steve Stumpf, Pana, Ill., and his 1/2A stunter flown on 45 foot lines. Cox Tee-Dee power, 6-3 prop, Tenny tank. Design is reduced Envoy from MAN plans. Next he'll do Sirotkin's stunter.



Here's a snappy little semi-scale that you can take back and forth to the field without dismantling. A real crowd pleaser.



Off we go into the sunset! Ship is designed for .40 to .50 cu. in. engines. One nice thing; both wings take same size ribs throughout.

LITTLE

TOOT

Everybody loves a biplane . . . don't they? This one is sort of a medium small size, for fortyish engines. Watch those surface movements, Toot can almost bite its own tail!
By Denny Elder

PHOTOS BY DENNY ELDER

● A few years ago, while attending a contest in Dallas, Texas, I first saw the fiberglass Little Toot. The fiberglass job had foam wings and the works, all ready for Formula II. The only one that flew was entered in scale, due to lack of entries in this event. With a screaming K & B .40 there wasn't much of a show. Had the city of Dallas been a bit easier on my pocket, I would have probably brought one home.

As the summer months grew to an end, the winter air inspired the birth of my version of the Little Toot. The 600 inches of wing area were kept in the design in order to create a biplane for the mid-sized engine and the miniature radios. There are a few around here who

think only in terms of 7 foot Travelairs. (*So what's so bad about that? - WCN*).

The plane in the photos is the second of two. The first was a bit shorter and sat higher off the landing gear. The second plane was lengthened from the trailing edge of the bottom wing and the landing gear was shortened. Both of the changes were brought about to aid in ground handling.

Before we begin chopping wood and smelling glue, I would like to make a couple of comments. First, if you're seriously thinking about building this little biplane you've got to be crazy about wings. All biplanes have two wings. (*Very profound there, Denny! - WCN*). Second, though this is relatively a sim-

ple plane to build and fly, I'd recommend some flying experience. Not "ace of the base", but just an Ugly Stick or two. Ready? Let's go!

WINGS

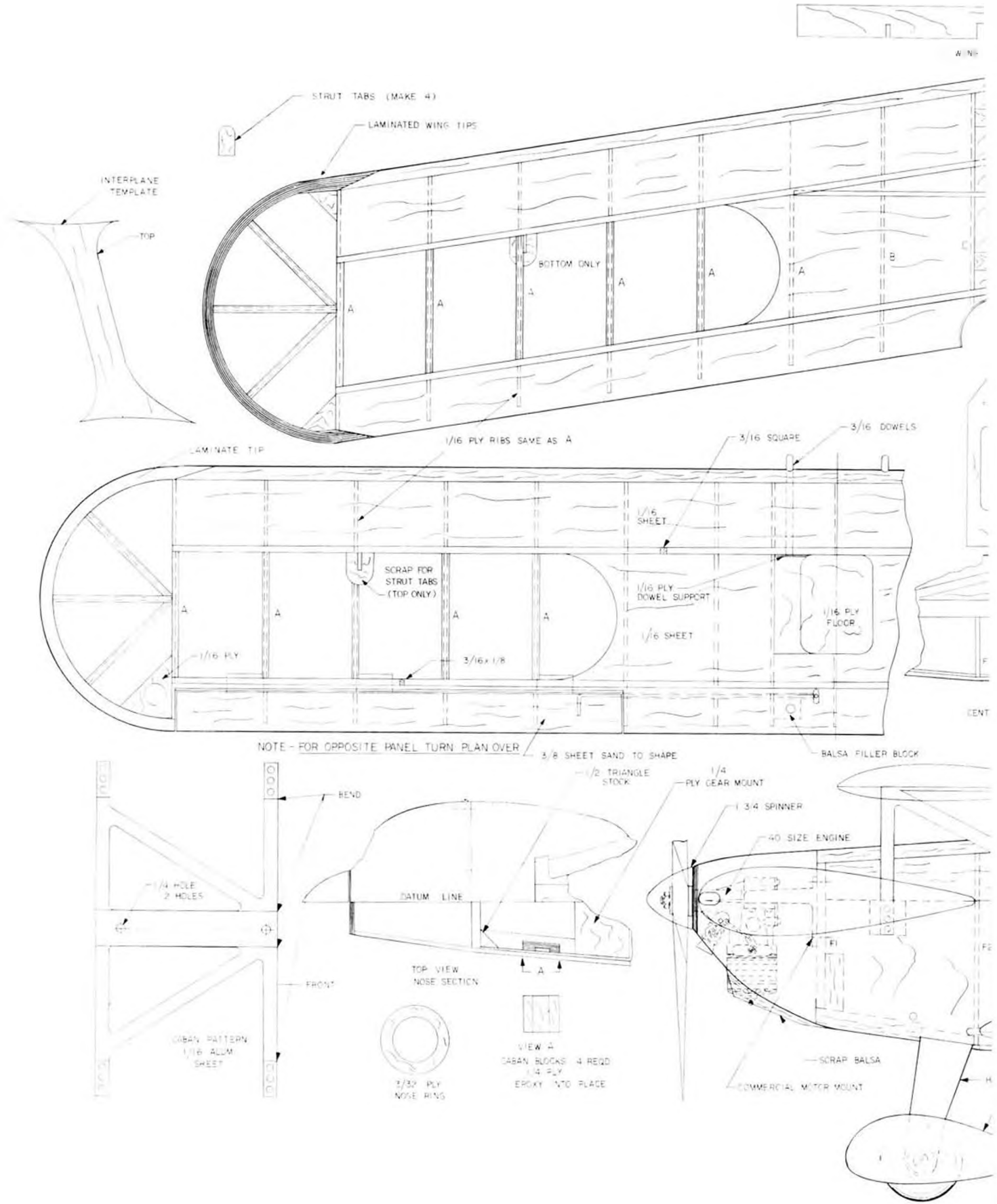
Both wings use the same rib pattern. The rib outline is traced on a 2 x 4 inch block and cut with a band saw. The idea was given to me by the creator of Big John. (I'm on my second B.J. II). After the outline is cut, notch the rib block for the spars. Sand the block lightly and then using some type of a guide, begin slicing the ribs off about 3/32 inch thick. The waste from the block looks to be rather great, but compare the cost of the block to the sheet stuff.
Continued on page 39

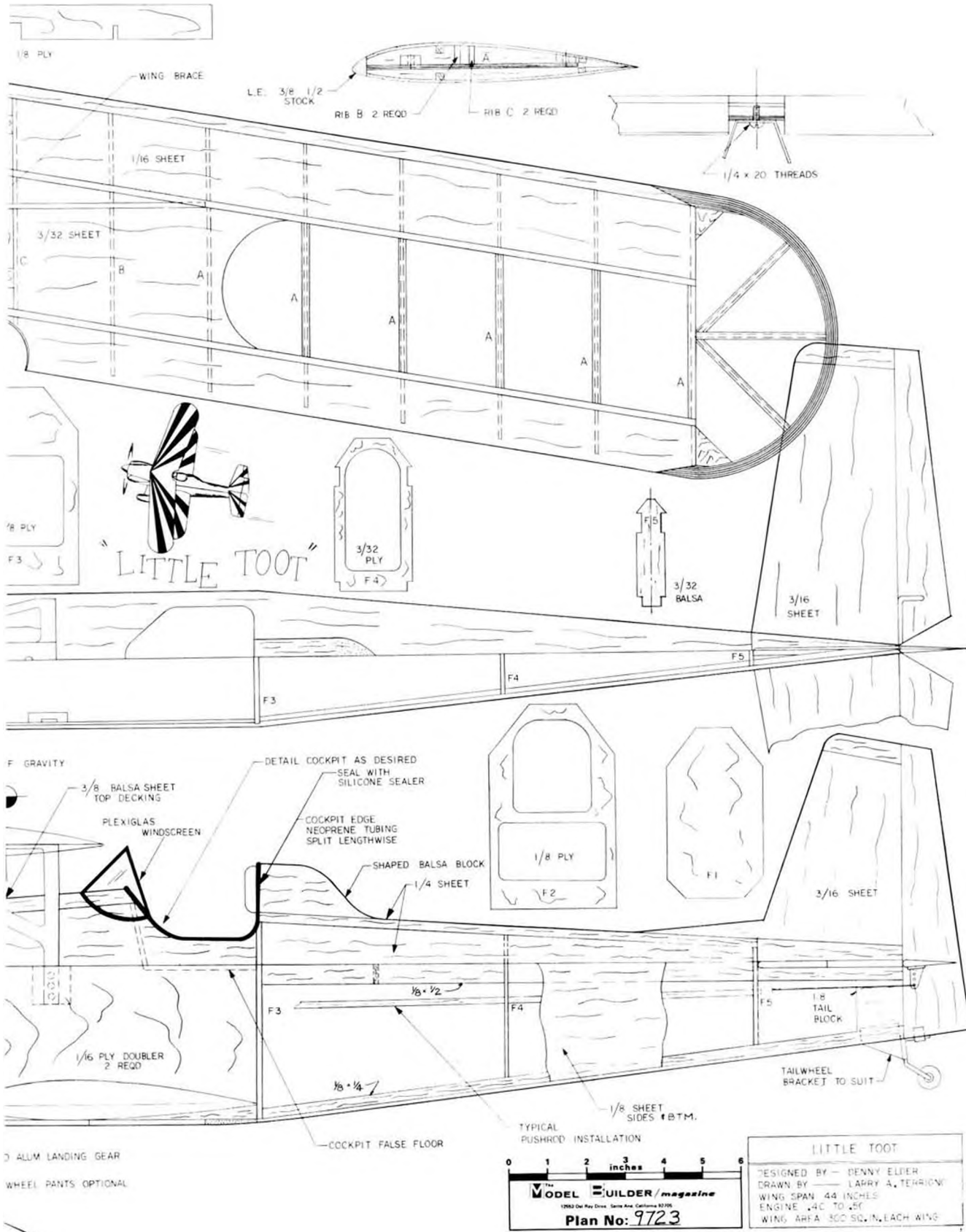


The author and the plane. He HAS to be a good guy, having built two Big Johns! Denny will supply fiberglass parts if you want them.



This view shows some of the construction and assembly techniques employed in creating the Toot. Note simple top wing attachment.





FULL SIZE PLANS AVAILABLE – SEE PAGE 64



Paul White's Minnow which was first in scale judging at Bakersfield meet out of 119 aircraft. Note the scale cheek cowl shape and slim canopy.

pylon

By Chuck Smith

What with competing in the AMA Nationals, and preparing to race in the International Pylon event in England, our editor found his hands too full to attack the typewriter this month. However, we'll have a Nats report next month, and a first hand report from England the month after. Meanwhile . . . stay loose!



Francis Products Shark by Bob Seigelkoff. This new version is closer to scale outline. Right cheek cowl is molded separately from fuselage.

The MODEL BUILDER



Winners in Hawaii (rt to lt): John Brodbeck (1:34.8), Chuck Smith, Joe Martin, Marcial Davila (Mexico), and Whit Stockwell.



Walt Schoonard (front left) with his Minnow, and Norm Holland with his Shoestring, do a lot of racing in the Florida area.



Charlene Brodbeck holding husband John's Minnow, which took first place in Hawaii. Both models well built.



No, it's not Larry Leonard. The hat looks familiar, but underneath it is Marcial Davila of Mexico, whose Minnow placed 4th in Hawaii.

The MODEL BUILDER



Joe Vartanian (rt) and Mike Bridges with ST .40 powered Miss Dallas, Ship is kitted by J.G. Models (John Garabidian).



Marge Derrough holding husband Basil's "Miss Canada," a scratch-built P-51. They're from St. Thomas, Ontario. Qualified in FAI at US Nats.

● As you know, there is a rules freeze in effect for all 1972 AMA rules. This means that there will not be any changes in the 1973 rules except for clarification of some wording. Quarter Midget racing, therefore, cannot be considered for official status until the summer of 1973 when the Contest Board meets to discuss the 1974 rulebook. Hopefully we will be an addition then. (*Looks very likely, however the status will be provisional first—WCN*). Meanwhile, we must look at all of the current rules and experiment. We have the time. The organizations also need your support so as to better represent your views and hear your ideas.

The industry seems to be taking notice, and many new kits, engines and specialized parts are becoming available. There are several P-51's available, with Stafford, J&J, and J Craft making all balsa or balsa and foam kits, while Hobby World and Francis Products make glass fuselages with foam wings. K&K makes a glass and foam Minnow and Midget Mustang. Hobby World also makes a glass Minnow and Aircobra. House of Balsa is kitting my Shoestring design, which can be easily modified into an El Bandito. Hot Line Models has a Cassutt Special, Mini Flite makes a Rivets, and Dee Bee has a plastic ARF Mirage. Until some of the new engines become available, you can really take your pick. Any of the current engines can be competitive. Sig just announced plastic QM wheel pants and cheek cowl. Now if somebody would just make a 7x5 wood prop

Last month, QMRC, in sunny Califor-



Mike Penko releasing P-51 No. 16 for his dad, Bob, at the Mentor, Ohio races on July 4th. Bob is chiefly responsible for the progress made in QM development and founding of the QMPL. In foreground, Bob Pretner releases Bob Jones' P-51 from Nobora plans. (Now kitted by J&J)

PYLON/4

By Fred Reese



Wow! Look at the up elevator on the Keith Rider R-5 Jackrabbit by Dombrowski. The OS .15 powered K&F Cosmic Wind belongs to Al Gross.



Alex Kozaloski puts the "electric chicken-stick" to his Mongster, June '72 MB) while Bill Gadamer holds on.



Bill Torpe flew his "Quickie" (Midget Monocoupe) at the Mile Square races. REM, OS.15. At least he got more air time than the others.

nia, sponsored two QM races at Mile Square, Orange County. On July 9 there were 28 entries, with first place going to Henry Bartle, flying a Little Mike with OS .15 power. Second place was taken by Carl Weyl, flying a Shoestring with ST .15 engine. Jack Stafford was third with his kit prototype P-51 with ST .15. Jack posted the fastest time of the day, 1:37, around the 350 foot, 1 3/8 mile short course.

After the race, each of the above airplanes was measured and the engines were checked for modifications. The cylinder heads were removed and the carburetors were also checked for modifications. The three airplanes were all found to be legal by the rules and the whole process took only about 15 minutes. The portion of the check that took the most time was determining the wing area. To simplify this, the CD could require each contestant to present, if asked, a wing planform drawing of his airplane. This outline drawing or plan could be easily compared to the actual wing and then quickly measured.

On July 30, there were 20 entries. The winners were: First, Fred Reese, El Bandito ST .15, 1:45; Second, Don Barton, Pogo, OS .15; Third, Chuck Brown, Minnow, OS .15, 1:53.

My 1:45 was the fastest time of the day and I came in second in that heat! I guess a lot depends on the guys pushing the buttons on the stop watches. The day was really hot and we were lucky to have any timers at all. In fact, all of the flyers owe these people a debt of gratitude, for without them we wouldn't be doing much racing. The day was



Ken Oakley adjusts idle on his Loving Love Special. ST.15

marred by several midairs and collisions with the pylons. More airplanes were destroyed in this one day than in all of the previous races. It must have been the heat, or possibly that many of the races were very close and the winner was determined on the last turn of the last lap.

As I mentioned earlier, now is the time to experiment and try the rules being used by the other clubs so that decisions can be based on experience rather than conjecture. For example, the QMRC group, which has been flying the shorter 350 foot course, plans to begin experimenting with a three pylon, two mile course at the next race in two weeks. At first I preferred the shorter course, but now, with times approaching 1 1/2 minutes, it may be a little too short. I would like to see the fastest times come back to around two minutes,

Continued on page 59



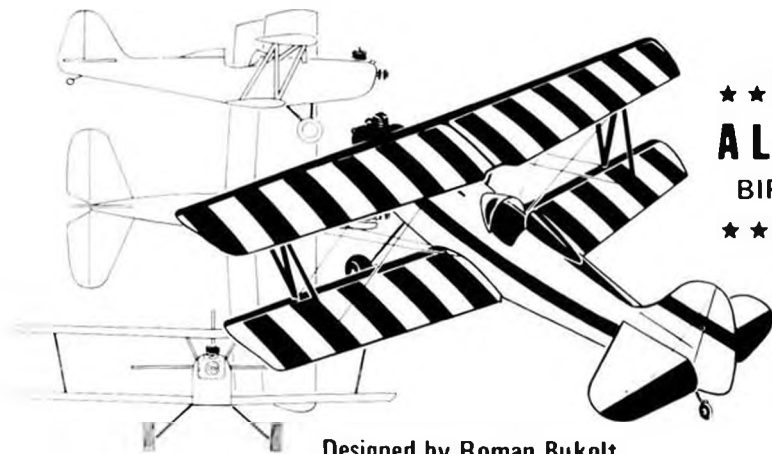
Henry Bartle, Little Mike, OS 15, and a sweet smile of victory at July 9, Mile Square races.



Paul Loring scaled down Form I Shark plans to build this ST.15 powered ship. Ken Rausis his caller. They're with San Diego Drones.



Carl Maas' very fast P-400, ST.15. He beat Fred Reese in the race in which Fred had fastest time of the day! Figure that one out!!



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port, Flying, Aviation, Air Age, Sport Planes, Air Progress, Air Classics, Popular Aviation, Air World, Soaring, Popular Rotorcraft Flying, and many more.

In the model building section will be found: Flying Aces, Air Trails, American Modeler, Model Airplane News (back to 1929), The Model Builder (natch!), Model Aircraft Builder, Model Aircraft Engineer, Scale Models, Scale Modeler, Aeromodeller, Modelarz, Modellbau, Letecky Modelar, Le Reduit C' Avion, and well, you get the idea!

Thanks to the remarkable memory of the curator, plus the organization of the facility, information retrieval is a relatively simple task. Some modelers have quickly located information here, that they had previously thought unobtainable. This splendid library is also available to browsers. There are no lending privileges, of course, but copying equipment is available on the premises, and at a very nominal fee.

PLANS: To many visitors, the Pièce de résistance is the model plans library. The majority of these are contained in the "Mr. Old-Timer" John Pond collection, which numbers over 2,000 reproducible. Blueline copies are available while-you-wait, thanks to the Blu-Ray machine, which can provide prints up to 42 inch in width. A sampling of the offerings would include kit plans from such companies as: Ideal, Megow, Wanner, Tomasco, Hi-Flyer, Comet, Scientific, Joe Ott, Miniature Aircraft, Dallaire, Burd, Capitol, Lindberg, Eagle, Selley, Ace Whitman, and on and on. You must see this collection in person to appreciate it properly, however, a plans list is available for 75¢.

In addition to the plans and magazines, a large selection of aviation books (both model and full-size) are housed in the Russ-Craft archives. Some of these bound volumes date back prior to World War I. Kite enthusiasts will also find quite a number of publications devoted to their interests.

Russ-Craft is located at 139 South "B" Street, San Marcos, California, 92069, and is open Tuesday through Saturday, with weekday hours of 10AM through 6PM, and Saturday hours of 9AM through 6PM. Stop by this veritable "time machine" and gain renewed insight to this most rewarding hobby of ours, and discover that those "good old days" are now! ●

museum . . . Continued from page 29

which weighs a mere 5 pounds! This craft features stressed members with music wire in tension, an idea which has been recently "reinvented".

Those with interest in model engines will be impressed with the more than 200 examples on display. These encompass virtually the entire spectrum of miniature powerplants, including ignition engines, glo engines, jets, CO₂ and compressed air types, as well as multi-cylinder and homebuilt variations. Also on view are accessories used in conjunction with them, such as spark plugs, early glo plugs, timers, etc. A propeller collection contains examples of rubber-power and gas types, including folders, feathering versions, and adjustable pitch configurations. Many vintage kits are also displayed, in their original boxes.

Russ emphasizes that this is an ACTIVE museum, and visitors are invited to participate by contributing additional items of interest. Exhibit pieces may be donated or placed on a long-term loan basis, and each donor's name will be prominently posted. Several items are

urgently needed to fill important gaps. For example, a Jim Walker Fireball model or kit. In the cases of particularly rare specimens, swaps can sometimes be arranged, as certain duplicate material exists.

REFERENCE LIBRARY: Perhaps the most unique feature of Russ-Craft is the comprehensive reference library, devoted to both models and full-size aircraft. Scale modelers may become almost incoherent at the sight of all this choice material in one location! The Russ-Craft 3-view collection is probably the largest organized and accessible in the United States. Most drawings are categorized by country and manufacturer, in 3-ring binders, filling an estimated 24 feet of shelf space. In addition, a 3 x 5 inch card file contains a comprehensive listing of 3-views, plans, and articles to be found in the magazine section of the library. That area displays a fantastic array of periodicals from the U.S., United Kingdom, France, Poland, Germany, Italy, Japan, and even a few from Russia. Publications devoted to full-size aircraft include: Flight, Flying Review International, Aero Digest, Flugs-

FINAL ASSEMBLY

Cut out the section of the fuselage necessary to mount the tail. Bevel fuselage structure as required in order to provide a flat surface for the tail to sit on. Remove the covering from the center section of the tail and glue the tail in place. Replace the top section of the fuselage and hinge the ruddervators to the tail.

Now comes one of the most important parts; aligning the wings. First, bend the wing rods to the six degree dihedral angle. Slide these through the fuselage holes and slide the wing root plates over rods. Do not glue to the fuselage yet! Slide the wings about half way on to the rods. Now apply glue to the fuselage side of the root plates and slide the wings all the way on, sandwiching the plates between the wings and the fuselage. When dry, apply large fillets to the root plates and to the fuselage-tail junction, using your favorite epoxy-putty. Sand well.

FINISHING

Using a razor saw, X-acto knife, and whatever else you have handy, cut the canopy loose from the fuselage. Give everything a final sanding and paint. I used Hobby epoxy because it gives a beautiful, hard finish that can stand up fairly well to repeated landings at Torrey Pines.

RADIO INSTALLATION

Now comes the fun part. As you may have noticed, there isn't much frontal area on the C-12 fuselage. This is reflected in a very small radio compartment. Your radio installation must be well planned to make sure everything will fit. A 225 mAh battery pack is advised but I managed to make a 500 mAh pack fit. It isn't pretty but it works.

First, glue the spruce rail mounts to the cabin braces. Epoxy small brass channel stock to the phenolic servo tray. Hold the larger brass channel stock to the tray with your fingers and use five minute epoxy to attach these to the rail mounts, making sure they are lined up as squarely as possible. When cured, slide the tray out from the stationary rails and use steel wool on the tray rails



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until the tray slides smoothly with no drag. A few shots of powdered graphite are helpful here.

Mount the rudder servo to the tray and make push rods to attach to the ruddervator horns. If you have a small airborne pack, the pack, receiver, and elevator servo will mount very nicely in line in the fuselage. With my large pack I found it necessary to tape the elevator servo to the top of the receiver on it's side. Make a short pushrod to go from the elevator servo to the sliding tray. This completes the radio installation.

FLYING

If the C-12 is built according to the plans it should fly right off the board, with little or no ballast necessary. The original C-12 weighs exactly two pounds ready to fly. You should set up the servos to give as much rudder as possible and as little elevator as possible. When set up like this, the C-12 is a fast, responsive aircraft.

Well, that's it. If you build one, have fun and fly safely. But please don't beat me with it. I need all the help I can get.●

TOOT Continued from page 39

The four wing panels are built separately. Begin by cutting ribs B and C for the top wing to accept the plywood wing brace. Cut the four lower trailing edge sheets to size and taper the upper back edge with a sanding block as shown on the plans.

Pin the trailing edge sheets over the plans along with the 1/2 inch wing jig strip. Glue and pin the lower rear spar to the sheet trailing edge. Now glue the ribs and other spars in place, trying to keep things straight and on the board as long as possible.

With the four panels completed as far as possible, join the two top panels with the correct sweep and at 0 degrees dihedral. Now cut the 1/8 inch plywood cabane platform and glue with epoxy between the two center ribs, making sure the platform is level according to the center line. After the epoxy is dry, glue the plywood wing brace in place, along with the hardwood blocks for the wing hold-down screws. The top of the top wing's center section gets 3/32 inch sheet instead of 1/16 inch, but wait un-

Continued on page 49

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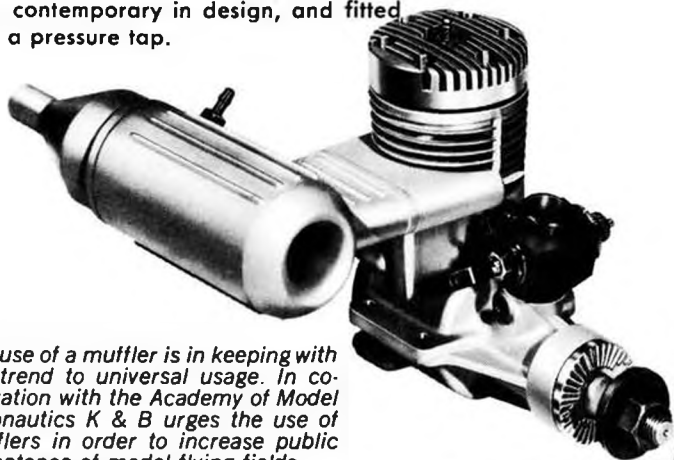
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Caddo Continued from page 19 for Pearce who dropped allowing Davis to take his place. (A later recount of scores indicates that Fred held onto third, and a team spot. WCN) In power it seemed that the only thing Hank Spence could do was max out and the same went for Earl Thompson. In Nordic Bob Isaacson was first until the 12th round, then faltered. Hugh Langevin and Paul Crowley were both in strong contention for the team all day, with Vince Croghan following closely.

As to the 15th and last round of the

meet, power was secured by Hank Spence after a magnificent job of flying with fifteen straight maxes. Earl Thompson had fourteen straight but slipped with a 132 second flight to fall to fifth place. Wolff and McLaughlin also made the power team. The fifteenth round in Wakefield proved to be unnecessary for Bob White and Frank Parmenter who kept the same positions held in round 14. And in Nordic, Hugh Langevin put up an easy max to cinch first place and Vince Croghan also maxed to get third. Second was in doubt for a while until Paul

Crowley went to make his flight. His model sunk in a downer, and began to drop until a minor miracle occurred. At about thirty feet off the deck it bounced once, twice and then stair-stepped fifteen feet in one swoop to max out! It must have felt like the remake of the "Agony and the Ecstasy" for Paul.●

John Ferrer describes a fairly accurate method of determining the altitude of your plane. Handy for R/C soaring enthusiasts, as well as free fliers.

● Ever wonder how high you really got? (On what, John?) Many of us are free with our estimates but I have yet to meet someone who could back it up. Recently, a friend of mine (an antique nut) bought a stadimeter (Second World War vintage) in an army surplus store for twelve dollars and then wondered what he was going to do with it . . . that is, until I saw what he had found!

No, a stadimeter is not for counting the spectators in a stadium! The device is used to measure the range (distance) of ships (the floating kind) and depends on your having some knowledge of the ship in question. Unlike a rangefinder, which includes its own base line reference, the stadimeter depends on the length of the ship for its reference. To use it, the length of the ship is set into a scale bar calibrated in feet. Next, the user sights through the telescope and sees two ships (sober or not)! This is because of a light beam splitter and some mirrors in front of the telescope. Now the range knob is turned, which slides one image relative to the other until the bow of one image just touches the stern of the other. The range is then read directly off the range knob.

To apply the instrument to a flying model situation just requires some scale conversions. The projected wing span of the plane is used as the reference length. The scale on the instrument does not go down to 5 feet, however if 50 feet is used everything is okay as long as a zero is dropped again when reading the range knob, i.e., 200 yards when the scale reads 2000. See Fig. 1

Viewing an airplane in motion overhead is somewhat more difficult to do than observing a ship on the horizon. If the plane is directly overhead you

can turn your head and instrument so that the airplane is oriented properly, however, if the plane is downwind slightly, then a reading can only be taken when the plane is heading toward or away from you. Even under these dynamic conditions, I estimate an observer accuracy of better than three percent. Rarely is a plane directly overhead at the end of an engine run, however, the error introduced by the slant angle to the airplane is slight in most cases. For example, a 5 percent error does not occur until the plane is almost 20 degrees from the vertical. I stand close to the launch site, so a flight beyond 20 degrees is usually a poor one anyway.

The amount of data I have collected is limited and therefore I cannot provide good statistical averages for all classes of ships. Averages of measurements on 1/2A, C, and FAI power taken at the USFFC meet at Taft this year are shown below.

| Class | Engine run | Altitude |
|-------|------------|----------|
| 1/2A | 13.5 sec | 510 feet |
| C | 13.5 " | 730 " |
| FAI | 9.5 " | 620 " |

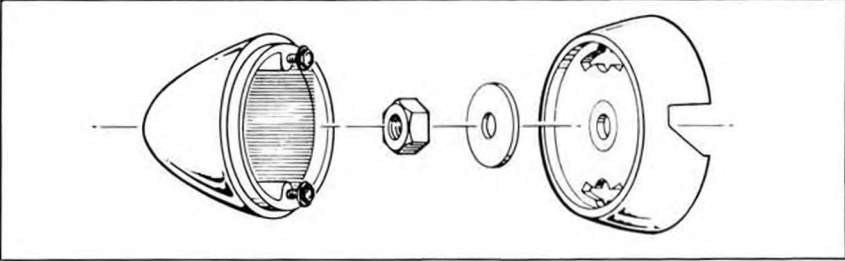
I record the engine runs in the hope that they will be of some statistical value. In both 1/2A and C, the typical engine run was 13.5 seconds. The FAI ships played it a lot closer to their allowed 10 seconds. If we compensate for the shorter than ideal engine runs we can extrapolate the altitude potential of a ship. For example, if the data above were compensated for ideal engine runs, the table would look like this:

| Class | Engine run | Altitude |
|-------|------------|----------|
| 1/2A | 15 sec | 567 feet |
| C | 15 " | 810 " |
| FAI | 10 " | 652 " |

The statistics presented so far are based on good flights; poor engine runs and just plain maladjusted planes were cause for data rejection. The purpose here is to predict the altitude achievable with a good performing contest ship. Also recorded at each flight is the engine used and plane design. So far, the spread in altitudes in a particular class has not been too revealing, however, when sufficient data is accumulated, the spread may indicate the difference in perfor-

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mance as a function of the engine used, and the plane design.

Just for the fun of it, I calculated the velocity of Doug Galbreth's FAI ship in which he reached 660 feet with a 10 second engine run. I also noted his ship did one and a half turns and the diameter appeared to be about 150 feet. The spiral flight can be treated as in the sketch. See Fig. 2

The actual path length of the flight is 967 feet, and the velocity is 97 feet per second, or 66 miles per hour! Even if my estimates are off by 20 percent of the spiral diameter and number of turns, the error is only 5 miles per hour. I guess we already know that if it comes your way, you had better duck!

As a last word, our ships do go high under power, so keep it in mind when flying near airports where the 500 foot ceiling is in force. Cat II contests would keep most ships below 500 feet. The big C ships may also be safe since the actual flight is not of constant velocity. A larger portion of a 10 second flight is in the acceleration and getting into the groove. I hope to substantiate this in the near future. ●

TOOT *Continued from page 47* til the wing hold-down blocks are tapped. With everything looking great, go ahead and add the wing tips. I used the laminated tips as shown for strength and looks. I am sure the flying of the thing would not be affected if another type tip were used, such as sheet.

The bottom wing panels are joined by sanding the center ribs to produce a half-inch dihedral under each tip rib. Now, the two lower panels are joined but not sheeted over the center section. No plywood spar is used . . . remember the Kaos.

This is the time to cut, drill, and glue what is needed to provide ailerons. Barn-door or strip ailerons will work great, as will bellcranks or torque rods. Suit yourself. By the way, the first Toot had four ailerons. The thing was very quick . . . too quick. Now that you have just mastered the engineering of the ailerons, finish the rest of the wing in the same manner as the top wing. Don't forget to fiberglass the center section after sheeting.

Continued on page 52

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Elsinore . . . Continued from page 15 name implies, is a boat hull of aerodynamic design supported in the air by airplane wings. Either may be amphibious . . . So much for today's lesson in semantics. (*Seamantics? ED.*) I lean toward the flying boat, probably because it is virtually extinct except for a couple of very nice little sport jobs and home-builts. Lateral stability on the water was once maintained by stub wings of thick section attached to the hull just above the step called "sponsons." However, outrigger floats which provide better water stability, are in greater favor and, when retractable, provide cleaner design. Note that you can trip and ground-loop (water-loop??) on either take-off or landing with "Tip-Floats," particularly in rough water.

Flying a seaplane or flying boat isn't all that complicated or difficult if one accepts a couple of the plainer facts. There is no way to scale down the surface from which we operate. A two inch wavelet is still two inches high, regardless of the fact that our aircraft is 1/6th full size, and there is no way to make it any less rough. And a four-inch chop is a heavy sea. Fortunately, our models are well over-powered and such surface conditions present no real problem. Second, the wing must be able to "rotate" to a good angle of attack without dunking the tails of the floats, or the model will have to go like hell to get on the step and start planing up to takeoff speed. If you can get your model "on the step" it will fly. Adequate power will overcome poor float design, and by that we mean putting a .60 engine in a model designed for a .45. The whole takeoff process revolves around getting the airplane up to speed . . . no unnecessary flotation gear touching the water and no spray in the prop. The airplane need not be specialized, although thorough waterproofing of the interior as

well as the exterior will make it last a great deal longer. Avoid adhesives that are not waterproof. Trainer or "Sunday Flier" type airplanes are ideal. A big, thick, flat-bottomed wing section is preferred, though not essential. Positive incidence helps. The idea is to develop relatively high lift at slow takeoff speeds. Carl Goldberg's Falcon series, though not flat bottomed in the wing section, is a fine example. (*Check back to the Seahorse in the May Issue of Model Builder. ED.*)

On the plus side, flying off a wet runway is the only way to get your toy airborne. Frequency interference is relatively negligible, simple because there aren't that many guys interested in this phase of the sport. So you pretty much have the air to yourself. (*Hey Art, maybe we should be selfish and can the whole article! ED.*) And where can you overshoot the runway by a hundred yards and still have a mile of open landing area in which to set down? Finally, the laws of physics notwithstanding, water just ain't as hard as old terra firma. You can dork the old tub in pretty good, straighten out the landing gear struts, and fly again. The same landing on dirt, grass or asphalt would put you in the "instant kit" business.

The flotation gear, whether it be seaplane floats or flying boat hull, is something else again. There are three essentials; (1) razor sharp chines and steps, (2) adequate fluting or spray rails, and (3) sufficient angle between the planing lines of the fore and aft sections of the hull or float to permit the model to rotate (angle the nose up on take-off) without dragging the aft section in the water. The Edo factory's Model Float designed in 1938 appears to have 6 degrees. This is minimum!!! Flat bottomed sled floats were abandoned in the 1920s for vee-bottom designed to shear through rough water

and dampen the pounding that tore out struts. But sled floats work fine on a model since the struts are usually well over-stressed.

On vee-bottom floats the spray-rails at the forward chines are designed to keep water out of the prop. Single or double-fluted bottoms accomplish the same purpose while providing better yaw stability on the water. If you've ever watched some poor slob try to get off with a chop on the surface throwing gobs of water into the fan you already know he ain't gonna make it over the trees. Just about the time he's ready to move up onto the step a wave breaks over the bow, he loses 3000 RPM to the spray and he has to start all over again. Fire up the pickup boat, he's dead in the water three hundred yards out!

The aft section of the float serves a single purpose . . . to keep the tail feathers from getting wet. It has no other function that I have ever been able to determine. A ping-pong ball mounted on an arrow-shaft would do a fine job if it provided enough flotation.

At this point the "long-planing hull society" is about fit to be tied. I choose to ignore the fact that long-planing hulls exist or will work even if they do. They are "gauche" or "noveau riche" (that's French for something that works like a charm but that I haven't had time to build). They come out of the water "goofy footed," step first and rudder last, like snakes. Of the long-planing hull one can never say, "Watch her get on the step and start screaming!!"

Sled floats are authentic in older models and work great. They present no drag problems and the flat bottoms provide excellent planing surfaces. A smaller third float is common for keeping tail feathers dry.

Adequate water rudders are pretty much a must. It is possible to "gun and



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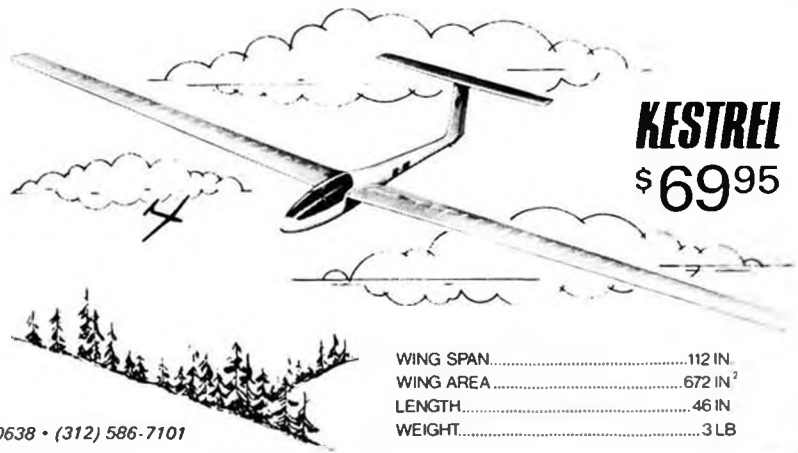
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LENGTH.....46 IN
WEIGHT.....3 LB

skid" a model with the air rudder in calm weather but with any breeze a model will weather-vane, and if the breeze is off-shore you can count on using the pick-up boat. The rudders should be just deep enough in the water to provide directional stability when the model is on the step. Probably the greatest satisfaction with good rudders comes from showing off your complete mastery of the airplane while taxiing in and out. Even if you can't fly a lick or the tub won't get out of the water, you can buzz up and down the channel and then bring your toy right in to the dock to the applause of the multitude. It wows 'em.

As for construction you can take your pick. Foam or built-up. Balsa or fibre-glass. Sled, hydro-ski, or scale designs. They all work. I prefer foam-cored, balsa-covered, glass-bottomed floats of the original Edo design with twin flutes.

For the "Tupperware Sailors," we would like to insert this helpful hint. Round corners are very pretty, but below the water line they are an invitation to guaranteed failure. If your floats are blow-molded polyethylene, purchase a polyethylene ski repair candle at the local ski shop (used for repairing dings in the undersurface of skis). Put a strip of masking tape around the chines fore and aft and across the transom and step. Light the candle and drip the melting polyethylene into the crevice between the tape and the chine, working back and forth until the crevice is full. Careful!! Keep moving or the hot drip will melt the float, too. Peel off the tape and trim to contour with a razor blade or Exacto knife. Keep those chines sharp!!

Radio waterproofing is another subject that has drawn a lot of attention. If you are going to fly from salt water . . . waterproof . . . or get ready to buy a new radio. It's as simple as that. The corrosive action of salt-water on PC boards is un-

believable. We fly from fresh water and our precautions range from nothing to stuffing the receiver and battery into Baggies. Switches should be shielded with a piece of polyethylene or preferably mounted inside. But the cure for that inevitable drowning is simple. Unbutton all the cases and shake the water out. Now dunk all the guts in a jar of methanol and shake out several times. The affinity of alcohol for water is remarkable. This is a particular must for drying out servo pots or other hidden areas. Then fire up the Cadillac (or other fine car — my Ford works great), turn on the heater and set everything under the fan. You'll be back in the air in an hour — safely — and none the worse for the dunking. (We have not checked this procedure with radio equipment manufacturers).

If the radio took on water, you can bet your bottom pezoze the engine is loaded with anti-fire. Pull the glo-plug and rotate the airplane and engine so that the by-pass is on the bottom, then crank out as much water as possible. Now you're ready to play Boy Scout — light the fire, that is. Prime through the exhaust and crank 'til you get a "pop" — prime and crank, prime and crank, prime and crank. Eventually you'll get two pops, then three, and you're back in business. At times like this the wealthier types equipped with starters have all the edge. Rarely does the fuel tank take on water, but if the fuel is milky, pump it out and refuel. Incidentally, it is always a good idea to fire up the engine for two or three minutes after the last flight of the day to dry it out — and always after a crash. Further, bearing in mind Clarence Lee's admonition, stuff a little 3-in-1 oil in the cylinder, intake, and front bearing to keep the rust bugs out.

A little thought toward waterproofing of the airplane during the building

process pays dividends in minimizing warps and lengthening the flying life of the model. My current hot-rod, a Bob Francis "Shoestring" is virtually impervious to water. It has a fiberglass fuselage, foam-cored fiberglass covered wings, and waterproof floats. The aileron push-rods are 1/16 inch stainless steel wire. Nylon push rods will get you in trouble — stay away from them. Nylon grows in the presence of moisture and will kink and bind until you have to perform major surgery. The sanding resins are ideal for waterproofing wood surfaces.

Now that your virginal pride and joy is ready to astound the populace with its grace and beauty you're up against the wall, Buster — almost. You can stall away another hour checking the radio, cranking up the engine, and generally goofing around, but sooner or later you have to get it wet. So stick her in and let her go. Taxi around getting the feel and then add a little coal. Bring her by on a fairly fast pass with quite a bit of up elevator and up-trim and watch the float action. If she is riding up on the floats and spray is behind the prop you're in business, head her into the wind, add a little more fire and see if she gets on the step. The acceleration as she performs the transition onto the step will be quite noticeable. Chop the throttle, taxi back, and refuel for the big moment.

At this point, with the older types, a little courage enhancer is indicated. Coffee Royal is fine for first hops on cold, brisk mornings. For test hops in the calm of the evening, one, or several Martinis are appropriate. Bottled courage is great for first flight nerves and provides a ready-made alibi in case you blow it. In any event, crank up the engine, stick her in the water, full up elevator, and push the "Johnson Bar" to "Red Line." As soon as she is planing, ease off on the elevator and let her run 'til she breaks loose with a tap of up.

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At this juncture it would be well to admit that all of the foregoing presumes ideal water conditions. The odds are that there will be just enough nasty little chop to spoil that beautiful long, smooth, takeoff run and make you porpoise just below takeoff speed. In this unfortunate but common event, keep the nose up, skip from wave to wave, and make your decision to go or abort. If you opt for the abort just chop the throttle, keep her straight, and let her settle. If you decide to go, hang in there and pray loudly that she isn't a snap-rolling SOB — you're coming off the water half stalled-out and the best deck for fifty yards, or until she starts to fly. The only real "No No" is horsing an underpowered airplane off the water before it reaches speed — that's a guaranteed crash procedure. The let-down, with all of that runway, is a piece of cake. Chop the throttle, trim her up to slow down and let her settle, then flare out about a foot off the water and you'll grease it (It says right here in our free illustrated instruction manual!!). There's no way you're going to pay the overshoot penalty by winding up in the weeds or the trees . . . there ain't none,

son — you're flying off water.

One last word of caution, you're sailors now and the word is KNOTS, instead of Miles Per Hour. ●

TOOT Continued from page 49
FUSELAGE

The fuselage is a bit simpler than it looks. Basically, the top of the thing is constructed in the same manner as the Stafford Mustang. Begin by building the fuselage sides. This is done by cutting half way through the sides with a hack saw blade, at Former center lines 2 and 3. Pin the flat section of the sides between Formers 2 and 3 to a flat surface. Now, with a small amount of water, soak the cuts to soften the wood. After several minutes, or a slow beer, (depends on how fast you drink beer), block the front and back sections up to match the plans. Fill the cuts with epoxy glue and add Formers 2 to one side and 3 to the other side. Be sure to use the center section of the side to square these Formers. Let these assemblies dry overnight.

Now, after removing the sides from the board, add the longerons and the plywood and balsa doublers. Taper the

longerons and balsa doublers at the tail to let the sides meet. Join the two sides at Formers 2 and 3. The two sides should come together at the tail and fit the firewall. Glue the firewall and Formers 4 and 5 in place.

The basic fuselage is now complete. The top of the fuselage is built by cutting the 1/4 inch sheets to fit from Former 3 to 5. Glue the two side pieces in place and when dry, sand the top flat and add the top piece. From Former 5 to the tail, is a soft block. The sheeting from Former 3 to 1 is done in six pieces. The side pieces are cut out of 1/2 inch sheet and the top is out of 3/8 inch sheet. Glue these pieces in place in the same manner as the tail. Sand the top to shape, mark the cockpit and cut out. Do not sheet any of the bottom until the plywood cabane blocks are epoxied in place.

The front end cowl and checks are built on, rather than around. Now is the time to decide what power plant to pull off the shelf. Mount the engine in a suitable radial mount, being sure to match the distance on the plans from the firewall to the thrust washer, and locate the mount on the firewall. While

the engine and mount are still on the firewall, cut the cowl to fit and just clear the carb. I will get to the cowl and cheeks in a minute. If you are satisfied with the way the cowl fits, remove the engine and mount.

The cowling and cheeks are made from fiberglass, using the balloon method. Williams Brothers (short) cheek cowl will work but they will let the engine head hang in the breeze. Should you let the idea of fiberglassing stop you cold, don't. I still have my plugs, and for the cost of materials and a letter, I will be more than glad to furnish you with the three parts. (See end of article).

I would advise anyone who hasn't tried the balloon method to go ahead and give it a whirl. You might even want to create your own front end.

The cowling is epoxied to the firewall. When dry, sand and trim the cheeks to shape and glue with epoxy to the cowl and fuselage. Remember, the right side of the cowl should already be cut out before the cheek is glued in place. With all three parts in place, fill the joints and finish the front end as if you were ready to paint. Don't forget to cut plenty of air holes. Mark the desired outline of the removable part of the cowl assembly. Remove the back from a razor saw and begin cutting the cowl, giving yourself plenty of room. After the cowl is removed, clean up the inside with a rotary file and epoxy the necessary mounting blocks in place. There you are, a perfect fit and plenty of room for engines and fingers.

Here comes the fun part; installing the cabane. First of all, the cabane itself is cut out of 1/16 inch aluminum and bent to shape. Alignment begins by squaring the lower wing and joining to the fuselage. The tail assembly, which is built in the conventional manner, is now glued in place for use as a visual reference. Nothing is more discouraging than to see a biplane (or any plane, for that matter), come down the runway looking as though it is headed towards "Jones". (Who he?)

Cut four slots in the top of the fuselage to accept the cabane struts. Providing the cabane platform in the top wing is at 0 degrees incidence, clamp the fuselage in a vice, or something, to hold the center line perfectly level. With the glue holes drilled in the cabane struts, apply epoxy to the struts and the

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slots in the cabane blocks, and slide into place. Make sure that the cabane is level both ways. Fill the rest of the cabane blocks with epoxy and let dry overnight, use masking tape to plug the bottom of the cabane blocks.

After the cabane is dry, set the top wing in place and line up, using the tail assembly and the lower wing as guides. Mark the holes on the wing cabane platform and tap for 1/4 x 20 screws. Screw the top wing to the cabane and check the distance between the upper and lower wing tips on both sides. They had better be close . . . Now you can sheet the top wing with 3/32 inch balsa.

Using the template pattern shown, make the interplane struts. If you are satisfied with the location of both wings and tail assembly, finish the fuselage by sheeting the bottom and adding the landing gear block, tail wheel assembly, etc.

PREFINISH

This is the time during the construction of a model that I consider most important. It is the time to check everything for fit: The interplane strut tabs are clamped in place. The engine, prop, and spinner are installed along with the

radio equipment. Also, install the tail wheel assembly, landing gear and push rods or Nyrods. Everything except the interplane strut tabs is screwed or glued in place. The hinge slots should not be cut if you plan to wet sand during final finishing. Holes and water don't mix.

Well, there it is, except for the uncovered wings and a bit of fuel proofing, it should be just about ready to take out.

FINISHING

On the original, the wings were covered with Top Cote. If you do it this way, cover only the top of the bottom wing and the bottom of the top wing now. With suitable holes drilled in the strut tabs, begin smearing the epoxy and glue the tabs to the plywood ribs. When the glue is dry, cover the rest of the wings.

This particular plane was a test hop for Francis' new surfacing resin. Caution, if you used Hobbyoxy Formula II for the cowl etc., don't get any of the resin on it. Formula II is one of the epoxies the resin will not dry on. The resin was applied to all wood areas as per instructions, with much success.

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Top Cote. After lightly sanding the wing with 400 paper, spray on a medium coat and let dry for a couple of days. Be sure the wings are clean and free of any fingerprints or oil. After you have achieved a suitable fill on the fuselage and wings, choose a color and get with it. I used my old standby, Hobbyproxy, for the complete airplane.

FLYING

First of all, poke a screwdriver through the wing, or something that will take the newness off. Those first hops of a new bird are a bit spooky for me, and this was no exception. It did not fly "off the board", so they say. The fact that I changed radios and did not check the centering on the elevator servo just about cost me an airplane. Back on the ground and everything centered and going the right way, I tried it again GREAT! There was no tendency to ground loop during take-off, touch-and-go's or landings. The rolls were a bit slow, but with the extremely effective rudder, everything came around. The thing loops straight and true, and spins are easily entered, and it's "hands off" for recovery. Are you ready to set her down? Make a couple of slow fly-bys to get used to the way it slows down. Three wheel landings were made by chopping off the throttle about fifteen feet off the deck and letting it settle before flaring out. How sweet it is

I hope you are as sold on the idea of a half-pint biplane as I am. By the way, for those cheeks and cowls, (chicken!), drop me a line (the cost will be \$3.00

for all three pieces):
Denny Elder
2307 Cottonwood
Springdale, Arkansas 72764 ●

r/c Cars Continued from page 27

The oval event was first on the program. There were 3 races of 6 cars each for the 18 car mains. Mike Morrissey, (Taurus), who had set the fastest qualifying time, was in the first race. Mike's strongest competition was coming from Gene Justing (Associated), but it didn't last too long. Gene hit a car that had spun out on the straightaway, breaking the right front wheel tie rod, so Gene was limping around on 3 wheels. The oval cars run at a consistent 40 to 50 mph all around the track, so when there is a crash it's generally a pretty good one. Mike was then way out in front when he hit a course marker and lost some time repairing his front end. Dick Dobson (Marker) easily won the next race over Dick Sahara (Thorp). In the final race, Roger Curtis (Associated) did a flawless driving job, setting fast time of the day. His ability to easily maneuver his car to avoid slower cars was a thing of beauty. Dick Sahara (Thorp) followed in second. The overall expert oval times showed first, Roger Curtis (Associated), second, Dick Dobson (Marker) and third, Mike Morrissey (Taurus).

Road racing is by far the most popular event in R/C car racing, and the next event is the one everyone wanted to win. In the qualifying heats, Chuck Hallum

(Associated) set the fastest qualifying time and would have to be considered as the man to beat. Chuck has been a consistent threat and just recently broke Gene Husting's track record on the old Cunningham course. In the first main event race, the pressure was on. Roger Curtis (Associated) and Dick Dobson (Marker), who finished first and second the day before in the oval race, were up in the first race, but Dobson ran into some early problems and Roger Curtis went on with a smooth driving job to win the race, with John Thorp (Thorp) coming in second. The next race belonged to Ken Campbell (Delta). Ken showed how he's won so many races in the Midwest with his fantastic driving skill. Joe Swan (Taurus) followed in second.

The final race looked as though it could have been the most exciting, with Chuck Hallum (Associated), Mike Morrissey (Taurus), and Gene Husting (Associated) ready to do battle. At the start of the race, Chuck Hallum took off in an early lead, with everyone else tangled up in the first turn. After a few laps, Morrissey was involved in a crash which broke his antenna mount, putting him out for repairs. Although Husting could pull Hallum about 40 feet on the straightaway, Hallum was ever increasing his lead. Morrissey got back on the track and dueled with Husting a little, but Husting had too much horsepower for him. Hallum went on to win with Husting following in second. The overall road race results showed Chuck Hallum (Associated) way out in front, with

Roger Curtis (Associated) second and Ken Campbell (Delta) third.

The overall combined results showed Roger Curtis (Associated) as the 1972 R.O.A.R. Grand National Champion, Dick Dobson (Marker) followed in second with Gene Husting (Associated) in third. ●

Boomer Continued from page 23 bilizer. Next cut out the rudders and attach when the boom/stabilizer assembly is completely dry. Apply two coats of clear dope to rudders and stabilizer and three coats of clear dope to booms. Fuel has a tendency to be thrown back over the booms and stabilizer, so it is a good idea to cover the leading edge of the stabilizer with tissue trim and several coats of dope.

The fuselage is shown as a build-up balsa box . . . you may prefer to make it out of a soft balsa block and epoxy a plywood firewall directly to the rear section. This works almost as well and will take more abuse. Suit yourself on this one. The only problem you will have is adding weight for balance. If you build the fuselage up as the drawing shows, use 3/16 inch medium soft balsa sheet throughout, except for the nose block. Cut out sides, top, and bottom pieces and glue to nose block and plywood fire wall. Next, insert bulkhead "B" and let the assembly dry.

General shape of fuselage is not at all a critical thing . . . use your own imagination if you like. We have built twenty pods (fuselages) to date and prefer the one shown best, appearance-wise. Next, insert the landing gear in place. The nose and main gear are put in from the top of the fuselage. The wire will have to be pushed through the bottom, and the bends will have to be made after the pod is finished. Install the bulkhead over the U-shaped main landing gear wire, and glue it into place. Repeat the same process for the nose gear and make axle bends after pod is complete. Once the landing gear is installed, apply three coats of filler and your favorite color coat. Complete the landing gear bends and secure the wheels by soldering washers to the ends of axles.

When the wing frame is finished, covered, and doped, attach boom assembly. This should be done on a flat surface with particular care being given to



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boom alignment. Cement the booms along bottom side of the dihedral rib.

Now, all that is left to be done is to mount the engine with four wood screws so that the needle valve is protruding above the trailing edge of the wing.

Flying is the same for most pushers . . . run the engine backwards (clockwise) or use a pusher propeller. Keep your fin-

gers out of prop when launching power flights. When properly balanced, a long rather fast glide, with no stall tendency, will be achieved. The first power flights should be made with the engine idled back in order to be able to make adjustments gradually. Do one thing at a time!

Try it, I hope you'll like it! ●

BILL OF MATERIALS BABY BOOMER

Balsa:

| | | | |
|----------|-----------------------|-------------|----------------------------------|
| 2 pieces | 1/8" x 3/8" x 15 1/4" | hard | Booms |
| 1 piece | 3/16" x 3/16" x 36" | medium | Leading Edge |
| 1 piece | 3/16" x 3/4" x 36" | medium | Trailing Edge (ready tapered) |
| 2 pieces | 3/32" x 3/32" x 36" | medium | Spars |
| 1 piece | 1/8" x 1/8" x 36" | medium | Spars |
| 1 piece | 1/16" x 3" x 12" | medium soft | Rudders |
| 1 piece | 3/32" x 3" x 8" | medium soft | Stabilizer |
| 1 piece | 1" x 1" x 3 1/2" | soft | Nose |
| 1 piece | 3/16" x 2" x 36" | soft | Fuselage |
| 1 piece | 1/16" x 3" x 18" | medium | Wing ribs |

Plywood:

| | | |
|---------|-----------------------------|----------|
| 1 piece | 3/32" or 1/8" x 1" x 1 3/4" | Firewall |
|---------|-----------------------------|----------|

Wire:

| | | |
|----------|-------------|----------------|
| 1 piece | .045" x 18" | Landing Gear |
| 2 pieces | 1/16" x 2" | Wing Hold Down |

Wheels:

| | |
|---|---------------------|
| 1 | 3/4" rubber or wood |
| 2 | 1" rubber or wood |

Odds and Ends:

| | |
|-------|-----------------------------------|
| 2 oz. | Lead weights for balance |
| 1 | Sheet colored tissue |
| 1 | Bottle clear dope |
| 1 | Bottle trim color dope if desired |
| 1 | Cox .020 Peewee engine |

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visibility . . . *Continued from page 21*

The radiation from the sun which reaches us is most intense in the yellow, which interestingly enough is what the eye detects best. The light is initially not polarized but the atmosphere does produce some polarization. More on this later. For best seeing conditions one should try to arrange things the same way as when taking a picture; keep the sun behind you. In the morning when the sun is in the east, keep the plane in the west. In the afternoon reverse the situation. At noon when the sun is overhead, go home for lunch! Seriously though, if the choice is available, it is much easier to see the plane if you keep the sun behind you.

The third factor which affects visibility is the medium through which one is looking. Clean dry air is a remarkably transparent and colorless material, but unfortunately very few of us have had the opportunity of not seeing this. If our atmosphere were perfectly clean then the sky would not even be blue but would be as black as the night sky with not only the sun visible but all the stars as well. There is no such perfectly clean sky here on earth, but a few places are very much clearer than most. Several years ago I was driving west on the Trans-Canada highway, still some distance east of Calgary, Alberta. I knew the air was clear since I could see the Canadian Rockies well over 100 miles to the west without the slightest indication of haze. We stopped along the road for lunch. I was impressed by how warm the sun felt in spite of the cool air temperature on this June day. I remember thinking that the sky looked unusually dark when I got out. I looked up and was amazed to see some dozen stars out in the middle of the day! I later found

out that the air here is exceptionally clean since it comes from the west in British Columbia, where it is thoroughly washed by the heavy rains and the remaining water is removed by passage over the Rockies.

If one cannot arrange to fly in one of the really clean air basins of the world, one must try to cope with the situation at hand. Here in the Los Angeles basin the air is notoriously bad. There are several problems associated with this air besides the eye irritation it causes. The material or crud in the air does two things to impede good visibility. The crud blocks light coming from the object we are trying to see. Also this impurity acts as a light source which may become just as bright as the plane we are trying to see.

There are two classes of material which affect our atmospheric visibility. Particles which are larger than the wavelength of visible light, typically larger than 20 millionths of an inch in diameter, act very much like large objects. They simply block light. In this group of materials we have smoke, sand, soot, pollen, dust, leaves, ashes, snow flakes, rain drops, birds, aircraft and all sorts of other airborne debris. All of this material absorbs some light and reflects the rest. If enough of this type of material gets between the airplane and the observer, the observer can no longer see the airplane.

Fortunately the larger debris is not always present. Without strong winds the larger sand tends to settle to the ground. Without a forest fire or a rain storm one usually does not have too much of the larger debris airborne. The very small debris is the usual problem. Particles which are smaller than the wavelength of light react differently than

the larger particles. The small particles are exceptionally slow in settling to the ground and are frequently removed only by rain. This material is frequently very fine dust (rock) and small salt crystals from dried up ocean spray.

In any event, the fine dust scatters the light rather than simply absorbing it. Also the wavelength of the light is related to the amount of scattering. Blue light is scattered most strongly, then comes green, yellow, orange, and finally red, which is scattered very little. The scattering of blue light from the sun by fine dust is what makes the sky look blue. If the scattering were equal for all wavelengths, the sky would be white. Since the scattering of light depends upon the wavelength or color of the light, some of the visibility problems caused by scattering can be overcome. If one looks through a filter which eliminates blue the sky looks darker, since a great deal of the scattered light is eliminated. A yellow or orange filter eliminates both the blue and green and most of the scattered light. The sky turns very dark if a red filter is used to eliminate everything except red. With either a red airplane (which reflects only red) or a white airplane which reflects the same amount of red but all other colors as well, an observer using a red filter will see a bright red plane against a very dark red background sky. If red sensitive camera film is used, this scheme is most effective. Photographs made of cloud formations use this technique to produce pictures of white clouds in a nearly black sky. In practice, red sun glasses are a bit extreme in the contrast they produce. Consequently either orange or yellow glasses are used with nearly the same effect.

Another property of the atmosphere

is that it polarizes some of the light which passes through it. Which way the light is polarized depends upon the position of the sun and the direction the observer is facing. With the sun directly overhead the amount of polarization is least. With the sun relatively near the horizon, the polarization is quite strong when the observer faces away from the sun, i.e., at sunset. Polarized sun glasses are almost universally polarized vertically. The reflected light from water, roads, etc., as well as the eastern sky light at sunset, is polarized horizontally. What this means is that polarized glasses will eliminate most of the surface glare from water (if you're slope soaring over the ocean, for instance) as well as a large amount of the sky light when you face away from the sun. The combination of using amber colored sun glasses which are also polarized produces a very marked darkening of the sky even in bad haze conditions. A light colored plane will now appear as a bright object in a darkened sky and be quite visible.


Another item which is an important factor is the coloration of the object at which we are looking. We are most familiar with color schemes used to make an object less visible; that is camouflage. In making an airplane visible we must do everything exactly opposite to good camouflage techniques. Good camouflage technique requires that an object blend in exactly with the background, matching brightness (reflectivity), color and texture. In order for an airplane to be visible it should be either much brighter or darker than its background. Its color should, if possible, differ from that of the sky. Light blue, gray, and white, as well as most metals, reflect the color of the sky and become nearly invisible in a light hazy sky. A very dark color; purple, green, red or orange, is much more visible in a light hazy sky.

Unfortunately, most airplanes are flown with a variety of different colored backgrounds. A dark orange aircraft which is quite visible in a clear sky, tends to disappear when the background terrain is one of California's arid sun-baked hills. A practical solution is to use two colors with two widely different reflectivities; flat black and glossy white, for instance. Other dark color combinations used in conjunction with white will be visible under most conditions. One important fact should be remembered. When two widely different colors are

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combined in some small scale pattern, the human eye tends to "average" the effect. A black and white checker pattern turns into a dull gray when viewed from a distance. If you do use two colors, cover a large solid area with each color. For instance, use a dark color for the wings (without light trim) and make the fuselage and tail assembly bright white.

It is interesting to watch such an airplane at a distance circling in a thermal. With a reasonably cloudless hazy or smoggy day, the white fuselage becomes totally invisible and only the wings are seen as a narrow black band (actually my wings are dark green). When the glider drifts under a dark cloud the wings appear to vanish and the fuselage stands out brightly.

When the aircraft is viewed from above, as is some times the case in slope soaring, some colors are supposed to be more visible than others. International orange is supposed to be the most highly visible color when viewed from above against a great variety of ground colors. I haven't looked into this, but it is quite visible at short ranges.

In an attempt to make an object as visible as possible, the contrast should be very high. The ultimate example is a bright star in a black sky. One more step can be taken to make a white surface become "bright", to use an advertising phrase from a soap commercial. Soap manufacturers use fluorescent dyes in their "detergents" to make white

clothing look "whiter". These dyes convert ultra violet light, which is not normally visible, into visible white light. The highway department maintenance crews in some states wear vests which are colored with fluorescent orange dyes which are quite visible. If you'd like to try such a fluorescent color instead of the white, make sure that it is the same color as your sun glasses, if you're using them.

To recap, there are some things which can be done to improve visibility under most flying conditions. If you need glasses, get them, wear them, and keep them clean and scratch free. If the air where you fly is not clear, visibility can be improved by using filters which remove the green and blue scattered light. Amber works well and is comfortable for long use. Haze can be further reduced by getting these filters polarized. Polarized amber "clip-on" filters or sun glasses can be obtained for \$2 to \$4 and are well worth it. The color of the plane is important. White is popular (and in many cases a scale color) but under some haze conditions is very hard to see. Regulations in many countries now require manned gliders to have at least part of the white fuselage and/or wings painted red to improve visibility and avoid mid-air. Any dark color other than yellow will give the proper contrast with white. With these simple and perhaps obvious techniques you can have the best visibility which can be obtained by inexpensive means. Good luck, and good flying. ●

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Hannan . . . Continued from page 30
Scale concept. Additionally, the ACES have long been champions of more variety in scale model flying. For example, they have developed a set of rules which encourage unusual entries, by giving them bonus points. Thus, the typical mundane "Piper Cub" type of model starts off at an automatic disadvantage, while the more esoteric entries, such as triplanes, racers, floatplanes, etc. receive extra credit.

* * *

WORLDS MOST FAMOUS AEROPLANES

Doubtless to the average man-on-the-street, the most famous aircraft ever to fly would include the Wright "Flyer," the "Spirit of St. Louis," the "Gee Bee," and the P-38. If asked to name a current type, he would very likely mention the Boeing 747. Needless to say, all of the above machines have been treated to lavish coverage by the popular news media, and thus have been indelibly stamped into many peoples' consciousness, in spite of the fact that they may have very little interest whatsoever in aviation.

We thought it might be fun to compile a list of favorite aircraft based upon the consensus of more knowledgeable types, meaning you, our readers. We are well aware that model builders are individualists, and that a really accurate representation might be difficult to extract, and yet, our results will certainly have at least as much validity as the so-called "scientific" TV rating surveys!

So why not while you are thinking about it, grab a postcard and vote for your favorite aircraft? We have divided the possibilities into categories, so you need only jot down the category number and name of each machine. No personal

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acknowledgment is possible, but we will tally your votes and present the results in a future issue, O.K.? Incidentally, don't be afraid to include the "man-in-street" choices, if you honestly think they are the best selections. Cut-off date for mailing your post-card will be September 25, 1972 (one month from date mags are expected to be mailed out).
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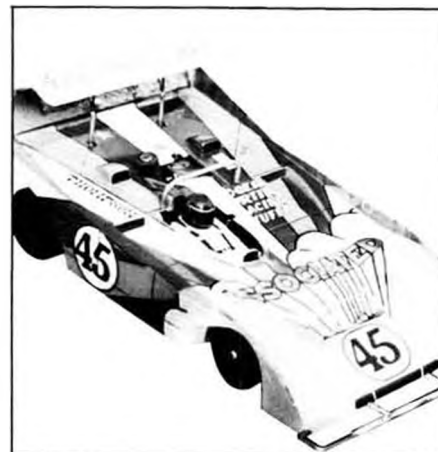
Vote for your favorite in the following classes:

| <i>Aircraft Category</i> | <i>Example</i> |
|--------------------------|-----------------------|
| 1. PIONEER (pre-WWI) | Wright "Flyer" |
| 2. WORLD WAR ONE | Sopwith Camel |
| 3. INTERWAR | Spirit of St. Louis |
| 4. RACING | Gee Bee R-1 |
| 5. GLIDER or SAILPLANE | Bowlus Baby Albatross |
| 6. WORLD WAR II | Lockheed P-38 |
| 7. POSTWAR | Boeing 747 |
| 8. MODEL | Goldberg "Zipper" |
| * * * | |

HANG IT ALL

Ye olde Hannan became a true "hangar" recently, by trying a couple of short hops in one of Richard Miller's hang gliders. . . and, I'm happy to report, I'm still walking without a limp! (*But he's having trouble finding shoes to fit his hands!* WCN) Richard Miller, incidentally, is the fellow who first wrote the VTO free flight column of Model Airplane News, and is a long-time glider enthusiast. He was also editor of the magazine SOARING, and is one of the spark plugs of the present hang-glider movement. He still retains his interest in model aircraft, and passes along these handy tips:

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how seldom you can get exactly the right amount of glue out of a tube? By keeping the glue in a short, tip-resistant bottle, with a tight fitting lid, you will be able to transfer a precisely controlled amount to the work with the aid of a brush. If the bottle is to be used frequently, a simple cardboard or aluminum shield will serve as a cap between periods of use. Add a small amount of thinner, as required, to keep the proper working consistency. The brush may be suspended in the glue if used fairly frequently, but should be cleaned with thinner when necessary.

* * *

LET THERE BE LIGHT

When carving props, hand-launch glider wings, etc., try working with the aid of a light box. We're speaking of the type used for tracing, or X-Ray plate examination. The light shining THROUGH the balsa can provide an excellent check on your carving progress, particularly when trying to make two equally matched panels or blades. Then too, a light source directed so as to cast a shadow across the surface being shaped can reveal subtle contours that might go unnoticed under ordinary, even lighting conditions. ●

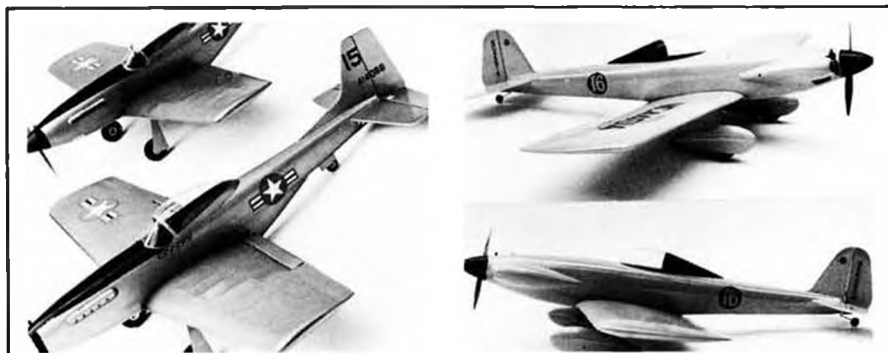
Paper glider . Continued from page 31

frist, next the 1/8 x 1/16 inch strips were added to the fuselage, allowing room for the Micro-Jet fuel line. The engine is then check fitted for proper clearance, installed, and fuselage is glued in place, securing the Micro-Jet in position. Caution: the Micro-Jet nozzle should be glued into position with no offset. Even a slight amount can make flight adjustments difficult. Apply glue generously to the nozzle and adjacent 1/2 inch of fuel line to keep it firmly in place. If the fuel tank fits somewhat on the loose side, it can be secured with a couple strips of scotch tape. The elevator is glued in place with about 1/8 inch incidence.

DECOR: Since the ship looks a little stark in its raw balsa condition, some sort of color or markings should be applied. Outs were cut from colored tissue, doped on. Perhaps you would care to rule on thin, parallel, green or blue lines to represent note-book paper. Or a little graffito, or whatever.

FLYING: A few gentle hand glides should establish the need for a small amount of clay nose weight, which serves double duty as a sort of shock absorber. If, however, the model dives, the elevator may need to be raised slightly. Next, give the model a vigorous heave in a banked attitude, and watch the flight carefully. Assuming there are no serious warps, the glide should be relatively straight. Overly tight turns can be corrected by adding a little clay to the outside wing tip, until only a slight turn remains.

The Micro-Jet may be filled in either of two ways: Filling with the loading gun pointed up will provide only a CO₂ vapor charge for a short run. Filling with the loader pointed down will allow liquid CO₂ to fill the Micro-Jet for maximum duration. There have been two types of Brown Jr. loaders produced. The early version featured a sleeve to "fire" the Micro-Jet, while the newer loaders require a rotation of the knurled knob to release. Launch the model upward at about a 35 degree angle, in a slightly banked attitude to assist the transition from powered phase to glide. Launched level, the machine may loop, which could be bad news for the operator. Most people are surprised at the amount of thrust available from a Micro-Jet. Although its power run is short, the acceleration is terrific. Incidentally, we have encountered quite a bit of variation



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in quality from cartridge to cartridge. Evidently this is a problem in manufacturing of the CO₂ cartridges, and even in the higher priced brands, differences are noticed.

If your "Paper Glider" wobbles during glide, it generally indicates the need for more nose ballast. As an experiment, we added a small amount of dihedral to the wings, which may be noticed in one of our photos (which means the elevator must be cut at the centerline). Delta wings are not supposed to require this, but we feel it aids stability. It is interesting to note that folded stiff paper gliders automatically assume a dihedral angle.

Micro-Jet units cost \$2.95, and the filler, which is called a Load-n-Launch gun, sells for \$3.95. This same loader may also be used for the reciprocating Brown Jr. CO₂ engines, by the way.

Dealers for Brown Jr. products include:

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P.O. Box 77
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146 West 22nd St.
New York, N.Y. 10011

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3018 Jericho Turnpike
East Northport, L.I. N.Y. 11731

Russ-Craft Hobbies
139 South "B" Street
San Marcos, California 92069

Stanton Hobby Shop
4734 North Milwaukee Ave.
Chicago, Illinois 60630

W.C. Hannan, Graphics
Box A
Escondido, California 92025

Mail orders to any of the above firms should include 50 cents postage and handling.

Even without the Micro-Jet, "Paper Glider" can be a lot of fun, as it holds its trim much better than folded paper gliders. So now all you need to do is build your own pyramid . . . ●

pylon/4 . . . Continued from page 45

and possibly make the course more difficult, to keep the emphasis on piloting rather than just long straight-aways. The distance from pylon no. 1 to no. 2 and no. 3 will be 450 feet, with 156 feet between nos. 2 and 3. The pilots will stand inside the triangle, 300 feet from no. 1. The 450 foot distance is a compromise between 515 and 350.

Bob Penko sent me a diagram of a 500 foot course with the pilots in the center and two additional pylons, also at the center, 85 feet apart. This would allow for the pilots to stand in the center and the airplanes would dogleg around them. A cut on either of the center pylons would cause disqualification from that heat. There is a lot of experimenting to be done and ideas expressed. ●



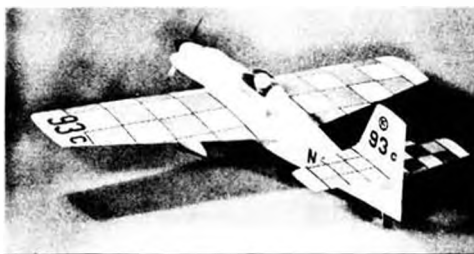
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Japan *Continued from page 35*

- a) "W" shall be defined in detail.
- b) Taxi demonstration before takeoff and after landing shall be compulsory but not scored.
- c) The coefficient of "W" shall be large enough.
- d) The total value of the coefficient K of "W" and that of "A" shall be equal.
- e) The number of "A" shall be small.

1.4. ESTABLISHING OF MANEUVERS

The study mentioned above resulted in 10 maneuvers as follows:

- | | |
|--|------|
| 1* Takeoff (Proto-Taxi plus Takeoff Maneuvers) | K=30 |
| 2. Double Immelman | K=10 |
| 3. Slow Roll | K=15 |
| 4. Inverted Straight Flight | K=10 |
| 5. Four-Point Roll | K=15 |
| 6* Planing Touch-and-Go | K=25 |
| 7. Horizontal Eight | K=10 |
| 8. Spin Three Turns | K=10 |
| 9. Rectangular Approach | K=10 |
| 10* Landing | K=25 |
- (The asterisks indicate "W")

The "K" total of Maneuver 1, 6, and

10 equals 80, and that of 2, 3, 4, 5, 7, 8 and 9, equals 80. Therefore, the possible maximum total score is 1,600 points.

2. MODEL SPECIFICATIONS

General model specifications are the same as those of FAI rules. The specifications on configuration, number, size and shape of the floats or hulls are not necessary, because the balancing of "W" and "A" automatically keeps the floats and hulls in appropriate specifications within the FAI model definition.

RC SEAPLANE AEROBATIC RULES

1. DEFINITION OF AN R/C AEROBATIC SEAPLANE MODEL: Almost the same as that of FAI RC aerobatic power models except that: the model must takeoff and land on the water.
2. BUILDER OF THE MODEL RULE: The model shall not be necessarily built by the competitor. (This rule is similar to AMA's).
3. CONTEST SITE
 - a) In the proximity of the shore, the buoys which signify the start-finish gate on the water.
 - b) The takeoff and landing square of

a 50-meter length consisting of four buoys on the water.

4. GENERAL SPECIFICATIONS OF THE MODELS: Same as FAI, but there are no restrictions on the configuration, number, size, and shape of the float or hulls. The floats may be changed according to the weather conditions, if they have been processed.
5. NUMBER OF FLIGHTS: Same as FAI.
6. NUMBER OF HELPERS: Same as FAI.
7. DEFINITION OF ATTEMPTS
There is an attempt when:
 - a) The model passes the start-finish gate after the pilot announces the start of the flight.
 - b) The model fails to pass the start-finish gate for the takeoff maneuver within the 3 minutes allowed the competitor.
8. NUMBER OF ATTEMPTS: Same as FAI.
9. DEFINITION OF AN OFFICIAL FLIGHT: Same as FAI.
10. ORDER OF STARTING: Same as FAI.
11. SAFETY PRECAUTIONS
 - a) In accordance with conditions within and outside of the site, the organizer must designate the safe and dangerous areas.
 - b) There shall be an official on each boundary between the safe and dangerous areas to indicate by visual and audible signals if and when the model passes over the boundary.
 - c) On the first invasion, a warning shall be given. On the second invasion, that flight shall be disqualified.
12. CONTROL OF RADIOS: Same as FAI.
13. JUDGING: Almost the same as FAI, except that for the judges' sake a pre-contest meeting and practice flying before the contest, and a post-contest meeting immediately after the contest, shall be held.
14. MARKING: Same as FAI.
15. CLASSIFICATION: Same as FAI.
16. SCHEDULE OF MANEUVERS:
The preface to the schedule is almost the same as FAI including the rule that the pilot has ten (10) minutes in which to start his motor and com-

plete the program of maneuvers.
 16.1 TAKEOFF, K=30: Takeoff consists of Proto-Taxi and Takeoff Maneuvers. Proto-Taxi is not scored, but is compulsory for Takeoff.

Proto-Taxi: After passing through the start-finish gate, the model taxis to the takeoff and landing square, plowing. The model goes around the two buoys (left to the discretion of the organizer according to the environmental condition), plowing.

Takeoff Maneuver: Start of the maneuver shall be announced. The model passes through the takeoff square, runs straight, plowing and then planing, lifts gently from the water and climbs at a gradual angle. Takeoff Maneuver is completed when the model is turned off from the takeoff path. Down-grading shall result for any of the following reasons:

1. Not passing through the square.
2. Not showing a clear distinction between plowing and planing.
3. Changing in heading on the water.
4. Jumping from the water.
5. Retouching the water after becoming airborne.
6. Too steep a climb angle.
7. Galloping in elevation during climb.
8. Changing in heading during climb.
9. Dropping a wing tip.

10. Omitting the Proto-Taxi: The whole point of takeoff shall be scored zero.

16.2 DOUBLE IMMELMAN, K=10: Same as FAI.

16.3 SLOW ROLL, K=15: Same as FAI.

16.4 INVERTED STRAIGHT FLIGHT, K=10: Same as FAI.

16.5 FOUR POINT ROLL, K=15: Same as FAI.

16.6 PLANING TOUCH-AND-GO, K=25 within the square, K=10 without the square: The model descends smoothly and gradually on the straight flight path. The floats or hull touches the water in the square and runs through the square indicating a clear planing for about 3 seconds. The model lifts gently from the water and climbs at a gradual angle. (Down-grading standard is almost same as those of takeoff and landing of FAI except for:)

- a) Planing too short, less than 3 seconds.
- b) Running on the water, plowing.

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c) Touching only small part of the floats or hull.

16.7 HORIZONTAL EIGHT, K=10: Same as FAI.

16.8 SPIN THREE TURNS, K=10: Same as FAI.

16.9 RECTANGULAR APPROACH, K=10: Same as FAI.

16.10 LANDING, K=25 within the square, K=10 outside the square: Landing consists of Landing Maneuver and Taxi-to-Hangar. Taxi-to-Hangar is not scored but compulsory for landing.

Landing Maneuver: The model flares smoothly to touch the water, runs straight, planing and then shifts gradually to plowing. Landing Maneuver is completed when the model is turned off from the landing path to Taxi-to-Hangar. (Down-grading standard is almost same as FAI). Taxi-to-Hangar: The model runs on the water, plowing, and enters the start-finish gate.

Note: For not returning to the start-finish gate, the whole point of Landing shall be scored zero. ●

C/L *Continued from page 38* to go faster it was a simple matter of increasing the pitch so the prop (and thus the airplane attached to it) would screw itself further, faster. Took him some time to realize that the engine went slower and the resulting flight speed was slower. Most people suffer from this thinking still. Everyone tries to overpitch their airplane. Usually, they end up clipping the tips off in order to get engine RPM back up to a respectable level, but the overall result is poorer performance than if they had kept the largest possible diameter and gone to lower pitch. I cringe every time I see someone clip prop tips. Generally, it is necessary to compromise between pitch and diameter. Remember, diameter helps maneuverability and pitch helps straight line speed . . . up to a point.

The best thing to do is select a prop which lets your engine rev happily, but which has enough blade area to haul the ship well. Only *you* can tell when it's right by experimenting. Three blade props are a black art that maybe I can explain later. Generally, you are better off with a two blader.

My comment about the merits of

FIBERGLASS GLIDER KITS

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|---|--|--|



1/2A Stunt generated a few responses, which, compared to reader reaction to the rest of this swill, were an avalanche. Seems others have found the little gems to be more than just "cute" (Bob Giesecke's word for my 1/2A "Pinto" Stunter). They actually fly well, too.

My announced bid to win stunt at the Nationals with mine was thwarted by my 3½ year-old's refusal to let me remove the Pinto from her room (where it normally hangs) in order to refinish it and practice with it. However, it is clear that the idea has struck terror into the hearts of the stunt "establishment". It is only a matter of time until my kid goes to sleep and drops her guard on the Pinto.

The next hurdle will then be THE WIFE, who considers it so cute she wants her co-workers at the china painting shop to paint it like a real pinto horse; with hooves where the wheel pants are, a portrait of a horsie on the wing, and big tan and white spots. I am trying to convince them that their paint will double the weight and the ship won't tolerate being fired in the baking kiln, but the future isn't too bright.

One thing I did manage to find out was that you need at least 2½ ounces of fuel for a stunt pattern with the TeeDee .049 . . . it's a guzzler. I made my own tank to replace the original, which usually went dry in the square eights. ●

F/F Scale . . . Continued from page 37
CO₂ engines, there is now a special event for these little outstanding performers. They seem to be the most efficient source of power for their size. Models powered with the Brown are getting off the water time and time again, more so than either the rubber powered or gas powered models.

In general, the most successful fliers in F/F seem to be biplanes (love those bipes!) particularly in rubber and gas. Primarily, it is due to the additional lift of the second wing. And believe me, you need all the lift you can get to overcome adhesion! Some fliers choose to put their floats at a positive incidence to the thrust line, while others prefer to place the thrust line at a positive angle to the floats. Each has good arguments to support their method. Still others say it's the shape of the floats that makes the difference.

I think it is fair to say that no one yet has the exact formula for continued R.O.W. success, and much yet has to be learned. This third year saw many more qualifying flights from all classes, proving again that experience is the best teacher.

R/C flying is also very exciting, and they generally have little difficulty getting off the water due to their excessive motive power, which of course, can be throttled back after take off. Obviously, R/C doesn't fall under the four-second qualifying flight time! Planes must be able to R.O.W., fly, make a successful water landing, and then be judged for scale after flying.

I would highly recommend this new dimension to flying scale, particularly F/F, for some new and exciting experiences. So, look over that lake where you have been doing your fishing . . . maybe it has other possibilities.

Don Butman comments on the Peck-Polymers Pietenpol Air Camper kit:

This is a well thought out kit . . . good wood, complete instructions that include a photo building sequence, and scale 3-views. The building went smoothly and covering this bird was a cinch! The Model 'A' engine and radiator add

much appeal . . . but a couple of pilots (profile) really set it off!

A pilot is an item that should be in the cockpit of all peanut scale models!! There is just nothing nicer than a "piloted" peanut chuggin' through the air!

My "Pete n' Paul" flew with no adjustments required. The suggested 3 degrees down thrust was built in, so the powered flight gave no problems. ●

workbench . . . Continued from page 7
95070, has given his company, which is producing and marketing a line of high performance R/C sailplane kits. The first offering is the Kestrel 19, which already has two firsts in major contests. John Baxter took first place in scale at the 1972 Western Soaring Championships (see photo, page 35, August MB) and Hugh Stock won first in speed at the 1972 Chicago Soaring NATS. Since the Kestrel is primarily a thermal soaring machine, the speed win proves that it has the ability to penetrate as well as soar, an important attribute when one is searching for lift.

The kit includes a beautiful, white finished fiberglass fuselage, custom-molded canopy and tray, complete fuselage hardware installation, machine-cut wing and stab ribs, complete plans and illustrated instruction manual. Price is \$69.95.

* * *

K&B Manufacturing has updated the Veco .61 R/C "Series 72". The engine now features new and improved head, piston, cylinder, ring, rod, by-pass, and port timing. Also, the housing has been beefed up. Most significant of all, the new engine comes with FLOW THRU muffler, and is available only as a complete package, for \$74.95.

The muffler is designed to maintain performance of the engine but to keep noise down to an acceptable level. "This is in keeping with the trend to use mufflers and help increase public acceptance of model flying fields", says the company.

(While we're on the subject of mufflers, we feel that AMA should back the R/C Contest Board in its ruling for mufflers on all pattern ships when being flown at sanctioned contests. This was a first major, though only foot-in-the-door, step toward overall quieting of model airplane engines for many reasons, including the one quoted by K&B above.

Unfortunately, AMA allows sanctioning of pattern contests without mufflers, provided the sponsor gives sufficient public notice that mufflers will not be required [AMA monthly mailing No. 63]. We feel that the muffler rule should be without exception, and that no sanction should be given unless the muffler rule will be enforced. AMA must show the way! [Ryme intended . . . if it will help!] WCN)

* * *

JP Products, P.O. Box 58, Harrisburg, Ill. 62946, has announced a line of printed instrument sheets in a range of sizes to suit most scale model projects. These are to be the first of many products to assist the builder in detailing cockpits of scale and semi-scale models. A sheet of 25 instruments sells for \$1.00 to \$1.75, in sizes from 3/8 to 3/4 inch diameter.

Astro Flight, Inc., 2301 Cheryl Place, Los Angeles, Ca. 90049, has developed and is now marketing, the first practical electrical power for model airplane use.

The Astro 10 motor produces 1/10 H.P. at 12,000 RPM and will fly a 2½ to 3 pound model for 4 to 6 minutes on one charge. Battery can be recharged in 15 minutes. Recommended prop size varies from 7x3 to 8x5 depending on the type of airplane. Price of the Astro 10 power package (motor and battery) is \$59.95. A larger unit, about equal to a 35 or 40 glow engine, the Astro 25, will be available later. We'll have a more detailed report in the next issue.

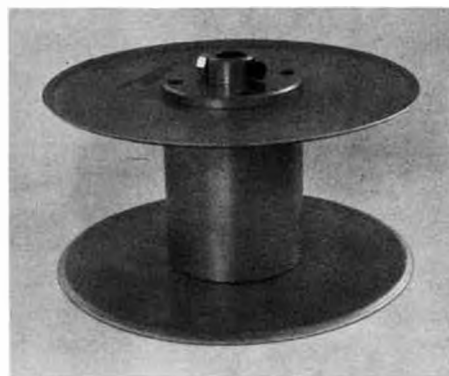
* * *

Vortex Model Engineering manufacturers of the well-known Santa Barbara R/C sailing yacht, now has the Soling-M available in kit or finished form.

The Soling-M is a near scale model of the 27 foot boat making its debut at the 1972 Kiel Olympics. Minor changes in scale have been made to accommodate the American Model Yachting Association 50-800 Class and the International Marblehead Class. Hull length is 50 inches, beam 12 inches, draft 12 inches, the 60 inch mast carries 798 sq. in. of sail area, and the displacement is about 17 pounds, including the 10 pound cast iron removable keel.

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* * *

As could be seen in last month's Carl Goldberg ad, the company has introduced new and improved 1972 retract gear mechanisms. If for no other reason than the relatively low cost, Carl's retracts have seen a great deal of use, which, from the point of view of quality control and improved design, is of great benefit to everyone.

Carl has noted that in some reports of nose gear collapse, nothing breaks but the retract lever. From examination of some installations which had this problem, he noted that the retract lever was not pulled back far enough to move the crank all the way back in its slot. As the sketch in this issue illustrates (it's a reprint of a portion of the instructions that come with every Goldberg retract gear set), if the crank is not pulled PAST DEAD CENTER, the gear is not truly locked down, and that poor little operating lever is left holding the bag. Obviously, if the gear hits an obstacle, the load will hit that lever, which HOPEFULLY, will break! If it doesn't, then your servo is going to catch hell!

The answer is simple . . . follow the instructions! First, put a V or Z bend in the nose gear push rod. Next, adjust the rod length so the servo stops just past the limit stop of the operating lever. The V or Z bend allows the servo to travel to its limit (to avoid excessive battery drain), and the crank, which is the thing that's supposed to

take the shock load from the nose gear, will be past dead center so it can do it's job. Let's face it; the retract lever only costs 25 cents to replace, but think of your loss of dignity when the nose gear collapses at the end of an otherwise smooth landing!

A POX ON HOTZ

John Penhallow, our resident statistician on full scale formula racing planes, sent in xeroxes of two pages out of *Aviation Week & Space Technology*.

One was an editorial on Transpo '72 (page 7, June 12, 1972 issue) in which Editor Robert Hotz referred to the flying demonstrations as the weak spot of the program. "It had an element of the barnstorming carnival performers that was totally out of place in a serious exhibition of advanced technology and two of the three fatalities came from this area. Wing walking, Pylon formula racing, Para-sailing, and model flying belong elsewhere", said Mr. Hotz.

It's bad enough to get negative press from the irresponsible, sensation-seeking daily news media, but to be shot down by a publication which is 100 percent aviation oriented and supposedly well aware of the many non-hobby uses of research models, and particularly R/C models, is a bitter pill.

The second copy John sent us is page 66 from the July 31, 1972 issue of *Aviation Week*; the Letters to the Editor section. In it is a long and excellently written letter of repudiation by Ken Willard, RCM's Sunday Flyer. Ken's final paragraph states, "The importance of models to the advancement of aeronautical technology has always been recognized. The fact that they are entertaining as well is another plus in their favor.

Non illegitimi carborundum, Ken! ●

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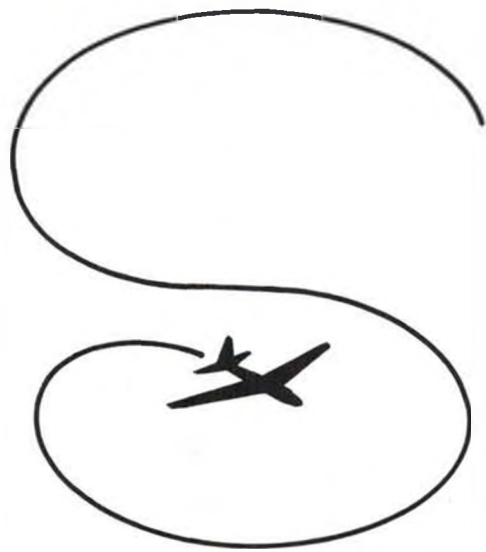


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NOTICE: All Kraft proportional systems feature long battery life with at least 2½ hours of flying time available per full charge.

INTRODUCTORY PRICE

\$299.⁹⁵

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