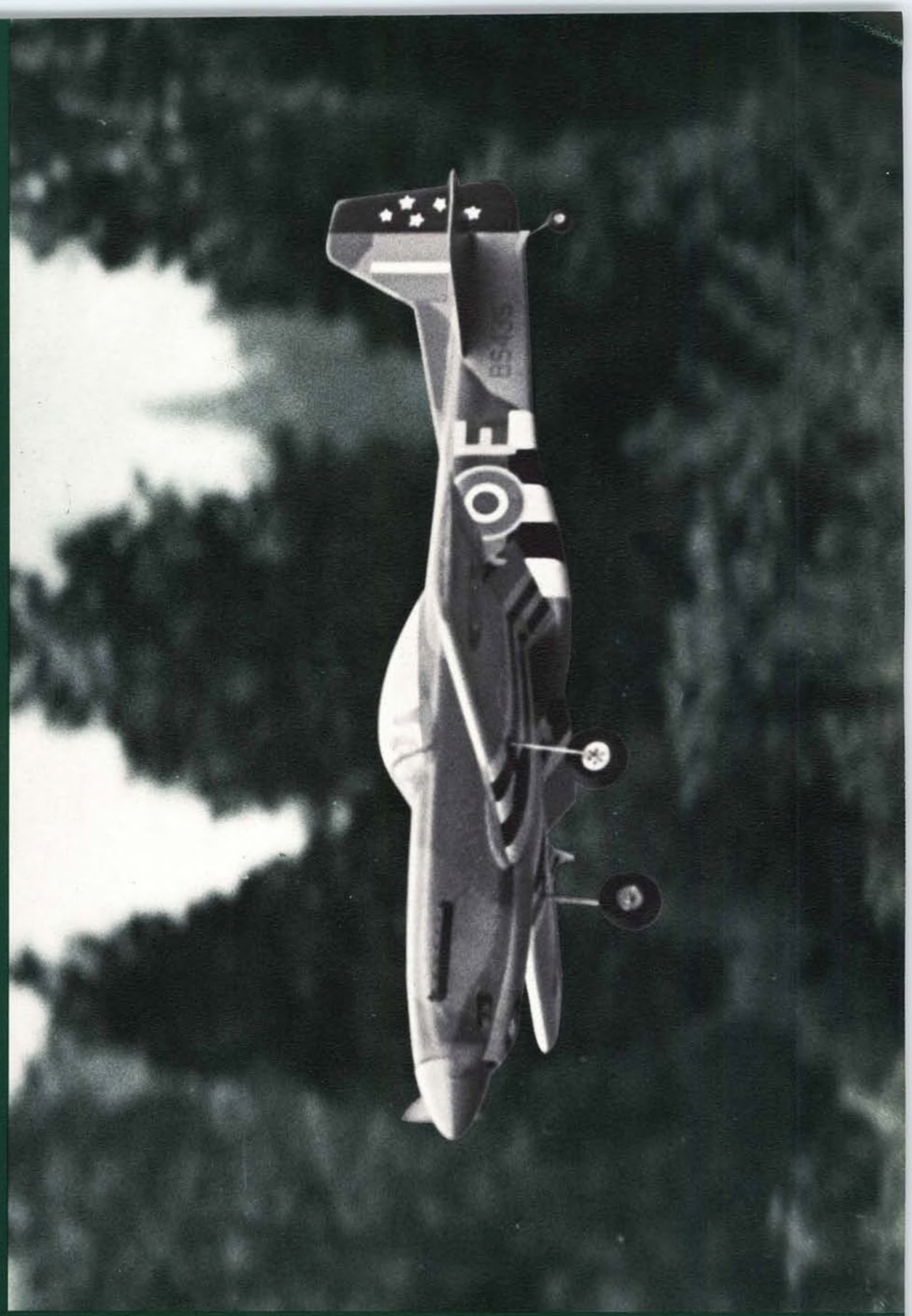
The Model Builder



MAY 1972

volume 2, number 7

65 cents

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The MODEL BUILDER

MAY

1972

volume 2, number 7

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ARTICLES

Cover: Top-Flite P-51 built by Ted Wilbur of the Northern Virginia R/C Club. Power is a Merco .61 and the radio is Heathkit. Fifth channel wo ks laps and landing gear simultaneously from two servos. Photo taken by John Preston using a 200 mm telephoto lens.

BMB (Before the Model Builder), when a guy had a chance to fly nearly every weekend . . . Sigh!

from Bill Northrop's workbench . . .

● Modelers often want to know if it's difficult to come up with a new subject every month on which to editorialize. Actually, there seems to be a never-ending stream of subjects, depending on the flexibility of the writer. However, there can always be a dry period.

Take this month, for instance. Outside of the fact that the Navy has just dropped sponsorship of the AMA Nationals after 24 years, and a large toy company is about to turn loose an electric powered R/C airplane complete with radio equipment that transmits at greater than the license free 100 milliwatts, there's really nothing to talk about . . . except possibly the reader in Clayton, Ohio who is teed off because his hobby dealer got The MODEL BUILDER before his subscription arrived. In fact, he's so disturbed (upset, that is) he has expressed the hope that we go under! Same to you, fella! Who can explain how the Post Office works anyhow?

As for the Nats . . . at this moment (April 4) it is still a gamble as to whether there'll be one this year. One thing sure, it won't be hosted by the Navy if it does happen. The Chief of Information, Rear Admiral W. Thompson made this clear in his letter to AMA on March 27.

It is this writer's opinion, having been close enough to the inner workings of the Nats operation in the past few years to understand some of the tremendous expense and responsibility taken on by the Navy . . . more each year as the Nats has grown . . . that we should not take our disappointment out on the aquatic services of our country's defense. As is usual, when we stop the war for a commercial ("Police Action" doesn't count), the military budgets get chopped drastically.

To many a Nationals contestant, Navy sponsorship consists of opening the main gate to a Naval Air Station and then having a bunch of swabbies stand around with stop-watches while some free-flighter tries to make them believe the turkey buzzard they're watching is really his 1/2A pride and joy in a thermal. But . . . just for starters . . . try to imagine what it costs to move a whole air station load of pilots, mechanics, airplanes, etc., to another air station for one week so a training program will not get too fouled up. Imagine how much it costs to turn over the B.O.Q. (Bachelor Officer's Quarters), to a couple of hundred Nats officials, judges, AMA officials, workers, etc . . . and to nurse a couple of DC-6 transports from station to station in various parts of the country to get all of those people to the Nats so the events will come off.

Even the last-minute nature of the drop-out can be excused. The past couple of years have been cliff-hangers as to Navy support. Both in 1970 and 1971, the final decision was well into the spring before becoming firm . . . A gamble each time . . . This year the same situation, and again, where do you establish the point of no return?

Oh well, enough of that. The question is now, can we muster the troops? Get them all to one spot in the country at one time? Deliver all the tabulating machinery, the paperwork, the myriad of forms, the clip-boards, stop watches, the chairs, tables, PA systems, field phones, monitors, etc, etc. All the hidden background material that nobody notices until it's missing.

By the time this issue reaches its readers, we'll probably have the answer. In the meantime . . . stay loose.

Remember the story about the electric car that made all the headlines when it crossed the country on only a few dollars worth of electricity? It's fame was quickly forgotten when somebody figured out that it cost over $600,000 for the extension cord!

As we said, that story (ahem!) was quickly forgotten, but the one about an electric R/C airplane won't fade too soon. The Mattel toy company has been developing their unit for some time and all the rumors about it were pretty well confirmed at the Hobby Industry Trade Show this February in Chicago.

The "Signal Command" airplane looks like a very common-sense type high wing cabin model of 40 inch span, weighing about 20 ounces at take-off, with pulse rudder control. Power is a geared electric motor driven by 8 nickel-cadmium batteries which provide about 3 minutes of flying time. The

A good friend of the Navy-sponsored Nats, LCDR Graham Hicks (rt) presents a model Grumman TBM-1C to WW II "Turkey Driver" RADM A. R. Matter at the admiral's retirement dinner. Mrs. Matter applauds. CDR Hicks modified a Monogram kit to duplicate the admiral's plane which the then Commander had to ditch in action.

On February 5, 1972, Roland Boucher of Astro Flight, flew this RF4 Fournier, powered by an Astro 25 electric motor, for 29-1/2 minutes over a 1/2 km closed course, covering a distance of 19.6 miles. The special, one-shot silver zinc battery for the endurance flight can be seen in the cockpit. All-up flying weight was about six pounds.

pack can be recharged in 5 minutes through an automobile cigarette lighter connection. The system is designed to cut off power to the motor at a given point so that there is enough reserve to operate the radio until the plane is landed dead stick. Price of the complete unit is expected to be in the area of 125 to 150 dollars.

Now we come to a part of the discussion that must concern *every* serious modeler, and particularly R/Cer's. This toy electric radio controlled airplane must be considered a quadruple threat to organized modeling.

First, there is interference. The transmitters will operate on the five 27 mhz frequencies, and since it is stated that FCC licenses are required, it is obvious that the units will be putting out more than 100 milliwatts of R.F. Even at 150 bucks a throw . . . and that probably means $99.95 from the discounters . . . enough of these things will be broadcasting from various uncontrolled locations to seriously hamper the safe use of expensive 27 band radios by modelers. Any purchaser of one of these units will be a potential hazard unless we are fortunate enough to net him as he comes out of the department store, explain the facts of life to him, and join him up in the local club so he can be watched. It goes without saying that from his point of view, success will be pretty limited by interference and lack of flight training if he doesn't join a club.

And that brings up a second threat, one which closely parallels the early attempts of marketing ready-to-fly U-control plastic models. To quote Doug Boynton's editorial in the March 1972 issue of his MODEL DEALER magazine, "Further, large sales through mass merchandisers probably will result in individuals spending their money and then through lack of instruction, watching their first flight end in disaster. The net result could be many a potential R/Cer becoming completely soured on the idea of flying models." Amen!

To this editor's mind, the most serious threat of all concerns the future of modeling in general and R/C in particular. Coming at a time when our relationship with the FAA is somewhat threadbare, and we must show our best side to regain their confidence in our ability to regulate ourselves . . . before they do it for us . . . we need an infestation of these electric mosquitos like we need a first class mid-air between a passenger-loaded jet liner and a runaway .60 powered R/C stunt job or a Class D free-flight.

The magazines have been asked to help in a campaign to get "the word" to all modelers, and in particular, non-AMA members, to make them aware of the dangerous aspects of their activity, not only of damage or injury on the ground, but also in the air. But how can we get to the mass buyer, the irresponsible in-and-out fadist, who could care less, or not even be aware of our plight?

Finally, threat number four, is to our pride. No matter how you try to ignore it, the neighbor who refers to "that nut down the street who plays with toy airplanes" gets under your skin.

In recent years, the spectator appeal of the highly exotic radio-controlled model airplane has done a lot to educate the "outside citizen" to what the hobby is all about. This is not to say that free-flight and control-line are not as technically interesting, but R/C is usually more closely related to the big stuff. Continual P.R. by the AMA, by model magazines, by individual clubs, and by well known celebrities such as Paul Harvey have done a great deal to elevate the stature of this skilled hobby of ours and to destroy the toy image built up in many years of careless word usage by newspaper and non-model magazine reporters.

But now, with the mass produced department store electric R/C plane, the toy image will regain strength and the serious model builder will have an even more difficult job proving that he's not "playing with toy airplanes."

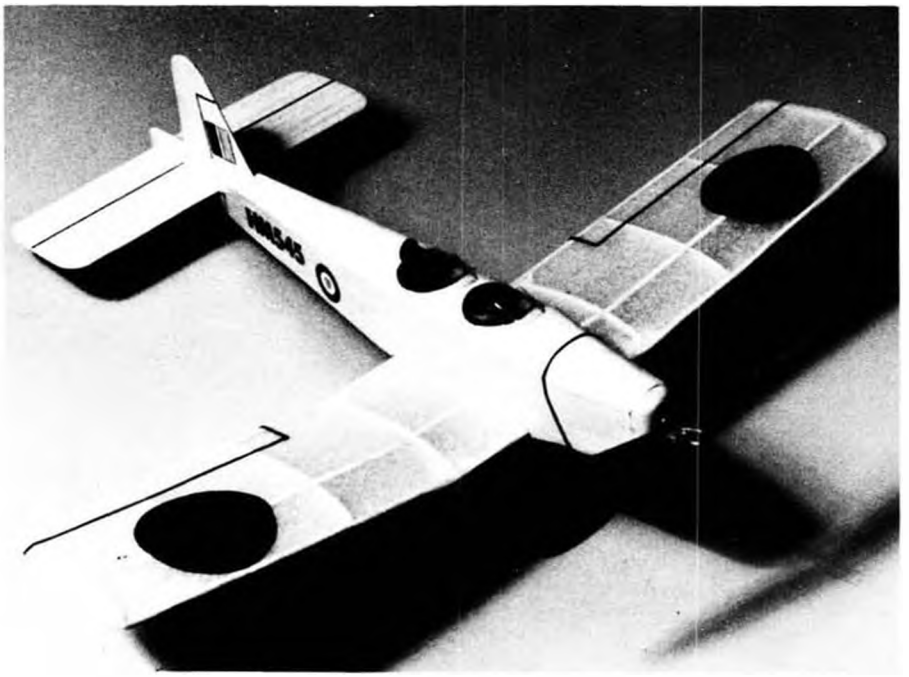
THINGS TO DO

We mentioned this before, but now have the location tied down.

Per information by Frank Womack, the Eighth Annual West Coast Antique Fly-In is scheduled for May 19-21 at Watsonville, Calif. This kind of show is a scale modelers Mecca.

The D.C.R.C. Club will hold the National Capitol R/C Pattern Tournament of June 24 and 25 at the U.S. Naval Weapons Laboratory, Dahlgren, Va., site of many D.C.R.C. record trials. Events will be pattern classes A, B, DN, DE, and a Special Event (Phil Kraft's

Great new hinge slot cutting tool set from John Tatone. Assures straight and true installations.



First of a series of Peanut Scale kits from Peck-Polymers, La Mesa, California. Kit has a great new invention called "printed wood." Miles M.18 is modified Walt Mooney design.

proposed new pattern as published in Feb. 1972 M.A.N.)

There will be special awards for Best Junior, Best Senior, Best Oldster (?), Best Single Flight, Worst Flight, and Worst Crash. For additional information contact Contest Director, 5803 Ellerbie Street, Lanham, Maryland 20801.

The R.O.A.R. (Radio Operated Automobile Racing) Nationals will take place on July 2 and 3 at the Briggs Cunningham Auto Museum, Baker & Red Hill, Costa Mesa, California.

Controlled practice is scheduled for June 30 and July 1 qualifying heats and mains on Sunday and Monday, July 2 and 3. Races will consist of Oval - Amateur and Expert; Road - Amateur and Expert; and Drag. There will also be a Concours event for A (Open wheel, GP and Indy type) and B (Full body, GT and Sports) cars. The latter do not have to race, but must be able to complete one lap of the course.

For further information and entry blank write to: ROAR Nationals, 9752 Saloma Ave., Sepulveda, Ca. 91343.

OVER THE COUNTER

Tatone Products' new tool for cutting hinge slots, aptly named "Hinge It," is so simple and effective that you can easily get hooked on it, cutting hinge slots in any piece of balsa you can get your hands on. Watch out, it could become chronic!

The $2.95 set consists of two items; an adjustable guide which determines the location of the slot to be cut, and a knife with a specially designed hook blade. In operation, the guide is set for the position of the slot in relation to the thickness of the surface edge to be slotted. Held in position, it acts as a straight-line guide to cut the slot (Ever notice how the wood grain will steer you off your predetermined course?). After cutting, the knife is turned over and the excess wood is scooped or hooked out of the slot, allowing room for the hinge and epoxy to be inserted without bulging the outside surface. The darn thing actually turns a chore into fun!

Another new Tatone item is a series of air wheels featuring neoprene rubber tires with nylon bushed metal hubs. The hub is recessed so that the wheel collars and acorn type retaining nuts, included with each pair, are hidden by a polished steel hub cap, also included. Wheels are available in 5 sizes from 2 inch through 3 inch diameters . . . range in price from $2.69 to $2.39 per pair.

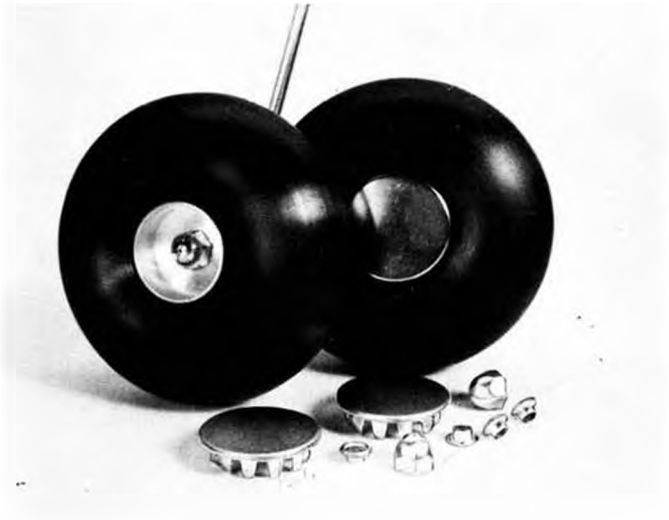
It was inevitable that someone would start kitting Peanut Scale ships. The popularity of Walt Mooney's series in our center spread only adds more proof to the old saying that once you start on peanuts it's awfully hard to stop (. . . or was that potato chips?)

Peck-Polymers, Box 2498, La Mesa, Ca. 92041 has introduced the first of a series of Peanuts, the Miles M.18, modified from a Walt Mooney original design. This model of an English W.W. II trainer spans 12 inches, and the kit includes printed wood (explain that to junior, Dad), a specially designed nylon bearing, plans and building instructions, authenticating 3-views, plastic prop and wheels, and Pirelli rubber. The price, at $1.98, may seem high, but remember, when Megow kits were 10 cents, you could buy a new Ford for about six or seven hundred bucks. If you can't find 'em locally, order direct and include an extra 35 cents for postage and handling.

Universal Developments, P. O. Box 5253, Orange, Ca. 92667, is importing a handy item for field repairs. It's a 25 watt soldering iron that operates from the power of a 12 volt car battery. The unit comes complete with a 15 foot cord and heavy duty alligator clips, as well as instructions in three languages, and a plastic storage and carrying bag. Extra tips are available at $1.20 each. Unit retails for $7.95.

Universal also has an interesting little catalog, "Bugattis to Blimps," which can be had for 25 cents. Items include a micro lathe mentioned in a previous MB issue, an .049 powered flying saucer, an aluminum die cast heat sink for .19 powered race cars, and a book with parts list and plans on how to build a 12 foot long Blimp!

Another item of interest is a 1:8



New neoprene rubber-tired air wheels from Tatone. Retainers and hub caps included. Five sizes from 2 to 3 inch diameter.

Imported 12-volt soldering iron; great for field repairs. by Universal Developments. Fifteen foot cord and clamps included. $7.95

scale Bugatti Type 37 race car for R/C.

Everything is included except radio and engine in the kit which sells for $34.95.

The features include a Bugatti body, aluminum chassis, five wheels and tires (simulated chromed wire wheels, rear axle and large gear, driver's body, front axle and steering assembly, plus hardware. It uses the Jerobee engine (Cox) and 8-tooth gear, which is available as an assembly, with clutch and starter, for $14.95.

Pictured in Le Gray's R/C Soaring column, is Harley Michaelis and his beautiful 150 inch span "Miskeet." Fliteglas Models, P.O.Box 98851, Des Moines, Wash., 98188 is now offering the "Miskeet" in a semi-kit for $39.95. Four sheets of rolled plans are included, showing left and right wing panels so both can be built simultaneously.

Wing area of "Miskeet" is 1008 sq. inches and the loading, at 4 pounds flying weight, is 8.5 ounces. A properly trimmed ship will fly over a hundred yards from a hand launch. Aspect ratio of the 12 1/2 foot wing is 22:1 and the airfoil is NACA 6412.

The semi-kit includes fiberglass fuselage and canopy, plans and instructions . . . no wood. About nine dollars worth of balsa wood is required to finish the wings, stab and rudder.

Scale modelers should be particularly happy to know that Proctor Enterprises, Inc., P.O.Box 9641, San Diego, Calif. 92109 is now marketing turnbuckles, cable, and swage fittings such as used on the well known Antic and Newport kits also offered by the company.

The turnbuckles, fully working and made of brass, range from 1/2 to 1-1/2 inches long, 7 sizes in all, and are furnished six to a pack, each pack costing $2.10 regardless of size. Twenty-five feet of stranded rigging cable sells for $2.25. Swage fittings are 60 cents for a package of 20, and clevis type end fittings to fit all but the two smallest turnbuckles are 6 for 90 cents.

Pete Reed, ex-President of NMPRA along with Sam Griswold and "Tiny" Rich have joined forces as GRR Enterprises (pronounced "Grrrr!), 19 Eastwood Dr., Plainville, Conn. 06062 and will put a tough, durable stainless steel insert in your engine head for 3 bucks, postpaid. The insert replaces the soft glo plug threads and will withstand the repeated plug changes of the racing enthusiast as well as the day-to-day requirements of the Sunday flyer.

GRR also makes the Miss R J Fiberglass kit of Chuck Hall's racing P-51 and a series of Custom Blend Fuels.

If you'd like to build a glider winch, but the necessarilly lightweight reel has you stopped, consider the unit now available from Rose Industries, 1190 North Rose, Escondido, Ca. 92025.

The aluminum reel consists of 1/4 inch thick, 8 inch diameter end plates joined by 8 steel bolts with 3 1/8 inch long spacers. Center hub has a 5/8 inch hole. Price is $20.

Free flighters should get a kick out of a series of scaled-down old timer (pre-1942) free flight kits by Micro Models, P.O.Box 1273, Covina, Calif., 91722 (phone 213-966-5233). All include full size plans plus selected balsa and pre-cut parts.

Currently available are 36 inch Scientific Mercury, 36 inch Miss America, 36 inch Goldberg Clipper MK II, 30 inch Request by Frank Ehling, 30 1/2 inch Megow Ranger, 35 inch Twin Cyclone by Tom Laurie, and 36 inch Berkeley Cavalier.

Ace Radio Control's 1972 catalog has a yellow pages! However, you won't find many telephone numbers therein. The first thirty page section in the catalog is actually a handbook on pulse proportional, including many reprint and original articles on rudder only flying, radio and servo installations, and model plans (one full size!)

The catalog is 47 pages of R/C equipment and related items, including components, fittings, model kits, accessories, tools, engines, radios, and so on. Sort of a mail-order one-stop shop. Price is a dollar and its purchase will entitle you to all subsequent supplements.

In Ben Hogensen's "In The Lee" column on boating you will find photos of two items by Norco Marinecraft Models, Arleta, Calif.

Precision machined and balanced aluminum flywheels are now available for .19, .40, .40 Super Tiger ABC, .40 K & B, and .65 Super Tiger. Prices are in the 3 to 5 dollar range.

Another item is a splined universal system for 1/4 x 28 and 5/16 x 24 size shafts. Matched joints are hardened for greater wear and sell for $2.95. ●

How to reduce drag when taking off water . . . remove one float at a time! Actually the special step design makes it easy. Looks good, huh?

SEAHORSE II

By George A. Wilson, Jr.

A real, honest trainer is a rare bird these days. The name is usually applied to anything that doesn't happen to be scale, stunt, or "go-fast-and-turn-left." Here is a genuine, inherently stable, hands-off, forgiving plane. And . . . being almost 100 percent pure . . . it floats.

● The Seahorse I was designed and built as a trainer for both land and water use. It worked so well that the design of Seahorse II was undertaken. The new design preserves the flying and water handling capabilities of Seahorse I and provides improved ease of construction.

Seahorse I has been flown many times by experts and many times by the author (a second grade novice) and the author's son (a complete novice). It is inherently stable and, given enough altitude, it will right itself "Hands-Off" from any of the weird attitudes that a novice may put it in. To demonstrate this ability, hands-off recoveries have been made from stalls, inverted flight, and several attitudes too difficult to describe. Maneuverability is as you would expect from a flat bottom airfoil and a lot of dihedral. However, Seahorse was not meant to be a stunt airplane.

Author/designer George Wilson, left, performs pre-flight check with the help of well-known New England R/Cer John Ross. Boat is handy in case you get a flame-out in the middle of the pond.

As a landplane, and without excessive back pressure from an over ambitious muffler, a 19 is plenty of power for Seahorse II. As a float plane, a well muffled 29 can be used and good performance obtained. My expert friends (Ross, Richmond, McCarthy and others) keep wanting me to remove the muffler to add some more power and see what happens. I know too well what would happen with me flying! As for them, there are plenty of stuntable airplanes around; why ask for performance that was never meant to be?

The constructional information that follows will be limited to those aspects of building the Seahorse that are at all "tricky". The design has been made as simple as practical. Even the tricky parts will be simple, if you follow the instructions.

FUSELAGE. The fuselage is light, rugged and has lots of room to make it easy for the novice to install his R/C gear. The Nyrod type control rod

Old-time R/Cers will recognize the sturdy, no-nonsense lines of the Seahorse . . . DeBolt's Livewire Champion is reincarnated!

Sub-fin balances the added side area of the twin floats. Remove it for land operation. Water rudder appears awkward but is very effective.

installation provides good water proofing. A gasketed cover is provided under the wing to make the fuselage, as-a-whole, waterproof. The following steps should be followed for assembly of the fuselage.

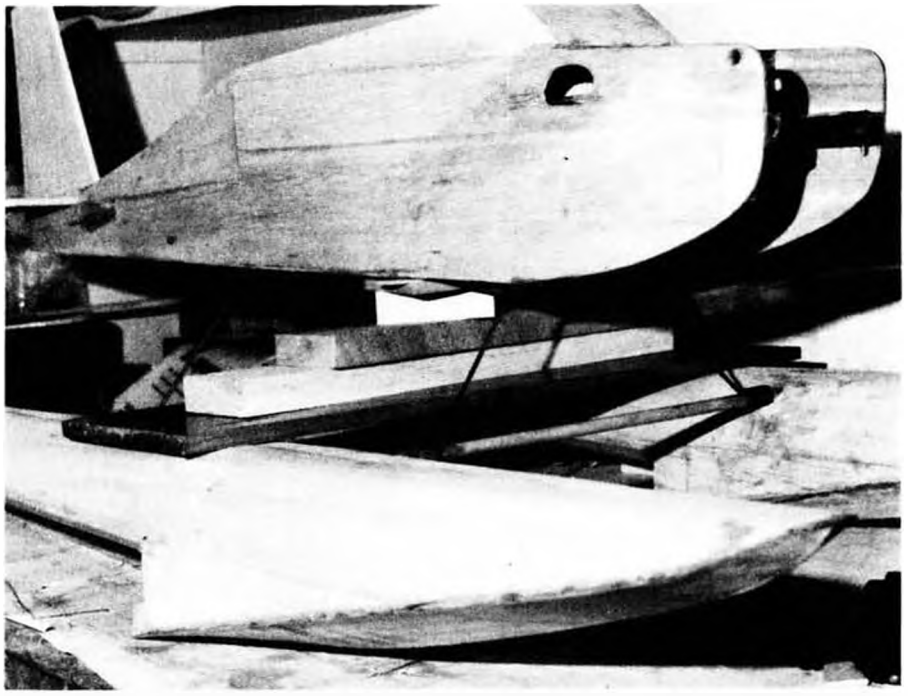
1. Cut out the sides, doublers and bulkheads.
2. Install the doublers and motor bearers on the sides . . . left and right! . . . and sand the sides while held together to make them alike.
3. Join the sides, with the bulkheads, at the front and back of the wing location. Pin this assembly, bottom down, to your work surface. Check to see that all is square and let things dry thoroughly.
4. Add the remaining bulkheads and motor firewall.
5. Add the bottom covering under the wing. (*Note:* Install the blind nuts for the landing gear, floats and sub-rudder in all plywood bottom pieces *before* they are installed.) Draw a center-line on the bottom covering under the wing area and use this to align the rear of the fuselage as you progress with the bottom covering toward the tail.
6. Install the rudder and elevator push rods before the top covering is added.
7. Add the top covering, tank compartment floor, windshield block, and other finishing touches except those in 8, 9, and 10, below.
8. Install the servo supports, motor control push rod and nose wheel push rod.
9. Install the hatch ledge and cover. *Note:* Install the blind nuts in the side ledges before you install the ledges.
10. Cut the motor mounting plate to fit your motor. About 2 degrees right thrust was built into the original and found satisfactory.

WING. The wing ribs are in three pieces; the triangular trailing edge sections may be cut from scrap balsa.

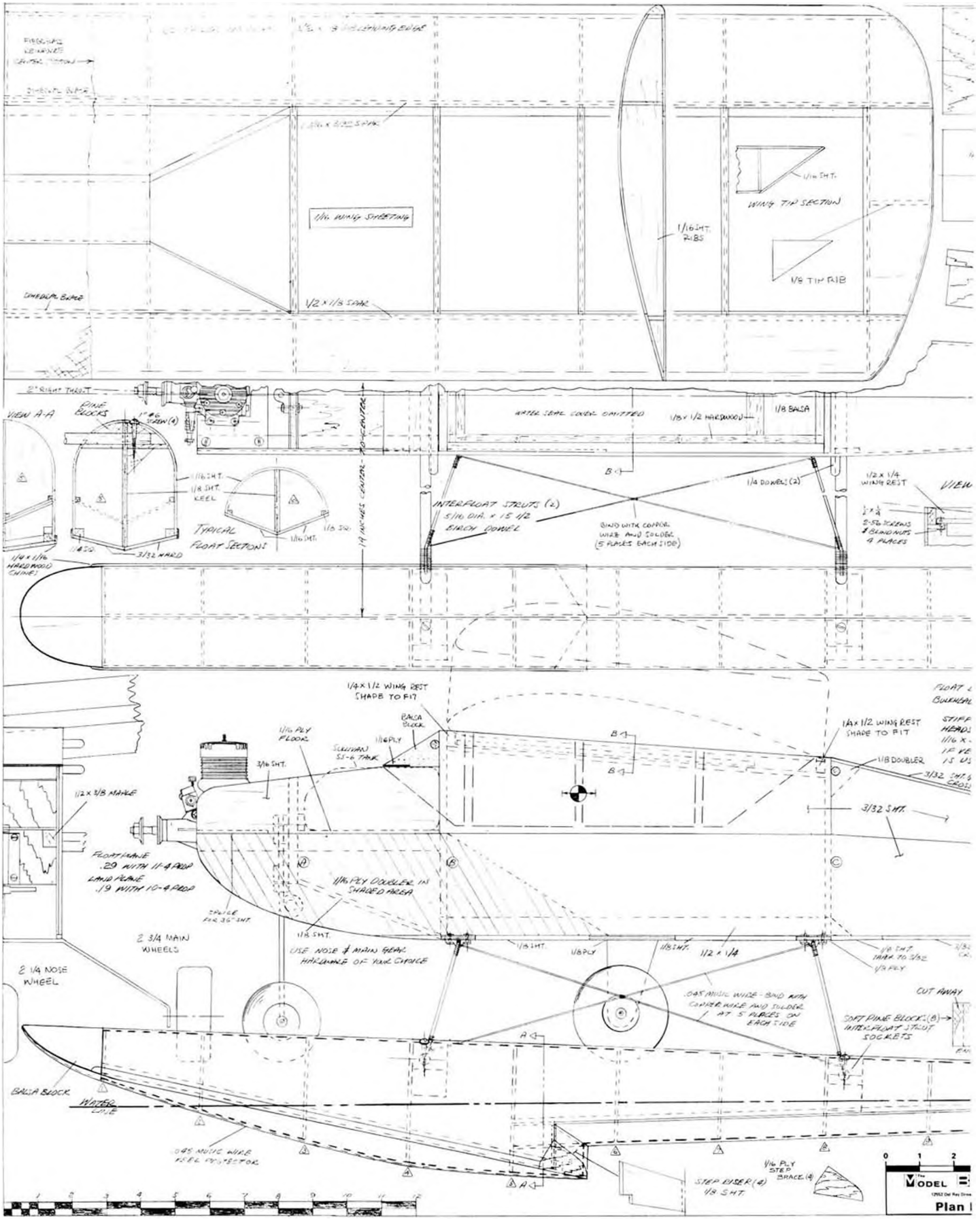
Pin down over the plan (wax paper first) the bottom leading- and trailing-edge sheeting. Mark the rib locations on the sheeting and lightly draw lines at each rib location to help align the cap strips and ribs when they are installed. Add the bottom cap strips, center sheeting and the main spar. Install the rib center sections (except those on each side of the dihedral joint), the rear spar and the subleading-edge.

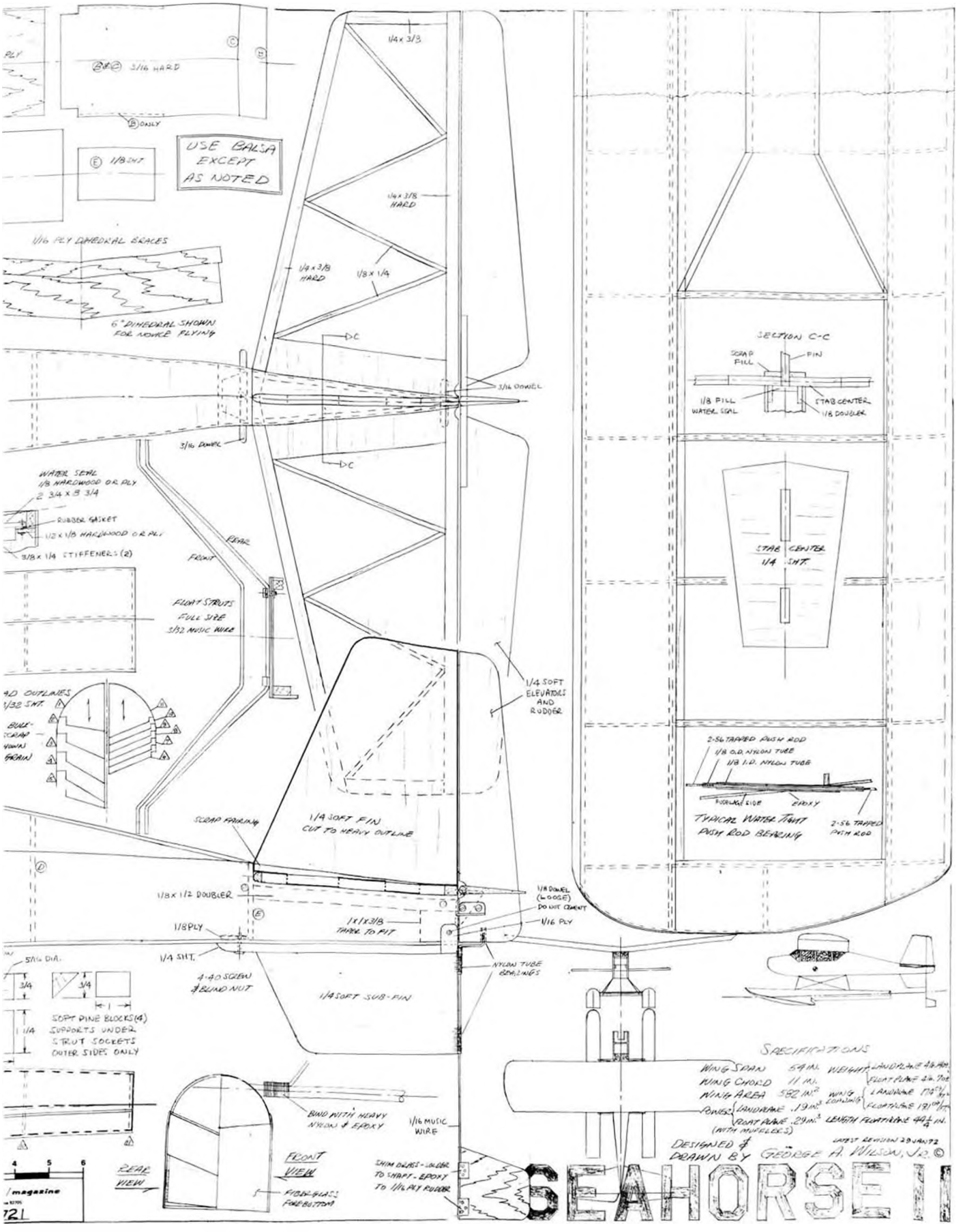
At this point, cut the central ribs to accept the dihedral braces, but don't install them. Trim the subleading-edge and aft spar flush with the tops of the wing ribs and install the rear sections of the wing ribs including those at the center. Allow this much of the wing assembly to dry well before it is unpinned from the work surface.

Make the dihedral joint by pinning one half the wing to your work surface, gluing the dihedral braces and center ribs in place in both halves of the wing and allowing the assembly to dry with a block supporting the end of the wing which is not pinned down. Make sure the assembly is true at this point; don't build in any warps! Before adding the top sheeting, dope or epoxy the inside of the wing structure, including the inside of the top sheeting. The top sheeting, cap strips, and tip sheeting complete the wing assembly. Don't forget to taper the trailing-edge of the rear top sheeting before it is installed. This is easily done using a razor plane. Pin each wing panel to your work surface while the top sheeting is glued in place. The washout under the wing tips is built



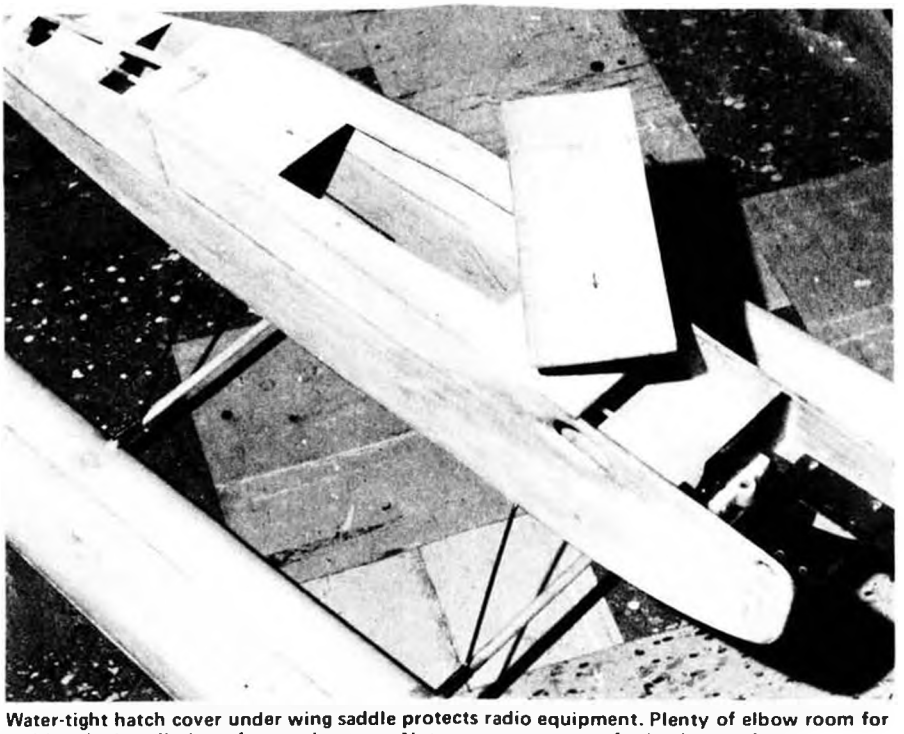
Accurate jigging during construction assures proper alignment of completed project. Float angle is important for short run water takeoffs. Floats remove easily for conversion to trike gear.


1/16 WING SHEETING
1/16 SHT.
RIBS
WING TIP SECTION
1/8 TIP RIB
1/2 x 1/8 SPAR
1/8 BALSA
1/8 x 1/2 HARDWOOD
1/4 DOWEL (2)
1/2 x 1/4 WING REST
INTERFLOAT STRUTS (2)
5/16 DIA. x 15 1/2 BIRCH DOWEL
BIND WITH COPPER WIRE AND SOLDER (5 PLACES EACH SIDE)
2-56 SCREWS & BUSHINGS 4 PLACES
VIEW A-A
PINE BLOCKS
1" #6 SCREW (4)
1/16 SHT.
1/8 SHT. KEEL
TYPICAL FLOAT SECTION
1/16 SQ.
3/32 HARD
1/4 x 1/16 HARDWOOD CHINE
14 INCHES CENTER-TO-CENTER
1/4 X 1/2 WING REST SHAPE TO FIT
BALSA BLOCK
1/16 PLY FLOOR
SULLIVAN 55-6 TANK
1/16 PLY
3/16 SHT.
1/2 x 1/8 MAPLE
FLOAT PLANE .29 WITH 11-4 PROP
LAND PLANE .19 WITH 10-4 PROP
1/16 PLY DOUBLER IN SHADED AREA
SPLICE FOR 36" SHT.
1/8 SHT.
USE NOSE & MAIN GEAR HARDWARE OF YOUR CHOICE
2 3/4 MAIN WHEELS
2 1/4 NOSE WHEEL
1/8 DOUBLER
3/32 SHT.
1/8 PLY
1/2 x 1/4
.045 MUSIC WIRE - BIND WITH COPPER WIRE AND SOLDER AT 5 PLACES ON EACH SIDE
CUT AWAY
SOFT PINE BLOCK (8) FOR INTERFLOAT STRUT SOCKETS
BALSA BLOCK
WATER LINE
.045 MUSIC WIRE TAIL SKID SPRING
STEP RISER (4) 1/8 SHT.
1/16 PLY STEP BRACE (4)
Plan



FULL SIZE PLANS AVAILABLE—SEE PAGE 56

Water rudder provides excellent directional control at all speeds Steering arm plugs into flying rudder when sub-fin is attached. Waterproofing is important. Follow authors instructions.



Water-tight hatch cover under wing saddle protects radio equipment. Plenty of elbow room for making the installation of control system. Note nose gear mount for land operation.

Seahorse II is the same as the first model but with some slight structural changes . . . which have been incorporated into the plans. For the beginner, this is a REAL trainer, very forgiving.

in at this time. Raise the rear edge of the wing tips about 3/16 in. with shims of scrap balsa *before* the top sheeting is added. Washout reduces "tip stalling" and makes the model more stable; especially when making landings.

TAIL.. The tail assembly is about as simple as can be devised, we feel. The vertical fin, rudder, elevators and sub-fin for float plane flying are made from medium-soft balsa sheet. The stabilizer is a flat, built-up structure. If plasticized dope (four to five drops of castor oil to the ounce of unthinned butyrate dope) is used, this structure should remain flat during the finishing process. Although Silron (or equivalent) covering is recommended, 1/16 balsa covering can also be used. Choose light sheet and sand it well when you go this route. After covering and finishing, assemble the elevators to the stabilizer and then add the vertical fin. *Make sure you remove the covering material* where the fin joins the stabilizer and where the tail assembly joins the fuselage. Install the fin and stabilizer assembly on the fuselage and then add the rudder.

The sub-fin is attached during float plane operation and it serves to provide 1) added fin area to balance the area of the floats which is in front of the CG, and 2) a mounting means for the water rudder. The sub-fin attaches to the fuselage by means of a 4-40 screw at the front end and a piece of 1/8 dowel at the aft end, which passes through plywood mounting plates on the sub-fin and the rear of the fuselage. The water rudder plugs into the bottom of the air rudder to provide the necessary interconnection: The water rudder is *absolutely* necessary and should *not* be shortened. Seahorse planes on the flat parts of the float bottoms and it depends upon the water rudder for directional stability when it is planing.

FLOATS. If you perform the following steps, your floats will assemble easily and the port and starboard floats will be straight and parallel to each other.

1. Cut the formers from 3/32 by 1-3/8 strips of balsa with the former grain running vertically. By inverting every other former, you can minimize the wood you waste. Stiffen weak formers by gluing 1/16 x 3/16 scrap pieces across the grain.
2. Cut the keels from 1/8 hard balsa.

Continued on page 42

The Gray (left) and Fehling (on starter) Team get ready for a "go." Ship is a Francis Shoestring with Supertiger "in-jine."

pylon

By Chuck Smith

FLORIDA RACES - The following report is from Jack Fehling in Florida:

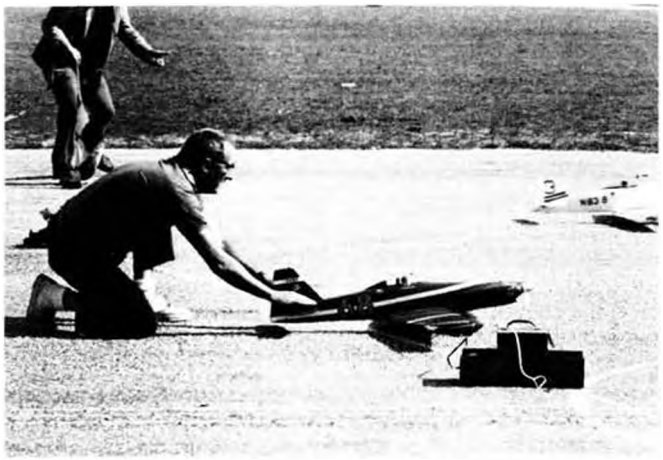
● The FMPRA (Florida Miniature Pylon Racing Association) kicked off its 1972 racing season in Miami on Feb. 6, at Tamiami Regional Park. The Tropic Aeros of Miami hosted a well run race. Conditions were ideal with a 10 mph breeze, on a bright sunny 78 degree day. The Dade County Parks and Recreation Dept. reported spectator attendance in excess of 3,000. Times were generally in the low 1:40's, the best time of the day going to Ed Weitock of Miami, with a very hot 1:35.

The Florida group is running Ugly Stick races this year as their second event. In the past, they have run open or sport pylon, but because of the way the current rules are set up it did not appeal to enough rookie pilots. Jack says that the FMPRA would like to switch to FAI next year, if the open engine rule can be changed. He feels that FAI may have potential as a rookie event.

Clint Smith worked out a handicap system for their Ugly Stick races. Basically, it uses 80% of the difference between a pilots fastest time and a three minute average time, as the amount of seconds a pilot must hold his plane on the line. This involves a lot of paper work since the handicap has to be recalculated each time a pilot flies faster. But it seems that all this is necessary (although they have set up their rules such that the engine, fuel system, prop and aircraft must be completely stock) because it still appears that there are always a few pilots who are much faster than the others. I myself have never believed in handicap races. They supposedly encourage the rookie and create closer races, but I could never get satisfaction from beating another flyer just because I took off 20 seconds before he did.

RAF ENGINES - Circular speed specialists Jerry Roselle and Jack Frye (RAF), 217 W. Wenger Rd., Englewood, Ohio 45322, are now producing engines for R/C pylon. Their .40 nitro engine goes for $100 and their FAI .40 with muffler is $125. Half of the money must accompany all orders. They claim they will have no problem producing 100 engines to make them legal for Formula I. Of course, this is not a problem for FAI. Both the engines are Schneurle ported and have rear exhauts.

Engines are fast becoming R/C pylon racing's biggest headache. The current limited production (or importation) engines can do nothing but discourage modelers from competing in pylon and increase the expenses involved. Any engine which is legal for R/C pylon should be made in such a quantity that they are available to at least every NMPRA member. The FMPRA has already taken a step in this direction by putting a $60 limit on the price of stock engines. They are also considering a change to the current NMPRA engine rule that requires at least 100 production units. They would



Winning plane , Jim Demeritte's, is launced by his father, Ed. K & K Ballerina. Note full right rudder on Number 3.

Jim Schweitzer, FMPRA President, flew this Miss Cosmic Wind. Supertiger power.

A handful of power! The new K & B .40, Schneurle ported engine.

Harold Coleson's K & B powered Stagall Minnow. Harold is currently leading the national NMPRA points standings.

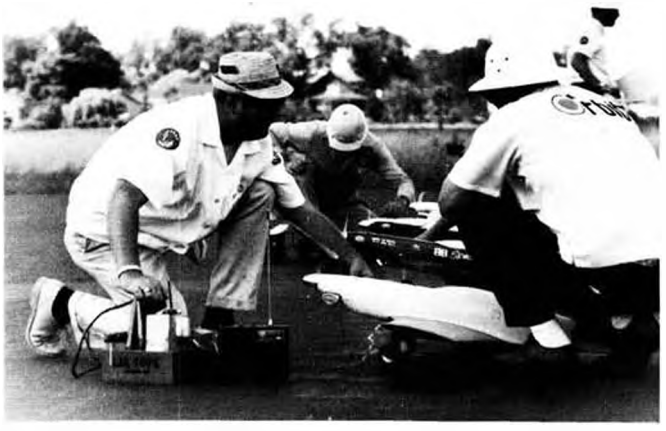
like to see 400-500 engines be required. I personally would like to see 1000 engines of a manufacture being made available in this country either through production or importation, before the engine can be considered legal. This would guarantee that the top performing engine would be available to everyone.

ROM-AIR RETRACTS - The success of the Telford-Violett team in FAI Pylon with their Rom-Air retracts has prompted Rom-Air International, Inc., 924 65th St., Brooklyn, N.Y. 11219, to make a limited production unit which is slightly over 1/2 inch thick. This unit should fit in most thin wing FAI racers with no modification. They claim delivery of the units within two weeks of receiving an order. The unit is intended just for pylon racers, so contact Rom-Air as soon as possible if you're interested.

FMPRA RACE RESULTS

	NAME	HOME	AIRCRAFT	ENGINE	TIME
1.	Jim Demeritte	Tampa	Ballerina	Tigre	1:41.2
2.	Ed Weitock	Miami	Ballerina	Tigre	1:35.0
3.	Harold Colson	Atlanta	Minnow	K & B	1:40.7
4.	Walt Schoonard	Orlando	Shushonic	Tigre	1:49.0
5.	T&D Racing Team	Melbourne	Minnow	K & B	1:47.2
6.	Bill Williamson	Ft. Laud.	M/W Cosmic Wind	Tigre	1:51.2
7.	Clinton Smith	Orlando	Shushonic	Tigre	1:55.6
8.	Ralph Leider	Miami	El Bandito	Tigre	1:59.3
9.	D. C. May	Atlanta	Minnow	K & B	1:40.9
10.	Larry King	Miami	Minnow	Tigre	-----

Note use of CB spinner and ram air in left cheek cowl for carburator on Bror's Miss Dallas.



Bror Faber checks with his partner, Howard Nupen to see if he has the right setting for FAI race at the 1971 Nats. It went lean anyway.

Front end of Faber's Mustang. Note fuel shut-off and cam-loc hold-down for cheek cowl. Accessibility is important in racing!!

Nupen/Faber Formula I stable. Stafford Super Midget Mustang (top) and Garabidian Miss Dallas. Color scheme is cream and brown.

SOUTHERN CALIFORNIA CONTEST CALENDAR:

April 22-23 - Formula I at Whittier Narrows.

April 29-30 - FAI Pylon at Los Alamitos NAS

May 6-7 - Formula I at Mile Square

MODEL BUILDER & BROR FABER INTERVIEW - CONCLUSION.

MB — Right now, FAI is the No. 1 pylon racing event in England. They have given Formula I a lower priority. Almost all their top pilots are concentrating on FAI and they have already proven they will be our biggest competition.

Faber — Absolutely. They have been very strong in the FAI categories for many years, when it comes to getting the most from their engines. We in this country are certainly not going to take time out to learn how to get an FAI engine to run if there are not races scheduled in the event.

You mentioned Formula I as being of secondary nature in England. What you have to realize, as many people unfortunately do not, is that there are many reasons behind the FAI rules as we now have them. Nitro methane has been outlawed in many countries on the continent due to rather particular legislative powers within the countries themselves, such as shipping. Consequently, the fantastic cost of nitro when and where it is available puts a damper on the enthusiasm for Formula I. Also, in just about every European country that I know of, they are being forced to a total, inclusive muffler rule on any aircraft. We in this country are very fortunate in having these freedoms, and if we do self-police it, we will probably continue to have that freedom.

We all know, those of us who fly in FAI and take great pleasure in the event because it is an extremely challenging event, that the rules as they now stand leave an awful lot to be desired. But the FAI Committee, for those who are not familiar with it, works exactly like the Olympic Committee. They as a body, which is the governing body for all of sporting aviation, are run on a one nation, one vote concept. This is pretty hard to swallow for us because we have a fantastic number of active R/C flyers in this country as opposed to some of the smaller European countries. This part of it we will not be able to change; however, I feel that with a strong concerted effort on the part of all of us and

The K & B Superpoxy finish shows up well in this shot. Bror likes it for the fast and fine results. Building time is minimum and every minute counts when Saturday comes close.

Continued on page 51

QM P-51 featuring special molded foam material that takes any finish. Being developed by two Hals . ... Osborne and Okert. Looks REAL good.

PYLON/4

By Fred Reese

● Bill Northrop, with a unanimous vote of one, elected me to continue this column on a regular basis. I gladly accepted, being assurred of lots of help from the readers in the form of letters, pictures, articles and "how to do it" type things. PLEASE!!!!!

This month I will talk about current organizational activities. The Mentor, Ohio group has established the QUARTER MIDGET PYLON LEAGUE. The QMPL is a national organization headed by Bob Penko, President and Ed Nobora, VP. This is a governing body type of organization whose purpose is to establish national rules and to represent the quarter midget flyers to the AMA. This group has been racing quarter midgets for four years and is responsible for the Mentor rules which are now being used by many other clubs around the country.

In Southern California, the QUARTER MIDGET RACING CLUB, QMRC, has been formed for the purpose of representing the West Coast, with John Elliott of Orbit Electronics, President, and myself as VP. Similar organizations have been started in Nashville, Tenn., and Corpus Cristi, Texas, although I have no details at this time.

These organizations are necessary in order to get communication between groups and to settle on a single set of rules. Naturally different factions have evolved. There are those who say that

Two of current world champion Ed Nobora's QM racers. P-51 being kitted by J & J. Mongster will be construction feature next month in MB.

the name of the game is racing and that the rules should be kept to a minimum. These words generally come from individuals currently flying Formula I. The other major faction is the "Sunday Flyer" group who wants to maintain a tamer event. Currently, most of the people flying quarter midgets are of the latter group. It was for this group that RCM originally proposed the event and because of the "intent" of the original rules, we now have wide acceptance of the class. There are also many people in between and therein lies the controversy. Where do we draw the lines?

Pressure has been put on NMPRA by some of its members, also by AMA, to look into the possibility of organizing QM racing if no national QM association arises. The QUARTER MIDGET PYLON LEAGUE, providing it receives national support, could do the job. John Worth and the contest board are watching the developments very closely. With some effort, QM racing could make the 1973 AMA rule book as a provisional event.

Meanwhile - like right now - join the QUARTER MIDGET PYLON LEAGUE. You need it and it needs your support.

Please complete and mail to the Model Builder magazine, the Quarter Midget Opinion Survey. The questions asked cover areas of controversy and we really need a more complete cross section of opinion to determine what the final rules should be.

I would like to start a contest calendar for QM racing. Send me race dates at least two months in advance or just give frequency of the races and who to contact in your area. The Northrop club and the Orange Coast RC club are racing monthly at Mile Square, in Orange County, Calif. Contact Ken Holden for race dates at (714) 979-1978.●

The MODEL BUILDER Quarter Midget Opinion Survey

ENGINE .15 cu. in. disp. (check one)

- ○ Stock
- ○ Stock, may substitute other production carburator
- ○ Modified

WING 300 sq. inches wing area (check one)

- ○ 7/8" thick at the root, straight taper
- ○ 7/8" thick at the root, straight taper, but with a minimum tip thickness, such as 1/2"
- ○ The thickness of the wing to be at least 10% of the chord over the entire span.

RETRACTIBLE LANDING GEAR yes ○ no ○

10 Second idle rule yes ○ no ○

Land under power yes ○ no ○

Are you currently flying a QM type racer? yes ○ no ○
Are you currently building a QM type racer? yes ○ no ○

What else do you fly?

- ○ Formula I or FAI
- ○ Scale
- ○ Pattern
- ○ Sport

Name _____

Address _____

Club _____

Quarter Midget Pylon League

Dues, including subscription to The MODEL BUILDER magazine:
AMA members (No._____) $6.50
Non-AMA members $7.50
Racing No. preferred _____

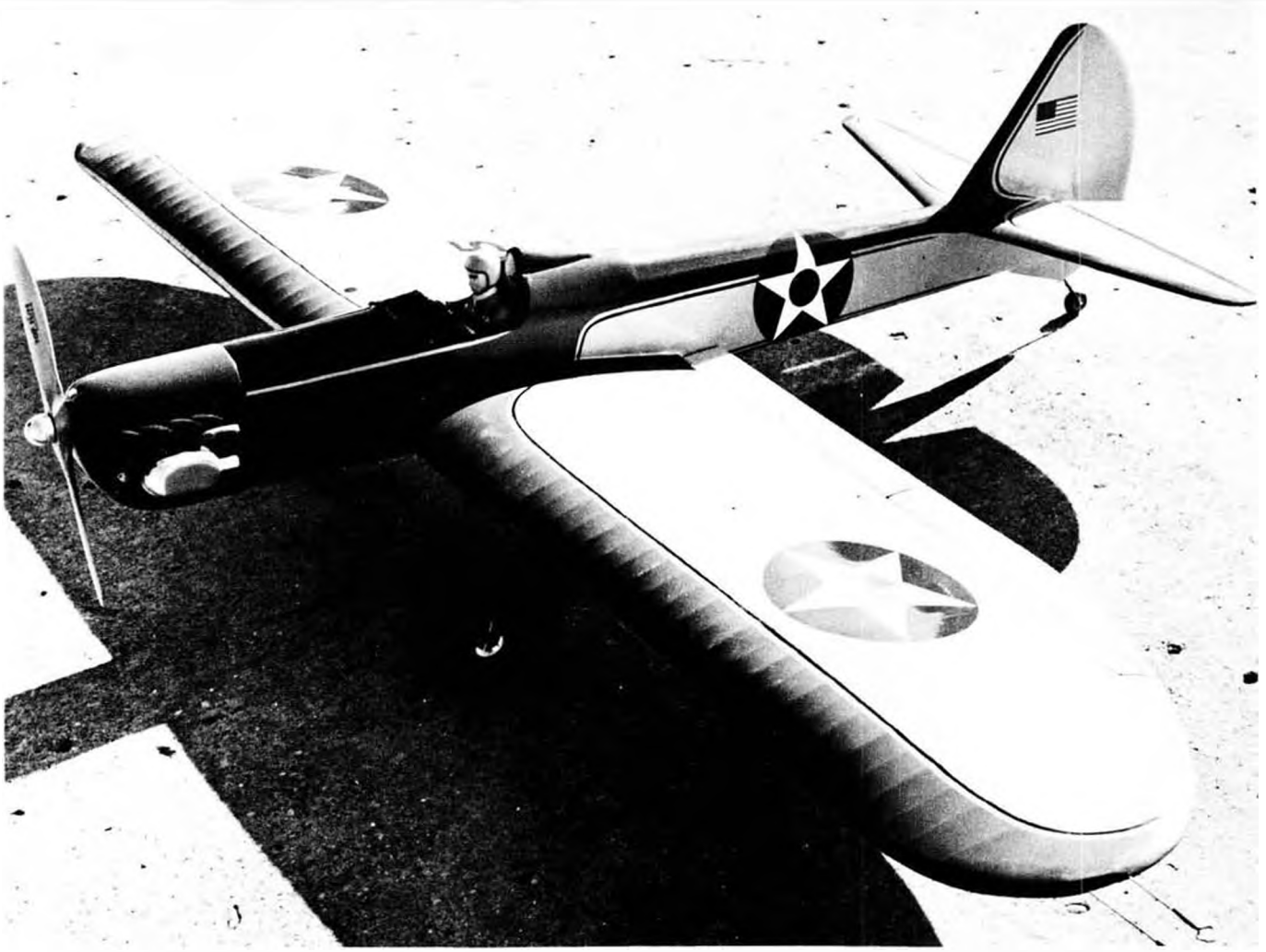
Send check to: Q.M.P.L.
9183 Route 306
Kirtland, Ohio 44094

Application

Name _____

Address _____

City & State _____ **Zip** _____



Well known CL designer Jack Sheeks turned the popular Pete Bowers Fly Baby into a stunt ship. Span is 56 inches, powered by .40.

CONTROL-LINE

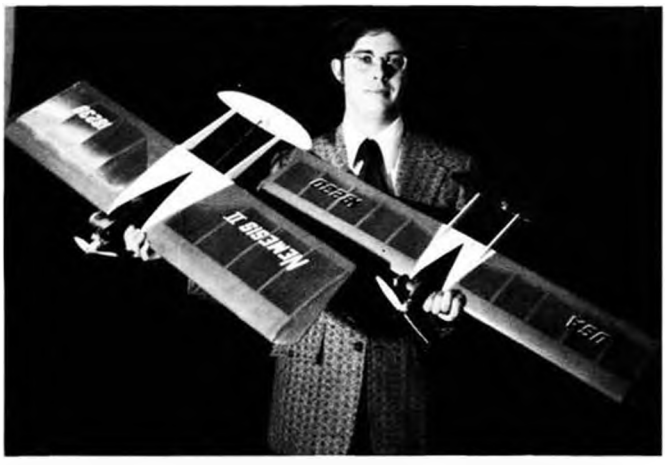
By Dick Mathis

Fourth rendition in the continuing saga of Fast Richard's Almanac. In this chapter we learn how to use a pacifier . . . and just in time . . . there is much anxiety in the world . . .

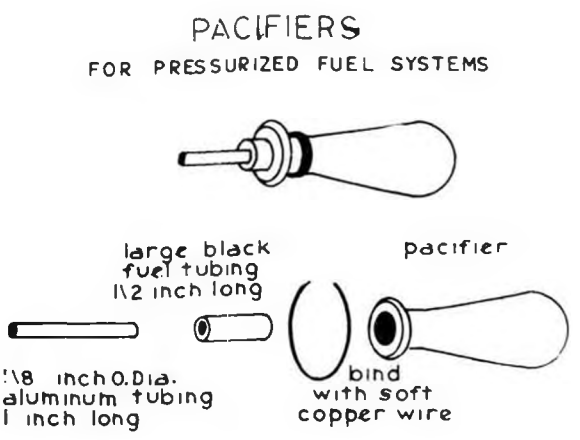
● Continuing the Crusade for FAI combat, we've obtained permission from AMA to run an experimental FAI combat event at the Chicago Nationals this year! Rules and dates will follow later, but if you want to start building now, the only stipulation on the airplane is that it be .15 powered and use .012 inch lines, 52 feet long. Brace yourself, it's going to be wild!!

Speaking of combat, dig the hpoto of "Kentucky Colonel" Howard Rush with his 1970 NATS winning "Nemesis" design. What's that little one in his left hand? None other than *his* answer to 15 combat, the "FAI Nemesis," which really looked "right" when I saw it at the Toledo Industry Show. M & P will manufacture both sizes beginning this summer. Also good news for combat freaks is the kitting of Phil Granderson's "Tyrantula" for 35's by Anderson Enterprises, who also package a ready-to-run pacifier tank for 49¢. No price on the "Tyrantula" yet, but inquire at Box 10621, Portland, Oregon 97210 and maybe they'll get inspired enough to finish a few kits. Another far-out kit for combat is the "Super Twister," one of Carl Berryman's designs, from Chip-a-way Models, Box 15297, Del City, Oklahoma 73115. All of these folks are shoestring operations who turn out excellent quality (a little love and pride helps!) stuff.

Ditto for George Bahrman who has a new line of pacifier tanks too. Three pacifiers for 50¢, you supply the tube fitting and wrap it. George also handles triangular leather fillet material in 1/8, 3/16, and 3/8 inch dimensions. These are good for making beautiful, round



Howard Rush, 1970 National Combat Champ, shows latest Nemesis design. Big one has S.T. 35, FAI version an S.T. 15.



George Bahrman's Pacifiers for pressurized fuel systems. This month "Rapid Richard" gives us the lowdown on their use.

and *light* corners on wing/tail-fuselage joints on stunters, or scale ships . . . or the tray in your toolbox for that matter. They are also *strong* and that makes them useable any place where reinforcement is needed . . . like even bellcrank platforms and firewalls. Contact George at 10644 Burbank Blvd., North Hollywood, California 91601. Better yet, give your dealer the name of all these small manufacturers and browbeat him into stocking their products.

While at Toledo, I got a look at Rozell and Frye's new line of handmade motors. These guys are well known for their speed feats, so we pay attention when they announce new motors for Combat, Carrier, Goodyear, Rat Race and Stunt. Thye are called R.A.F. Custom Engines, if you're interested, and the engines should be winners. They'd better be, 'cause the price tags run: Carrier .65 ($100), .40 ($80), .36 ($75), Combat .36 ($50), Goodyear .15 ($75), Stunt .40 ($50), Rat Race .40 ($75), includes mini-pipe. To me, engines got too expensive when the old Fox Stunt .35 hit $15, but I must confess I ordered one of the stunt 40's after falling in love with it at first sight. It should outlast my reflexes at least. All of the R.A.F.'s have schnuerl porting and aft-facing exhausts, which is the thing to have if you happen to be a motor. Write to 217 West Wenger Road, Englewood, Ohio 45322 for details.

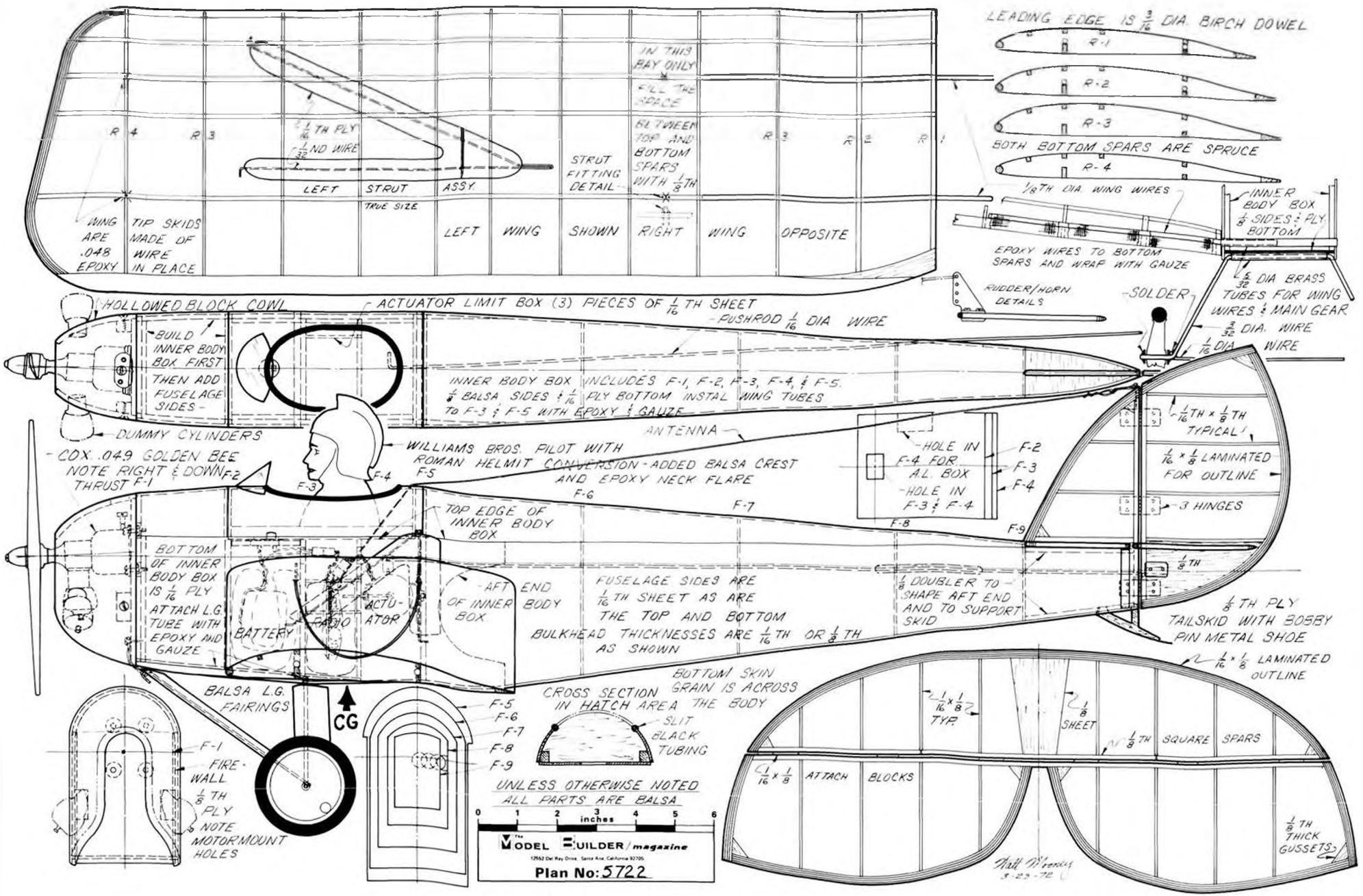
This month we discuss how to run pen bladder/pacifier pressure fuel systems. The drawing shows pretty much all you need to hook one up, but the trick is learning how to operate the things. First, the advantage is a constant engine run. Once you've set your needle valve it stays there regardless of what the airplane does. They're essential for speed and combat and can be put to good use on sport planes, too. It doesn't have to be a racing motor to benefit from a bladder/pacifier. Tank should be mounted in a compartment which has ample room for a full tank, to avoid "false pressure" which will change during the motor run.

Fill the tank with a squeegee bulb or hypodermic syringe and pinch the fuel line (soft black neoprene or surgical tubing) shut with a clothespin or fingers while hooking it up to the needle valve. Some simply close the needle valve after every flight and therefore don't have to pinch the line while waiting to fly. Then they open the needle valve to approximate running position while flipping the prop until the motor runs. I prefer to leave the needle valve open and fuel up immediately prior to starting, so I simply pinch the line off with my fingers, prime the exhaust, bump the prop a few times to distribute the prime and make sure the glow plug is good and hit the prop once, releasing the fuel line as soon as it fires. Works every time.

It's best to have the motor on its side or upside down when starting so the fuel can run out the venturi rather than flooding the case in the event the motor doesn't keep running. One thing that throws people is tuning the needle valve on pen bladder/pacifier pressure. Always remember the motor will run on a bladder/pacifier even if it is set very lean, but it will load up and quit flooded if it is more than slightly rich. Therefore, tune it from the lean side and start it from the lean side. If you have doubts about the needle setting when starting, simply close it and open it gradually while cranking and priming until it catches. A very lean engine on a

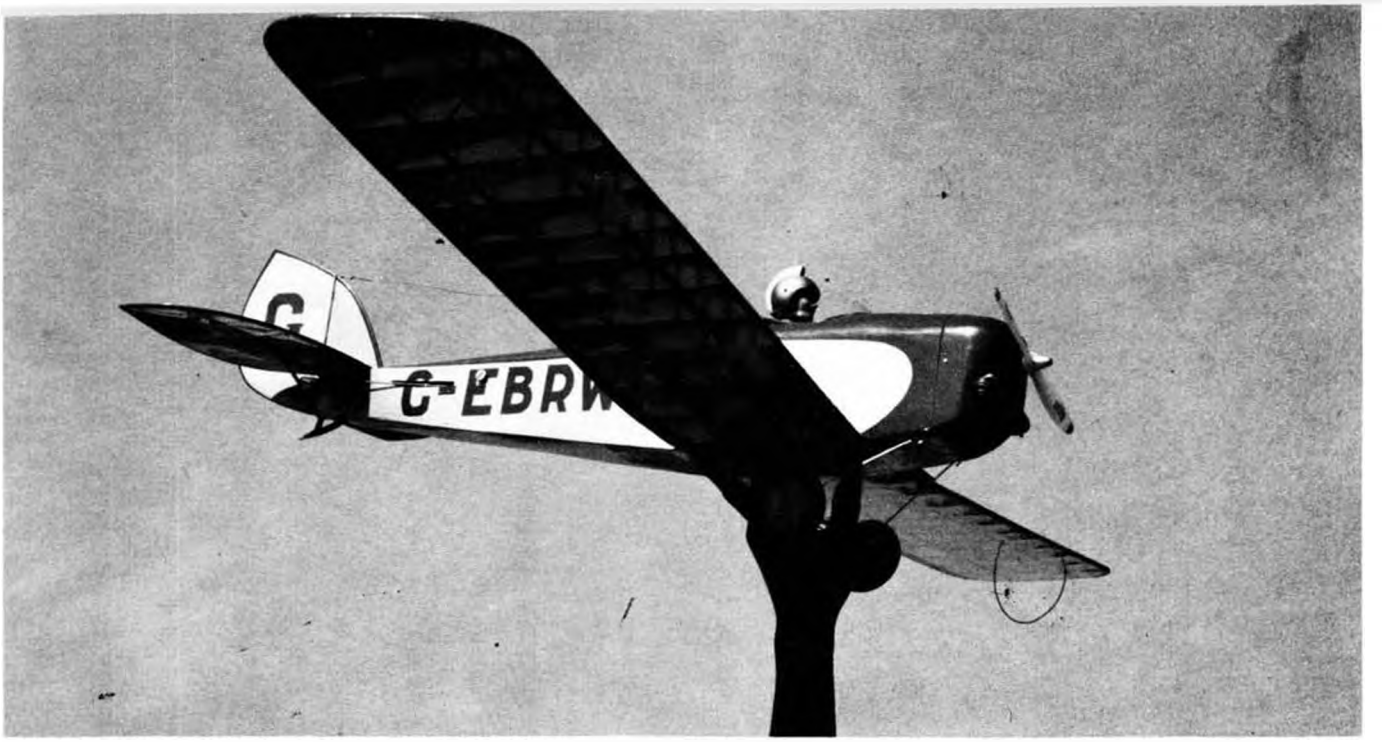
Continued on page 48

Junior members of the Red Barons Model Plane Club, Mt. Prospect, Illinois. These guys won the trophies they stand behind. Sorry we weren't given their names.



FULL SIZE PLANS AVAILABLE—SEE PAGE 56

PHOTO BY EDITOR



This particular model started life as a Jumbo Scale (Over 48 inch span, rubber power) and was converted to "R/C Free Flight" for this article.

F/F - R/C D.H. HUMMING BIRD

We wanted to prove a point . . . that pulse rudder was the ideal system to control a free-flight model. With Walt Mooney's help . . . mission accomplished. The Humming Bird was a free-flight first and an R/C model second. The transition was painless, in fact, it became a perfect combination. **By Walt Mooney**

● This was the first light plane designed by the De Havilland firm. It was built for the Daily Mail's lightplane trials at Lympne in October 1923. A three-view of the Humming Bird and several pictures of the various versions (mostly with differing engines), are presented in Volume I of British Civil Aircraft 1919-59, by A.J. Jackson. On page 296 is the photo that inspired this model. It shows G-EBRW taking part in the comic event at the Woodley Flying Meeting on 5 April 1930 piloted by a gentleman wearing a Roman helmet.

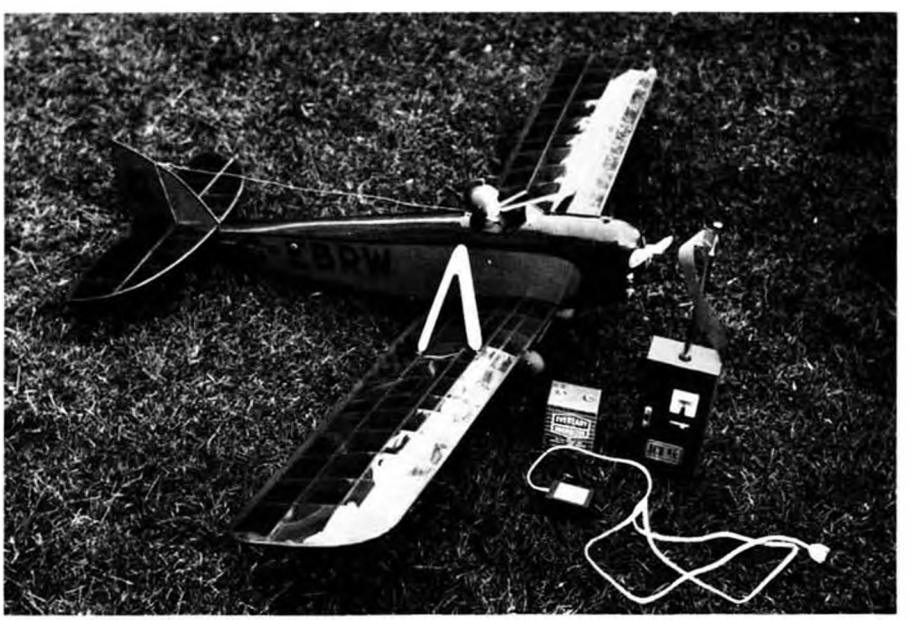
The model actually started out as a Jumbo (over 48" span) rubber scale model for the Flightmasters annual Jumbo Scale meet. One of their rules requires a pilot, so I modeled the happy Roman warrior as well as the G-EBRW. As a rubber model it flew but did not place, mostly because it was finished just the night before the contest. *(Of course nobody ever does that! Ed.)*

However, Bill Northrop thought it would fit in with a concept of his which he calls Radio Controlled Free Flight. So, with the advent of Ace's Commander '72 radio control system, a conversion project was born. The Perelli rubber and the propeller with a wire hook was replaced with a Cox .049 and the Ace '72 system.

Now the Ace '72 system is the answer to a beginner's prayer for an easy way to start out in the R.C. business. The connections between the various components are color coded and everything is extremely neatly done. We used the Stomper actuator in this model with a scale rudder (*Big!*). Even so, the R.C. version turned out to weigh the same as the rubber version, because a 48 inch span rubber job uses quite a bit of Perelli and the Ace '72 system is quite light.

Only the actuator need be installed in the model in a rigid fashion. The radio and the battery/switch combination can be encased in some rubber foam and dropped into a hatch in the

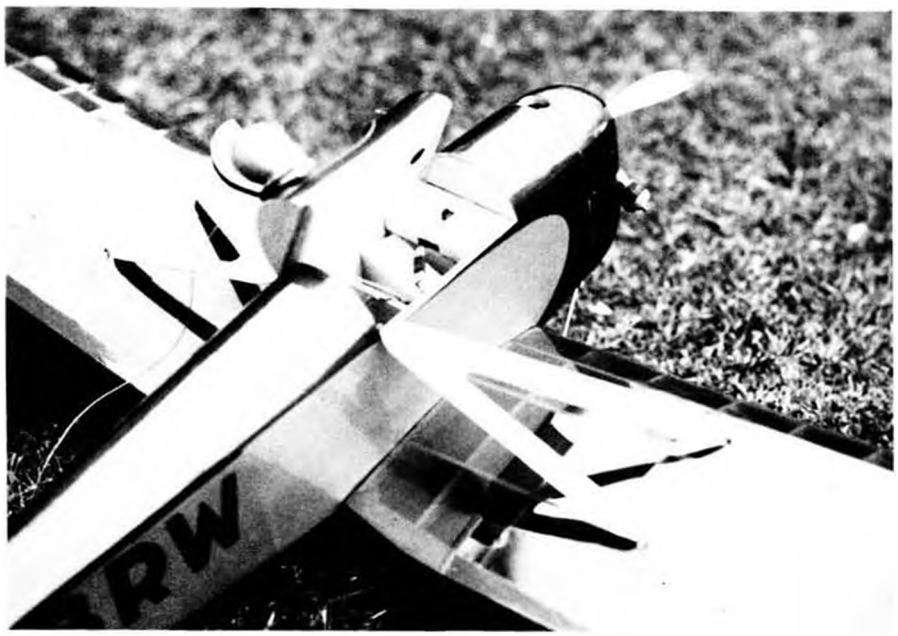
TAKAGI



What better way to keep your F/F scale job from wandering into the next county . . . or that nearby tree? Ace Commander unit has given terrific boost to pulse rudder activity.

Here's the "Hummin Boid" doing its thing the first time around, as a Jumbo Scale at the 1971 NAR Flightmasters contest. Berrara times.

See that dowel head between the "B" and the "R" ? For old times sake, Walt left the rear rubber holder in place. RC version no heavier.



Access to the Stomper actuator, Commander receiver, and switch/battery pack comes with a flip of the hatch. Switch can be operated through the cockpit without disturbing the Roman pilot.

model, making convenient to use single radio in several models so long as each model has its own actuator.

Ace sells a charger, size matched to each of the available airborne battery pack sizes, so you don't even have to think about the charging rate but just plug it in. You do have to remember to put the switch in the "On" position, but then most of us can learn to do that.

An owner's manual comes with the Ace '72 system and it is really worth reading. It also saves this author from writing a lot of flying instructions. What the Manual says goes for this model, although I'll have to admit I made all of my test flights R.O.G., partly because a poorly adjusted power pattern won't even get it off the ground and thus can't hurt the model much, and second, because I find low wing models a little awkward to hand launch because they can't be held near the CG. G-EBRW took off perfectly every time. On the first flight, the ship pulled to the left, but this turning tendency was easily controlled by the radio. It turned out that the left wing had more washout than the right wing.

The model was covered with Monokote. We used silver for the fuselage and for the wing numbers, and transparent red for the rest of the airplane. It sure turns out pretty this way, although the finish wouldn't be expected to garner too many points in scale judging.

The model was constructed as far as possible in the same manner as the real G-EBRW. The built up Monokoted wings and tail simulate the fabric covered originals, and the sheet balsa fuselage construction simulates the plywood covering of the real fuselage. The model basically follows the traditional construction methods and should require little more than the plans for the construction effort. A few special details are noted as follows. *(Did you notice? He didn't say, "Construction is straight forward." Ed.)*

The outlines for the horizontal and vertical tails, and for the wing tip bows, are laminated out of four pieces of one sixteenth by one eighth balsa. Cut the forms out of balsa or box wood and wax the edge so the lamination won't stick to it. I use a color crayon for waxing because it's easy to see where the form needs more wax. Use white glue, thinned about half and half with water, to cement the laminations together. Put glue on each stick and lay the next one on it until there are four in the stack. Wet the outside of the last stick with water and bend the stack around the form, using masking tape to hold it in place while it dries. The secret to bending the stack of sticks around the form without having them break is to attach one end to the form securely and then keep some tension on the stack as you "pull" them around the form. Laminated tips are stronger and lighter than tips cut out of several pieces of sheet. *(See "Scale F/F", this issue. Ed.)*

The most common structural failure on a model is a broken wing leading edge. To avoid this as far as possible the Humming Bird uses a piece of three-sixteenths diameter birch dowel for the wing leading edge.

The second most easily damaged part of a model is the landing gear, and on G-EBRW the landing gear is made so that the forward struts are held by rubber bands and the main legs pivot in a cross tube in the fuselage. The landing gear can thus flex in the aft direction if it hits an obstruction.

Continued on page 48

PHOTOS BY GEORGE BAHRMAN

Dennis Mihora and original A/2 Nordic. The spacious new Taft, California site is a natural air harbor. Free-flight championships held here.

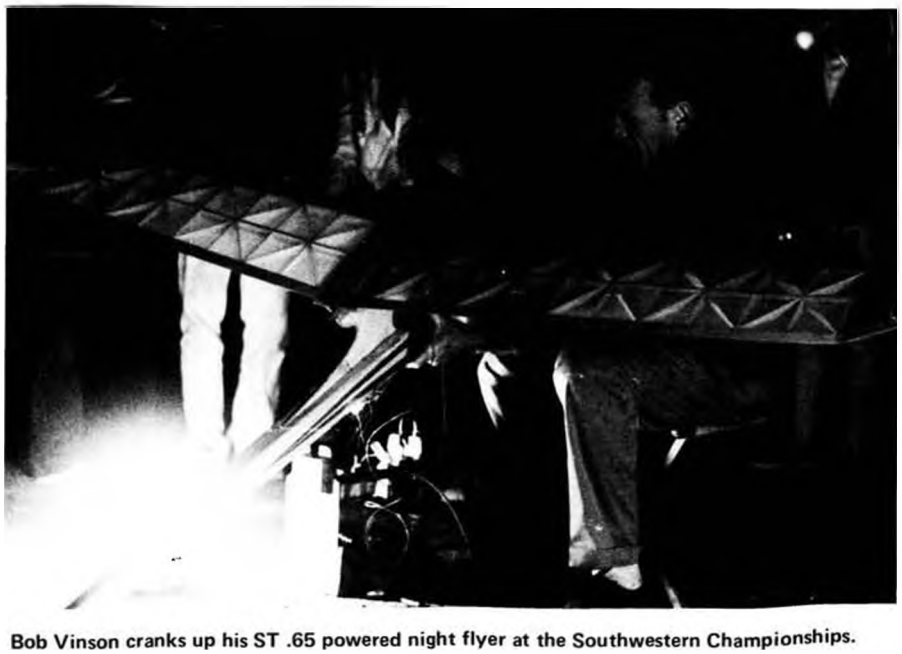
FREE FLIGHT

by Mel Schmidt

WHY USE AN AUTO-STAB?

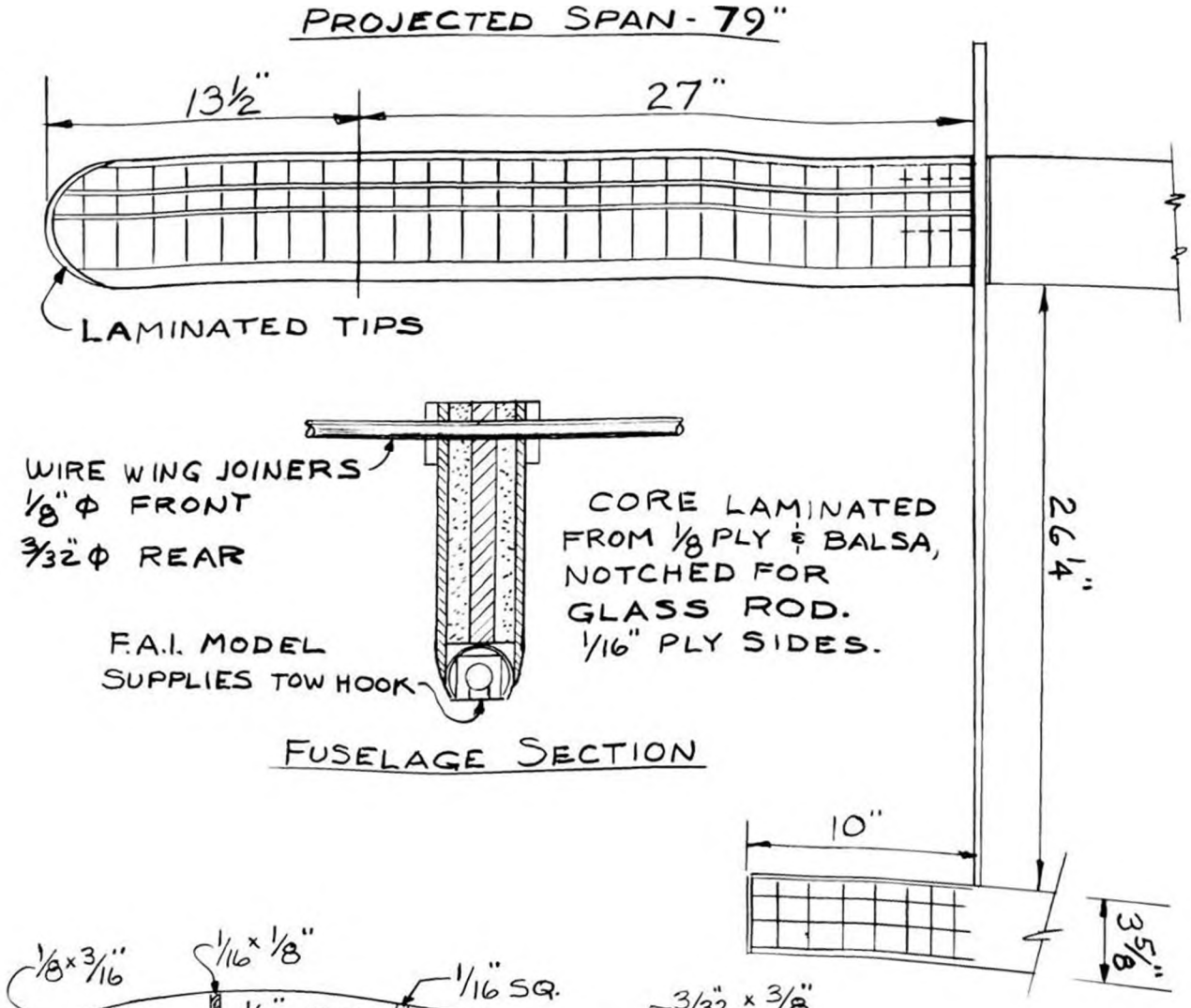
● Some flyers believe that the sole function of the tailplane should be to stabilize the model. For such designs, the tailplane is a streamlined symmetrical section, rigged to fly at 0° angle of attack, giving no lift. In other words, it holds the ship in a groove. This was a popular concept in some old time designs and is still popular for power control. If you look at old time plans, you will see that the balance point is roughly one-third back from the wing's leading edge. For such a design, the wing is normally the only lifting surface.

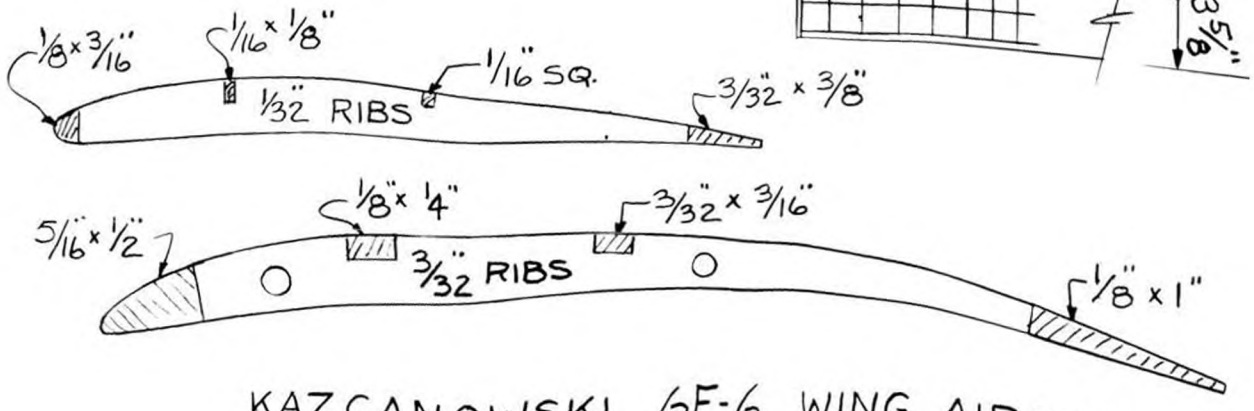
Other flyers consider the tailplane as a lifting surface, as well as a means of stabilizing the model. This means that the center of lift is now a resultant force from wing and tail and the more lift the tail is designed to give, the farther back the total reaction. Generally speaking, the larger the tailplane, the farther back the center of lift, and thus the center of gravity. This is particularly noticeable on power designs with large tailplanes where the center of lift can be anything between 50 to 100% from the wing leading edge. Although the balance point on such a design may seem a long way back, the center of lift is still a little farther back.



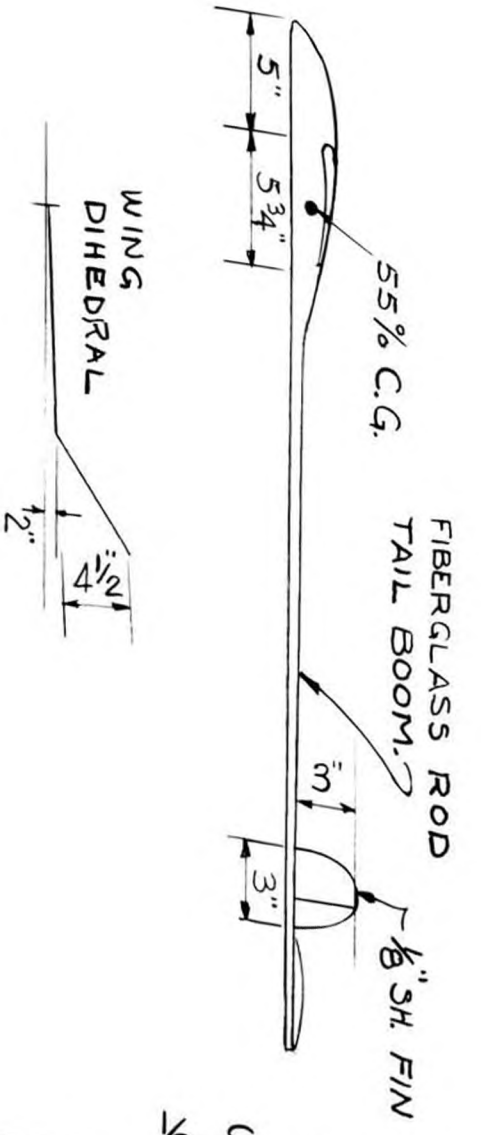
Bob Vinson cranks up his ST .65 powered night flyer at the Southwestern Championships.

If we have built our model to a proven plan with the tail and wing incidences correct, and the model balancing where called for, a good glide should result, showing that the center of gravity and center of lift are in the right places. Usually, slight inaccuracies exist in our incidence setting, giving us a center of lift too far forward or rearward of our center of gravity. If a model shows a stalling tendency on gliding, our center of lift is too far forward, and to bring it back, we increase the lift on the tailplane by shimming up the leading edge. What must be emphasized is that this method can only be used for trimming





KAZCANOWSKI 6F-6 WING AIRFOIL



⅛ SCALE
THE ULTIMATE DRAGMASTER A/2

— BY —

TOM HUTCHINSON

Don Zink flew his Half-A "SHOCER" 38:15 minutes for a National Category I Open record. Ship weighs 6.4 ounces.

Juan Livotto with his A/2 Nordic, "Lively Lady" design, which he flew in the FAI semi-finals. Juan is a Nordic specialist.

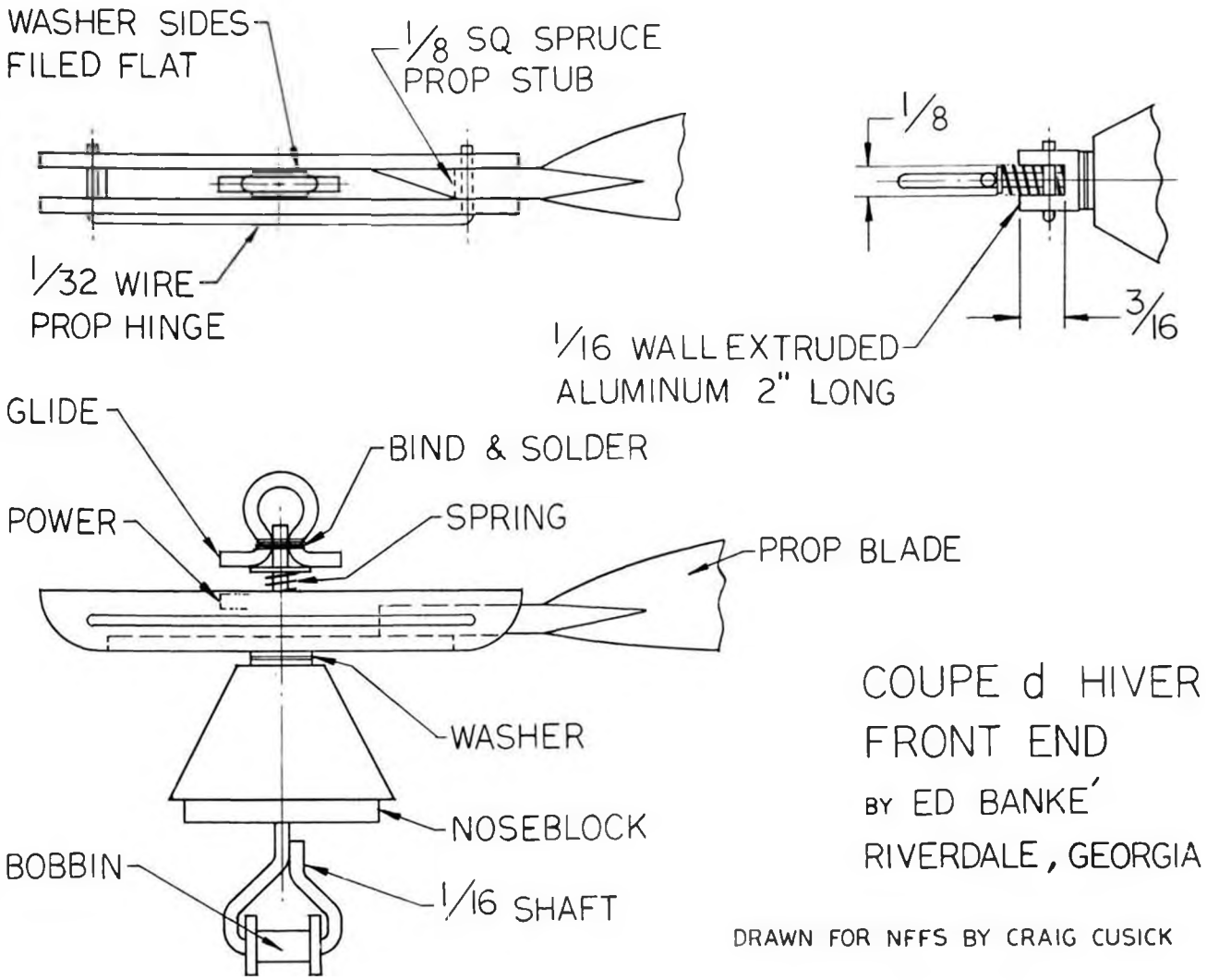
out small inaccuracies. If used to extremes, the wing will be operated at very inefficient lift/drag ratios and poor stability will result. Therefore, if your model needs adjustment to a point where the wing-tail incidences differ much from 2 to 4 degrees, always move your center of gravity position first by weight adjustments.

What does all of this have to do with using an auto-stab? When under power, the ideal wing-tail incidence difference may be some 2 degrees and the ship holds in a groove and flies fast. Then, for the glide, an auto-stab can be used to change the incidence difference to some 3 1/2 degrees, allowing the ship to become more buoyant and susceptable to riding thermals. The center of gravity is positioned with the incidence difference at some 3 1/2 degrees, which results in a position further forward than for a fixed tailplane. For the glide, the tailplane is lifting and the ship is very stable. For power, and particularly very high power, the ship is in a definite groove. Gravity forces are decreased because of less turning or looping and structural failure of the wing is less liable to occur. A ship will climb higher and glide longer using an auto-stab.

Next month we will illustrate the installation of a reliable auto-stab.

Lincoln Bahrman holds Pop George's new Half-A Burrito. Ship is Tom Hutchinson's 1972 design. Right on, Lincoln Baby!!

Another Livotto who knows how to fly Nordics. It's Juan's son, Jeff.He's already won some Junior glider meets.



EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT NORDIC BUT WERE AFRAID TO ASK . . . OR . . . THE ULTIMATE DRAGMASTER

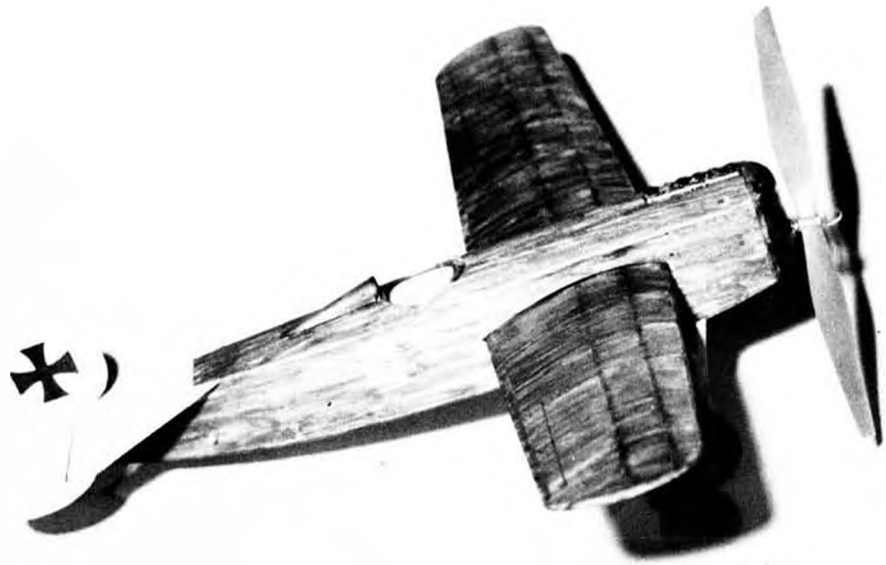
by Tom Hutchinson.

"This design had its beginnings at a dead-air Nordic session that Bob Issacson and I had at Lake Elsinore last winter. Bob flew his standard Dragmaster and I used my Led Zeppelin and a modified Dragmaster using a set of Lively Lady wings. Conditions were such that we were able to establish some consistent and repeatable times for each design. (The standard Dragmaster was doing 135-140 seconds, the Lively Lady about 145 seconds and the Led Zeppelin 155-160 seconds). I went back home and calculated the predicted calm air time for each model, using the Allnut technique presented in the 1970 NFFS Symposium. The predicted times came out within 3 seconds of the observed time for each model, which gave me a lot of confidence in the method of calculation.

"Allnut had been raving to me about the Kazcanowski GF-6 airfoil for some time, but I didn't believe him until now. So I ran the GF-6 parameters through the calculations and found that the calm air time of the Led Zeppelin could be increased to about 175 seconds just by switching airfoils. I passed this information on to Lee Polansky, who was getting ready for the World Championships. He built a Zeppelin with the new airfoil and sure enough the performance was as predicted (Skill and science win out over fear and superstition!). In the calm Swedish air, there weren't any Nordics around that were capable of beating any of the American still-air Nordics, and Lee's looked like the best of the bunch (the only US A/2 to max in the first round, under very dead conditions).

"Now that I had confidence in the technique, it was time to try and improve the standard Dragmaster's performance in the still air. Calculations showed that a slight increase in aspect ratio (from 13 ro 14) plus the new airfoil, would increase performance to the same level as the original Led Zeppelin, the benefits were obvious, so I built one while Lee was building his Led Zeppelin (actually, I just built a new set of wings and a new stab, to fit the spare fuselage I had around).

"This model showed a much slower glide than any of my previous Dragmasters, and the calm air time was as predicted. It's much more of an all-around contest machine than the Led Zeppelin, since it's stronger, easier to build, but still retains the stability and thermal riding characteristics of the standard Dragmaster. Bob Isaacson was impressed enough to try one, and his model has the same good performance. So, I'm tossing this one out for you to try if you care to. I'd be interested in hearing of the results." ●



"Tony's Patchwork Pursuit" is what you might call this one-of-a-kind Fokker V-23, made for design competition. D-VIII wing, D-VII fuse, D-VI tail.

FOKKER V-23, THE ODD PEANUT

An almost unknown Fokker, which never made the scene in WW I. . . .a modeler's paradise, but a pilot's nightmare . . . if you wanted to see below you. The V-23, the plane made of left-overs. By Walt Mooney.

●This is a model of a one-of-a-kind (although there were several similar types) Fokker monoplane built in early 1918 to take part in a German fighter competition. Although it is still relatively modern looking, it did not win the competition and therefore only one was built. Probably one of the main reasons it didn't win was the poor visibility down and forward. The wing on the V-23 was practically the same as the one used on the later parasol winged D-VIII . . . the fuselage looks much like a lengthened version of the D-VII with the cockpit moved aft and a headrest fairing added, and the tail looks like it may have come off of a D-VI. In 1918, Fokker probably had lots of pieces to choose from to make variations on a theme. It is said that one of the Fokkers in the competition was made in five and a half days.

This business of using available parts results in a different color scheme than one would expect on a WW I Fokker. For instance, there is a cross only on the rudder. There is no insignia elsewhere on the airplane. Secondly, the paint job looks rather rough, and although the photograph I have is not easy to decipher, it looks like the wing had the streaky greenish varnish put on with a big brush. I assumed this was true on the fuselage too, so the model was finished as follows.

The wing and spreader bar were covered with white tissue and given a single coat of dope. The rest of the model, which is sheet balsa, was given a light coat of sanding sealer. The top of the wing, spreader bar, and the top and sides of the fuselage were colored with a felt pen to look like the streaky varnish. The bottom of the parts and all of the tail was left white. Aileron outlines, tail hinge lines, cockpit outline, front of headrest, engine and radiator details, and the black cross on the rudder are put on with black felt pen.

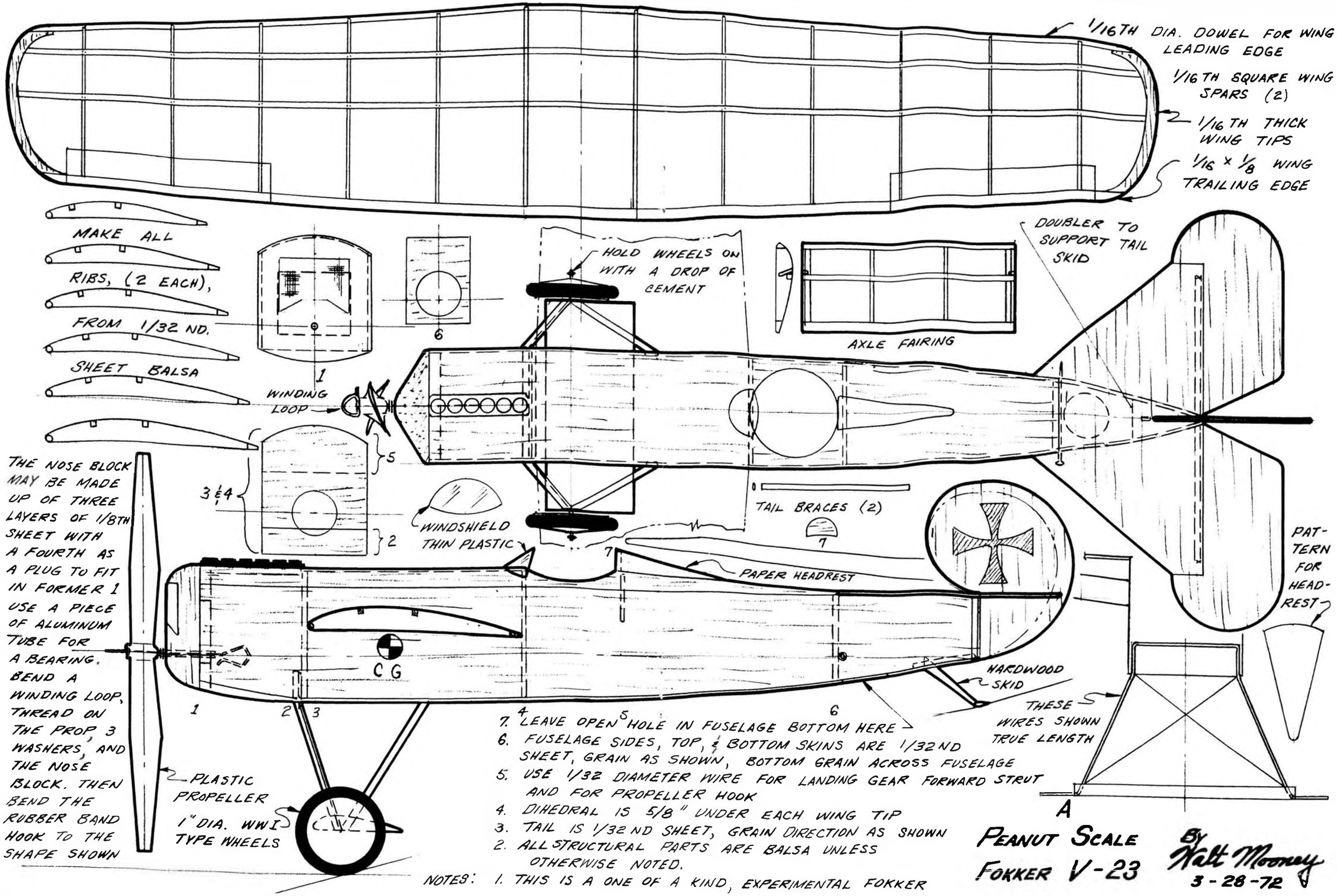
Now, for an admission, I don't have a three-view of the Fokker V-23. I do have a photograph on page 356 of German Aircraft of the First World War by Peter Gray and Owen Thetford. This book also has three-views of the D-VI, D-VII, and D-VIII. The model drawing was made up from these and the use of the photo. I believe it is an accurate representation of the V-23 and from the same direction as the one photograph I know of, it looks right.

The model structure is very easy to make. Since the tail and the fuselage

Continued on page 50

PHOTOS BY FUDO TAKAGI

Another ship that comes under the category "Designed for Modelers," the V-23 certainly fills the bill as an inherently stable scale airplane. Paint job is typical swab mop camouflage green streaks, duplicated with a felt tip pen, followed by thin coat of dope. This one's a quicky.



NOTES:
1. THIS IS A ONE OF A KIND, EXPERIMENTAL FOKKER
2. ALL STRUCTURAL PARTS ARE BALSA UNLESS OTHERWISE NOTED.
3. TAIL IS 1/32 ND SHEET, GRAIN DIRECTION AS SHOWN
4. DIHEDRAL IS 5/8" UNDER EACH WING TIP
5. USE 1/32 DIAMETER WIRE FOR LANDING GEAR FORWARD STRUT AND FOR PROPELLER HOOK
6. FUSELAGE SIDES, TOP, & BOTTOM SKINS ARE 1/32 ND SHEET, GRAIN AS SHOWN, BOTTOM GRAIN ACROSS FUSELAGE
7. LEAVE OPEN HOLE IN FUSELAGE BOTTOM HERE

PEANUT SCALE FOKKER V-23

By Walt Mooney
3-28-72

MAY 1972 VOL 2 NO 7

CHUCK COLWELL PHOTO

One hundred points coming up! MB's editor, flying Le Gray's "Big Turkey" (Yankee Gull) at Bakersfield about to split the spot.

R/C SOARING

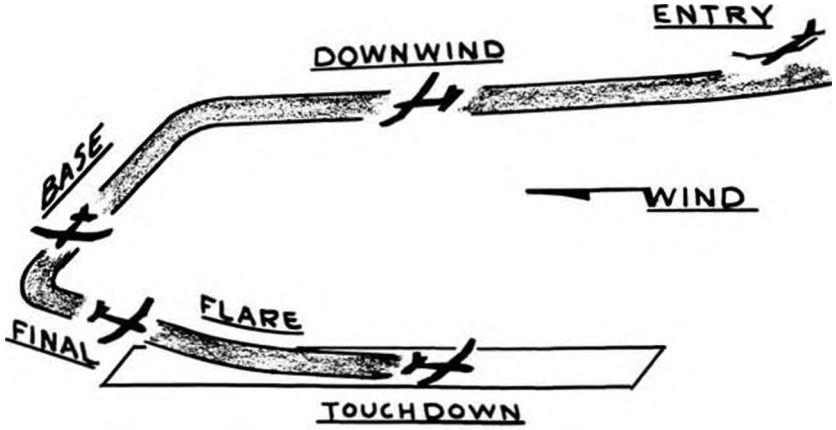
By Le Gray

. . . there is more than one reason to develope proficiency in the landing skills . . . like to keep your sailplane in one piece longer . . . a rather comprehensive discussion by an expert observer.

● A very wise man once said, "Tis a far better thing to be on the ground wishing you were 'up there' than to be 'up there' wishing you were on the ground." Or words to that effect.

Chances are, that quotation originated with reference to full scale aircraft. But to a lesser degree, it's appropriate to R/C sailplanes. No life is involved, but investments of time, energy and cash are worth protecting. And how many R/C sailplane sportsmen haven't wished at one time or another that their pride and joy was safely back on the ground . . . in one piece.

There are those amongst us, certainly, who are of a mind that landing . . . or at least precision landing proficiency . . . has nothing to do with soaring or soaring skills. Perhaps not . . . to those who always operate out of a field suitable for free flight. And if that's the case . . . and the attitude . . . perhaps it's free flight guiding rather than sailplane that's going on. If so, fine and no quarrel. But, if you happen to be of this opinion, and fly only from fields that rival the State of Kansas in size and symmetry, you may be missing a lot of utility, convenience and fun in your R/C soaring. However, and no matter what your feelings on the subject, once a sailplane is committed to flight, in a hand glide test, flung off a cliff, or released on a winch or high-start, one irrefutable fact becomes immediately evident: It's going to return to Earth. Sometime. Someplace. Somehow.



THE PATTERN

Any way you slice it, a safe return to Earth is most desirable. Granted, absolute on-spot landing accuracy may not be essential, though it does represent an admirable display of skill. What's more important is a capability to land with reasonable regularity, and predictability, within a reasonable space. Once this level of proficiency is achieved, we'll all occasionally nail one in on the target spot, as if we expected it to happen just that way. Don't act surprised . . . maybe they'll believe you. But more important, with a bit of skill in landing, we can exploit some of R/C soaring's real advantages.

One of the major "plus" factors of our chosen sport is the potential to

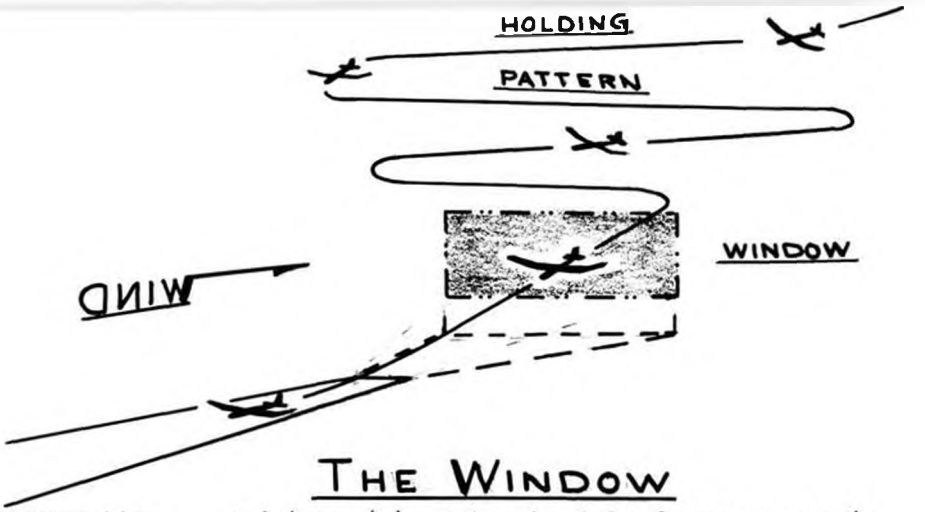
operate from relatively small fields in relatively heavily populated areas. Also, cross-country flights can add real gusto to your soaring life. But to take advantage of small fields in crowded areas, and to enjoy the challenge of cross-country jaunts, you must be able to handle your craft with reasonable precision. That is, you gotta be able to put it down where you want it. There's no throttle . . . you can't go around for another try . . . so you'd better get it pretty close to right the first time.

The development of any skill takes practice, and that is certainly true in the piloting of R/C sailplanes. The League of Silent Flight presents an approach worth considering. In the League's Soaring Accomplishments Program, attainment of Level I, which is required for membership, specifies among other things, the documentation of five spot landings within 10-feet of a target spot. The next step, Level II, tightens up on the landings a bit and requires ten within 5-feet of a spot. By the time Level II is completed, the total landing practice involved has brought the earlier 10-foot requirement into the realm of regularity.

For the most advanced LSF Levels III, IV and V, no spot landings are required, but cross-country Goal and Return Flights are scheduled. These usually result in several . . . make that "many", attempts before success. Lots of off-field landings can be involved. And that's a beautiful example of a time when landing skills can be needed . . . Badly. Like, putting it down on a country lane bordered by fences or other obstacles. You sweat less and enjoy it more with a little confidence based on proven skill.

Or how about small fields? In many parts of the country, schoolyards are available to R/C sailplane operations. Close in, convenient, clean, and comfortable. But usually with some hazards, such as back-stops or goal-posts and the like. Not wide open, perhaps, but plenty of room for launching and for safe landings . . . if you can park it in the clear areas. Again, a little well-founded confidence can bring new convenience and fun to your sport.

It would seem that there is a strong case for developing landing technique . . . that such does present a measurable demonstration of proficiency suitable for competition . . . and that such is quite important to successful, continued and advanced soaring.



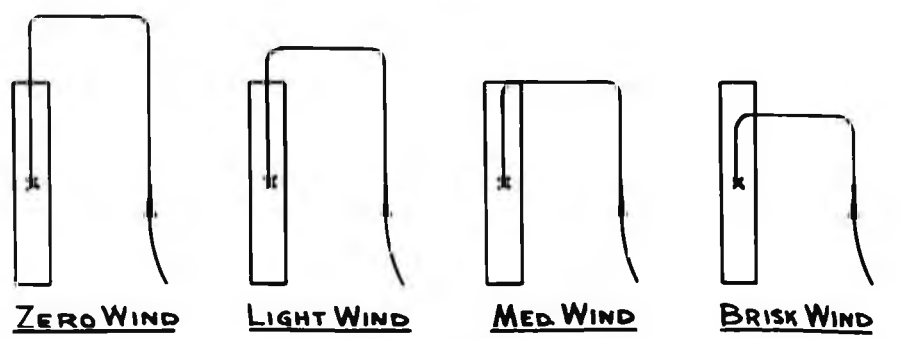
THE WINDOW

If you buy the reasoning up to this point, then let's go on to the next step . . . how . . . or how to learn.

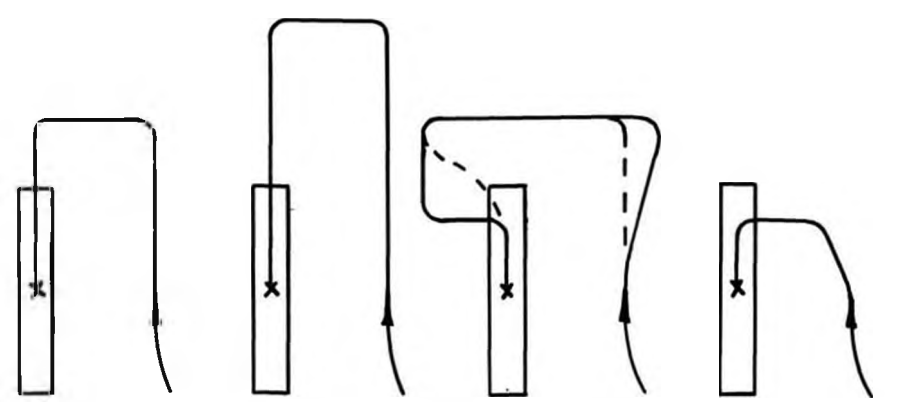
First, let's assume that our "training" sailplane is rigged with a "conventional" control setup . . . rudder and elevator or coupled ailerons-and-rudder and elevator. Spoilers can add a great amount of finesse to approach control, and are really useful on large, heavy sailplanes. Flaps can be a help, too. With independent ailerons, as opposed to coupled ailerons-and-rudder, the capacity to "slip" is introduced. But for our purpose, the basic two-control sailplane is the problem. Any one or combination of the more exotic controls may be available to you . . . and can make precision landings easier . . . if you know how to use 'em . . . but we won't depend on 'em here. Let's just learn the basics.

Second, let's refresh on a bit of aerodynamic theory. Not much and not enough to hurt.

There are two flight speeds that are of primary interest to R/C sailplane pilots: One is the speed that will allow a sailplane to remain in the air for the longest time; the other is the speed that



NORMAL PATTERN



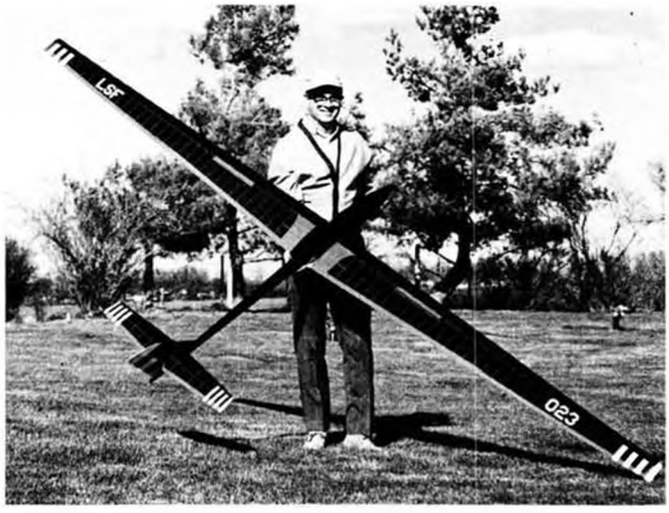
ZERO WIND

Did I hear you complaining about your flying site? Try this in your striped "tennies" and T-shirt! Julius Topf, LSF/131, Vernon, British Columbia, Canada, out to test fly his just-finished ModPod

Looks like the "Abdominal Snowman." Note insulated xmitter bag. Hands go inside too!

SNOW PHOTOS BY RUBY TOPF

"Gee, Ma, look at all the Tide!" You know how cold it has to be to keep the snow that powdery!



Harley Michaelis displays his beautiful "Miskeet" design, semi-kitted by Fliteglas Models.

will allow a sailplane to cover the greatest distance. The first is the "minimum sink speed" the second is the "best glide speed." Call the first "Vms" and the second "L/D max."

Now VMs is the speed at which most pilots try to fly most of the time, because staying up is usually the name of the game . . . particularly in sport flying. Without rather sophisticated test equipment, the Vms for any given model can only be approximated from observation. It's just a bit faster than "mushing," which is just short of the stall. For all practical purposes, Vms is what you're trying to get when you "flight trim" your model. And, of course, Vms is different for each sailplane.

L/D max is that speed which is most efficient for covering distance, and is a bit faster, by about 25 to 30 per cent, than Vms. At L/D max, the sailplane is flying "clean" and . . . without diving . . . sorta cuts through the air.

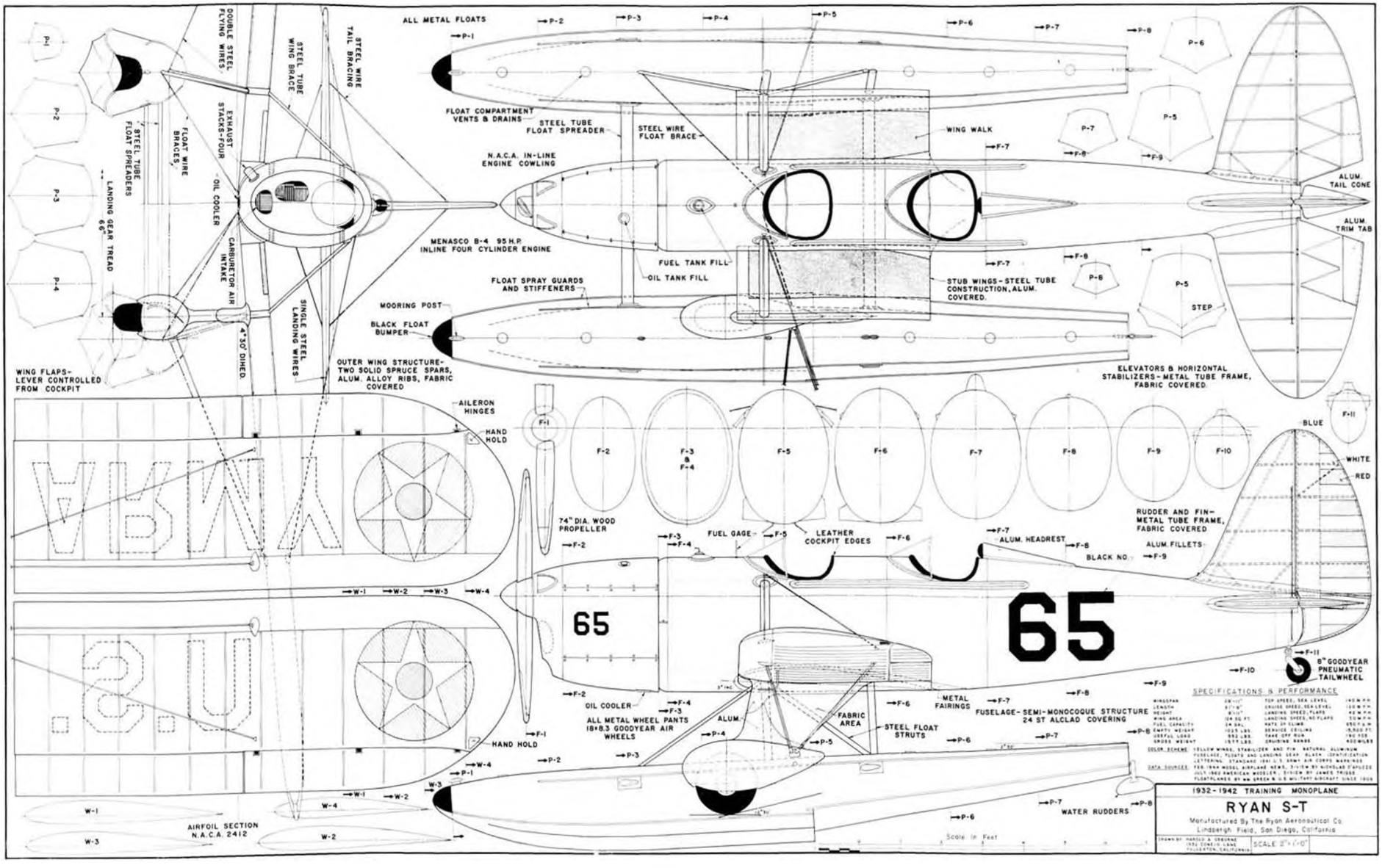
So what does all this have to do with landing? Just this. You can't expect to make a perfect landing approach on each attempt . . . honest. But by understanding a sailplane's various flight capabilities, you may be able to improve even a marginal situation by changing speeds. As neither spoilers or throttle are there to help, the sailplane pilot must use that which is available . . . and that happens to be the differences that can be brought about in the efficiency (lift versus drag) of the sailplane. These differences may be rather subtle compared to the dramatic impact that spoilers or throttle could provide, but they can be seen by an experienced eye. Besides, it's a practical example of "it's not what you've got, but the way that you use it" . . . as a charming little ole lady who lived in a room over a barbershop in San Diego once said.

Okay, consider this. To increase the rate of sink from that of normal flight speed . . . which is Vms . . . simply increase the drag of the sailplane. This can be accomplished quite easily . . . just pull back on the stick to get the nose up a little and increase the angle of attack. But watch it. This is approaching a stall. Ease off before it "pays off." Chances are you can see the thing sink a bit faster than normal . . . if you watch closely. This principal can be useful on a landing approach when you're coming in too high.

On the other hand, L/D max is a bit faster than normal flight speed . . . Vms . . . and results from "cleaning up" the sailplane. That is, decreasing the drag. This comes by pushing forward on the stick to get the nose down a little, so as to reduce the sailplane's angle of attack. Take it easy . . . don't over do it and build up a lot of speed. You can probably see the thing "flatten out," and this can be a help when you're marginal on distance and need to "stretch" the glide.

So that's about the size of the aerodynamics bit. To recap. Increase rate of sink by increasing angle of attack to reduce aerodynamic efficiency (ratio of

Continued on page 44



SCALE VIEWS

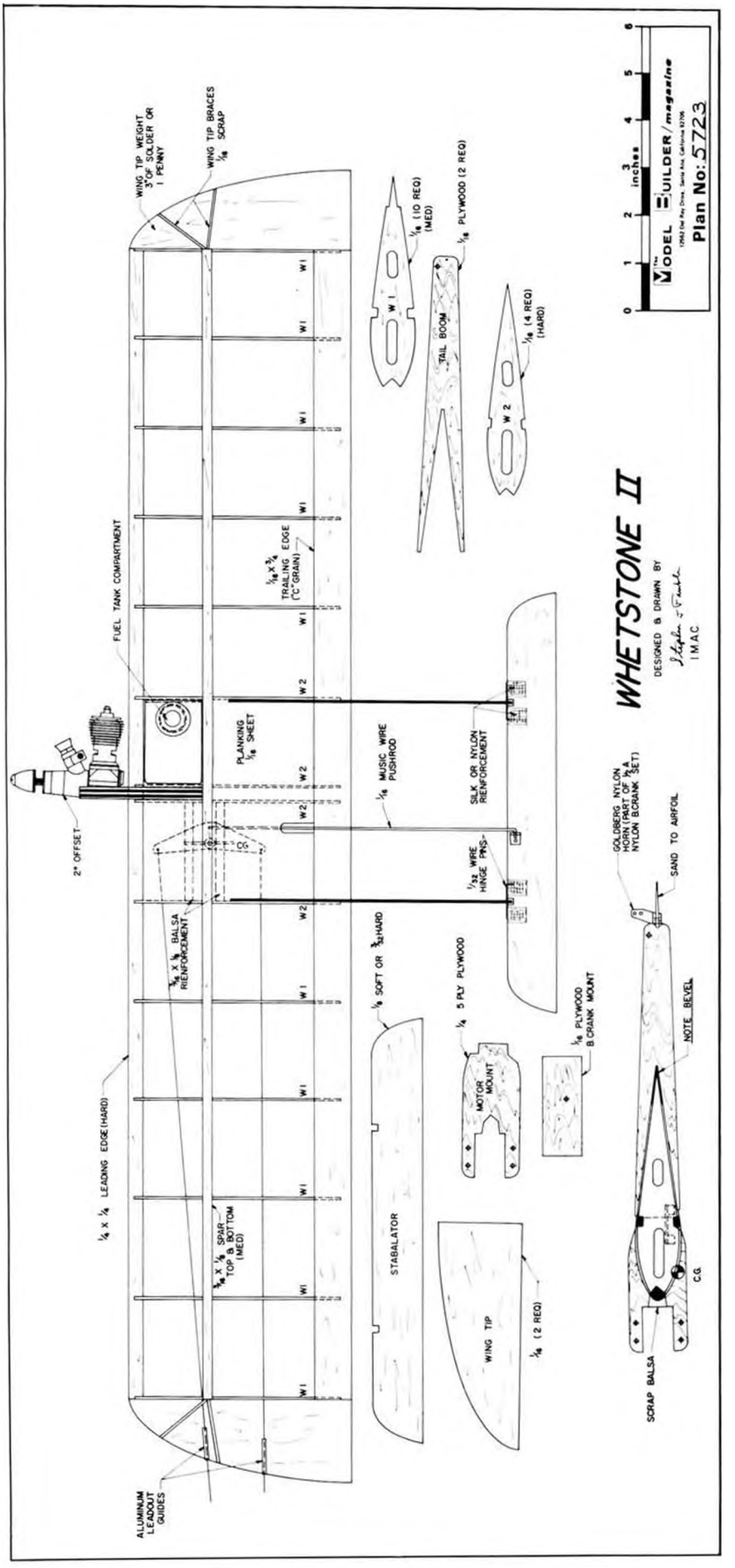
Available for the first time . . . . Enlarged scale drawings for modeling
The above drawing is an exact reduced sample of the large drawings.

RYAN S-T

Order direct from:

HAROLD A. OSBORNE
1932 CONEJO LANE
FULLERTON, CA 92633

AT SCALE 2" = 1'–0", 59-7/8" WING SPAN, 496 SQ. IN. WING AREA, PLAN SIZE 3-1/2' BY 7'. $3.50 PER COPY



FULL SIZE PLANS AVAILABLE – SEE PAGE 56

Author/Designer Steve Fauble and his Half-A combat ship, the "Whetstone."

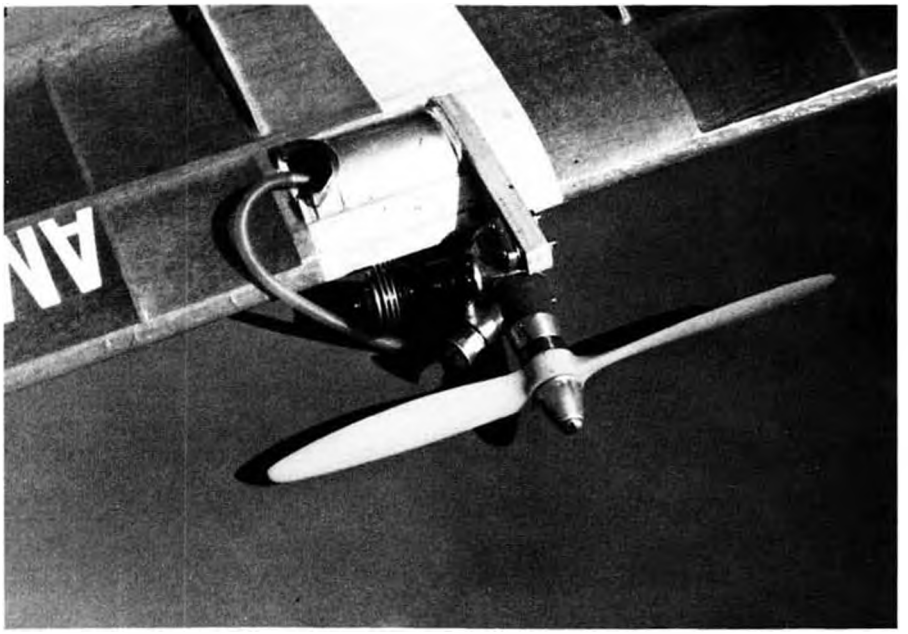
WHE

Story and Photos by Steve Fauble

● Welcome to the fun and glory of 1/2 A combat! I wish I could say that I was the reigning champion in this category of AMA competition, but I'm not. As a matter of fact, outside of England, there is no organized competition for planes of this type.

There are several reasons that you should consider constructing this plane or one like it. It would take two or three 1/4 A's to make as much noise as one combat .35. This, and the smaller circle needed, could open up some of the closer flying sights that you may have discarded because of increased urbanization. However, the real reason for this design is that if you are serious about combat flying, you must practice and fly in competition with an opponent as much as possible. Just going out by yourself with a .35 combat ship and wringing the plane out at 120 MPH won't give you the expertise needed to survive in an actual match. If these informal combat matches are flown using full size AMA combat planes the cost rapidly becomes prohibitive.

The original "Whetstone" used the basic design features of the "Winder" by Terry Prather, but incorporated a



Close-up of the power department, showing the 35 mm film can in which the pen bladder or pacifier fuel cell is enclosed. Opening is lined with grommet to protect tubing from cutting.

TSTONE II

Here's one that will sharpen your reflexes. It should be like swinging two bats as far as making you ready for the big combat circle.

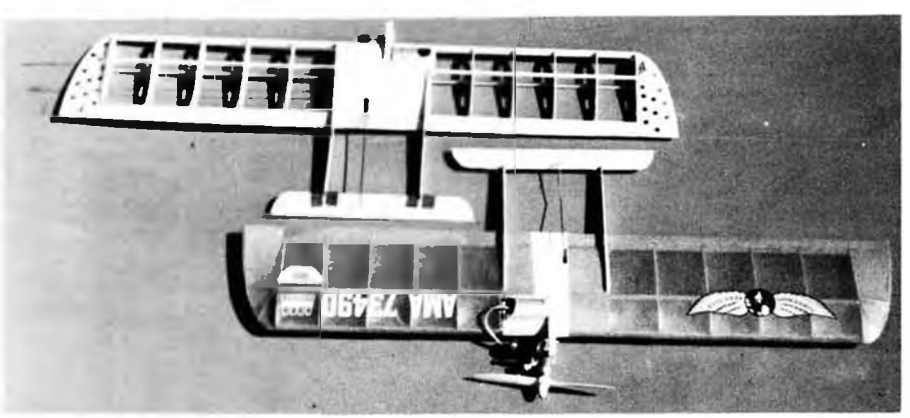
diamond airfoil and a different type of construction. A picture of this plane appeared in the February issue of Model Builder.

The airfoil of the "Whetstone II" is one that comes from Phil Granderson and Howard Rush. Howard Rush suggested the longer tail moment in a letter in which he talked about the center of pressure and its relationship to tail length. The high aspect ratio comes from many contemporary designs but I think the one who started the whole swing to this type of design was Wild Bill Netzband and his design, the "Splinter". The wing tip shape comes to the design by a circuitous route. The original idea was published in an article about the "Hoppte" rat racer, M.A.N. 1967. This and other reasons inspired Charlie Sotich, an inventive Chicago Aeronut, to try this type of shape on some indoor models that were very competitive. I in turn got the idea from him. The film can tank comes from the "Fox Feathers" article by Shane and Brownfield in M.A.N. Dec., 1971. The one piece motor mount comes from the "Uranus" free flight design of the middle 1960's. These were made from hard maple but the idea is the same.

CONSTRUCTION: Study the plans carefully and note that the inboard wing is longer than the outboard. The first step in building any design from scratch is to cut out the major parts. You are in effect making your own kit. The ribs should be made from medium 1/16 inch balsa. A template of ribs W1 or W2 should be made out of thick cardboard or 1/16 inch plywood. It helps to push short "L" shaped pieces of pins through the pattern to keep it from moving around while cutting out the ribs. A small piece of 1/4 inch square scrap glued to the top of the pattern as a handle can be quite a help too. A standard paper punch can be used to make the leadout slots in the ribs. This works best on medium or hard balsa and 3/32 inch is about as thick a piece as can be punched successfully. The trailing edge pieces should be made out of medium "C" grain. The rear of the 1/16 inch thick pieces should be beveled (see the plans) for a thinner trailing edge and a better glue joint. A razor plane works best for doing this.

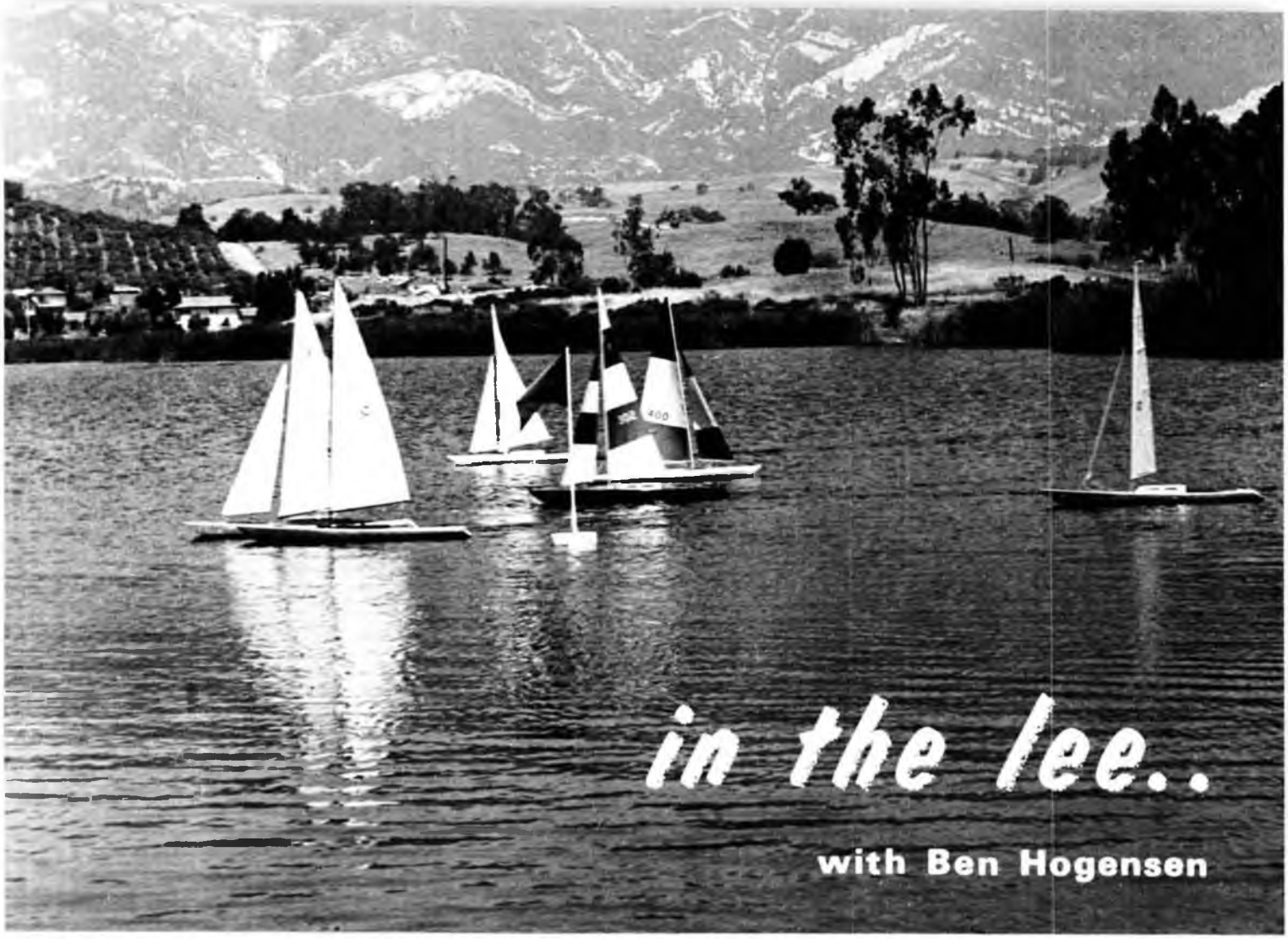
The tank should be made out of an aluminum 35 mm film can, minus top. A 1/16 inch balsa plug covered with Monocoat or other plastic is used to plug the open end. If one of these is not available, a suitable sized section of rocket body can be used but it must be fuel proofed. Cut a hole in the top of the can at one end and install a suitable sized rubber grommet for protecting the fuel line from the sharp edge. I use a 7/16 inch I.D. grommet. The grommet should be available from an electronic supply store. Provisions for a standard type of tank have not been made on the drawing. If you wish to use this type of

Continued on page 47



Looks as though Steve is seeking even lighter weight in the unskinned version of "Whetstone," with the swiss cheese tips! Certainly seems like the economical way to keep sharp in combat.

Steve's father Norman, lends a hand so he can yank the clip free once the engine starts.



Santa Barbara's jockey around the marker in a light breeze. "Where the heck are you going, 400?"

Ben continues the department which we started last month. We'd like to include power boating in the column, and if traffic allows, will split it off in a department of its own. Let's hear from you, "Stinkpotters!"

● Before getting into boats and boating, I'd like to touch very briefly on the subject of what appears in the model magazines.

Today's high cost of printing and mailing places demands on the publishers of magazines that is absolutely fantastic! Such household magazines as Saturday Evening Post, Liberty and Look have succumbed due to operating costs, and not for lack of reader interest. The recent Model Boating World News fell for the same reason!

Many modelers have sent in articles to the model magazines and have been disappointed because the articles were returned with the comment "Insufficient reader interest," which is the polite way of saying, we just can't afford to print the article because *our* readers, who are interested in such an article, are very few in number and we have to print what appears to be the main interest of our readers.

So, gentlemen, if IN THE LEE is to succeed, you must show your interest and support for the column and let Bill know you are indeed interested in a column on model yachting! (Slip him the price of a subscription with your letter and let him know that you are *really* interested!) *(Also, tell your product manufacturers where to advertise! Ed.)* By the way, drop me a line and let me know what you would like to have appear in the column. This way I can perhaps devote an article that will answer several questions at once in a more satisfactory way than just having a question and answer section at the end of the column! As Bill says, IT'S YOUR MOVE!

One of the big questions usually asked the model magazines is where to get in touch with the modeling organizations. So, let's supply that information here and now!

There is an organization in the United States that has been in existance for a great many years, with a history of National Championships dating back to 1931! This organization is the Model Yacht Racing Association of America, which is a part of the International Model Yacht Racing Union. Skippers of this organization follow the traditional Braine Gear or Vane method of sailing which is called free sailing.

When watching an experienced skipper tune his boat for free sailing, it looks like simplicity itself, but believe me, it is indeed a fine art! I can remember back to 1932, when I first tried the Braine Gear which was invented by George Braine in 1906, that my boat didn't perform as the model yachting

books said it would! However, after many tries, I finally got the knack of it and the model did follow my commands.

Later on, another method of sailing was created, which is called Vane Sailing. When a boat is sailed by this method, a vane control is linked to the rudder so the boat is trimmed by the action of the air on the vane. This method is one that takes time on the pond to master and isn't learned in a few minutes. Although this method has been around for some time, revisions are still being made to the gear and the method is constantly being improved.

There is a simple method of sailing that uses the Weaver gear. This is a refinement of the toy sailboat method used by the various manufacturers who produce very small models for the toy departments to sell at Christmas time.

All three of these methods will allow a skipper to sail his boat in a desired direction and thru the years there have been many devotees to free sailing. Anyone who is interested in this type of sailing should contact MYRAA's Secretary, Mr. Eugene "Bud" Salika, 3197 Sunnyside Avenue, Brookfield, Ill., 60513.

Ever hear of a Marblehead? For those not in the know, this is a boat that is 50 inches long and carries 800 square inches of sail on the top suit. This class of boat was created by Roy Clough, who has been in MYRAA for a great many years. And, since this class of boat is one of the most popular over the decades, it is indeed a feather in MYRAA's cap that Roy is a member of that organization.

Sailing on the North American Continent isn't limited to the United States alone. Across the border in Canada, there is a live-wire organization called the Great Lakes Model Boating Association. A letter to Dennis A. Eason, 1182 Warden Avenue, Scarborough, Ontario, Canada will bring you a reply about what's going on in Maple Leaf Country!

MB Editor's Santa Barbara, No. 319 making knots. We first wrote an article about this design of Tom Protheroe's back in 1965. The design has become one of the most popular in the AYMA.

Last month we discussed R/C model yachting, and there is an organization in the United States devoted to that sport. A letter to Ben A. Hogensen, Secretary-Treasurer, Box 127, Woodlyn, Penna. 19094 will bring you a brochure on the activities of that organization (Yes, I know I plugged AMYA last month also, but this is a full report on all of the model yachting organizations!) which is the American Model Yachting Association.

Incidentally there are two AMYA's like two (actually three or more) AMAs. There is the Australian Model Yachting Association and the American Model Yachting Association!

Perhaps one of the prettiest boats on the pond, or on the stand, is the Santa Barbara, produced by Vortex Model

Continued on page 49

Precision machined and balanced aluminum flywheels for various engine sizes; by Norco Marinecraft. See "Workbench" for details.

Hardened, splined universal joints for power boat transmissions, as produced by Norco, for 1/4 x 28 and 5/16 x 24 shafts.

Don Typond's Bristol Prier plays mother hen to a caricature of the famous Gee Bee. Yes, the fuselage is an eggshell.

FREE FLIGHT ... SPORT & SCALE

This month's discussion is about a technique that has been in use for many years, but by a surprisingly small percentage of modelers. Fernando tells how to laminate basswood for tips and trailing edges.

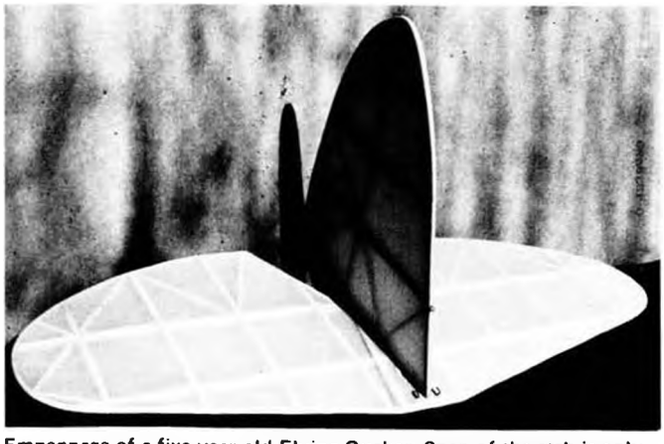
PHOTOS BY AUTHOR

By Fernando Ramos

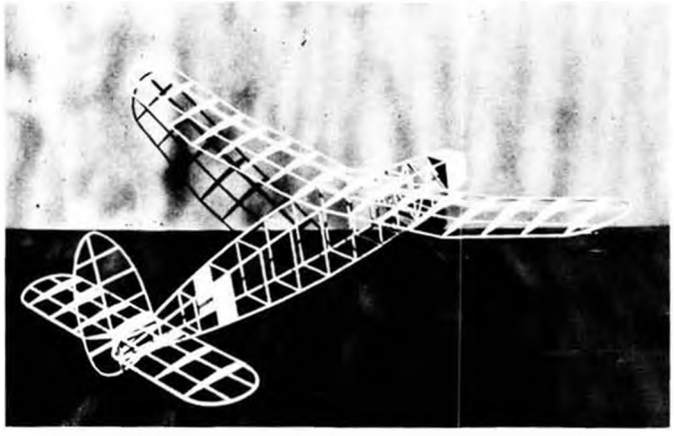
● Laminating wood for tail surfaces or wing tips is not a new innovation or technique, but it is surprising how infrequently it is used by modelers. It provides a more realistic appearance, particularly in scale models, gives more strength to the structures, and aids in resisting warps.

I have been using the lamination method for several years now, but with an entirely different wood than balsa. I prefer to use basswood because fewer pieces can be used in each lamination, and it gives a tremendous amount of strength wherever employed. Another plus for basswood, it is available in sizes from 1/64 inch square to about 1/4 inch square, and every size imaginable in between. It also comes in different shapes, such as I-beam (good for wing spars), angle or T-shape (makes good stringer material), channel, etc.

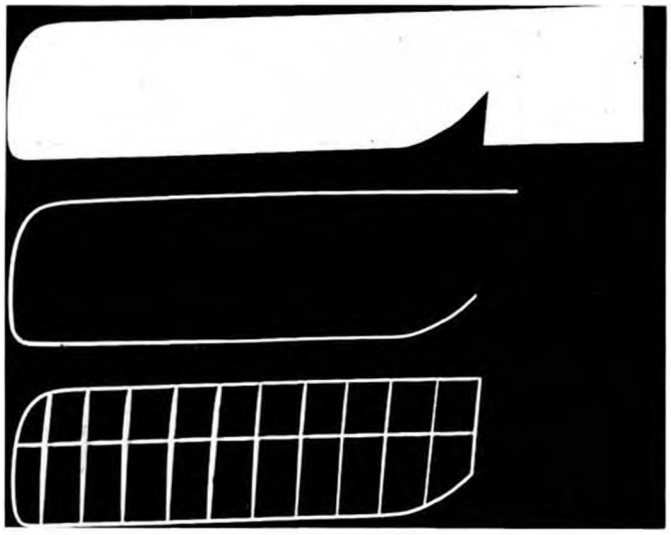
My first experience using basswood was for outlining tail surfaces in gas models, using three laminations of 1/32 x 3/32 inch or four laminations of 1/32 x 1/8 inch. These sizes worked out fine and gave the surfaces a delicate, but not fragile appearance. My next endeavor with this wood was to try it on small (average 18 inch span) and large (30 to 36 inch span) rubber powered models. On the small indoor type, I used two laminations of 1/32 x 1/6 for the tail surfaces. I was amazed that once covered and doped, there was no problem with warping, and there still isn't with these models, even after several years of flying or just "hanging" around.



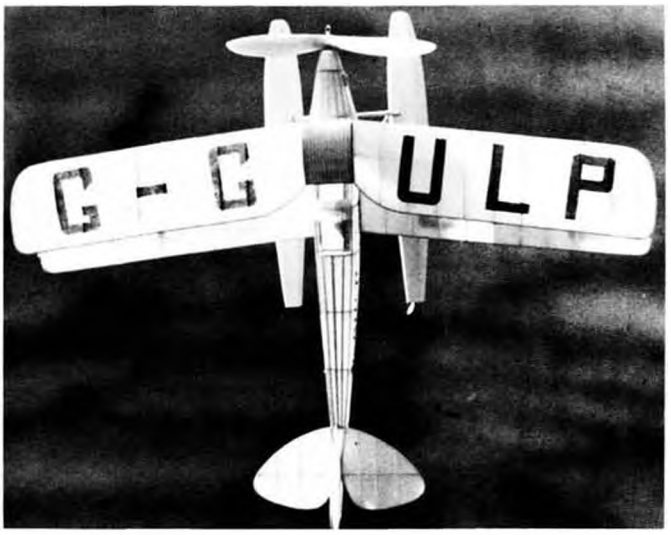
Empennage of a five-year-old Flying Quaker. Span of the stab is only 30 inches! Surface is still true and flat. Laminated outlines.



Dick Korda's Victory, using laminated edges. Strong as well as light and smooth, it's the way to go on most any model.



The pattern, the laminated outline, and a finished wing panel for the Tiger Moth. This tells the whole story in one picture.



The completed Tiger Moth, and because it's on floats, the author appropriately licensed it in the European style!

During these tests I was using this same method on wing tips only. The next question was, how to eliminate the typically large trailing edge stock that is traditional in model building? The first attempt was to take an old timer plan, Scientific's Flea, and laminate the trailing edge and wing tip as one unit, so to speak. The result was quite gratifying and even four years after construction, the wings are still true and strong.

It was obvious that this method would work well on scale designs, particularly on rubber models. So, I build a semi-scale *(Did I say semi-scale?) (Oh! Shame, shame, Fernando! Ed.)* Interstate Cadet using this system, laminating trailing edge and wing tip as one. Being satisfied that this was the way to go, I then tried it on my Chester's Goon.

While preparing for the NAR Flightmasters' 1st Annual Scale R.O.W. Contest, I decided to try laminating the entire wing outline, similar to the way a stab/elevator is done. The reason, in part, is that I had chosen to build a biplane (Tiger Moth) and as much as I prefer biplanes, I honestly dislike building wings. So, any way that I can make this task easier, I'm in favor of! One photo shows the steps and the completed wing panel, and another shows the completed model where both tail and wing surfaces are completely laminated. The span of this model is 18 inches, and its weight, less rubber motor, is 1 oz. Incidentally, there is no additional nose weight, which I attribute to the lightness of the tail group.

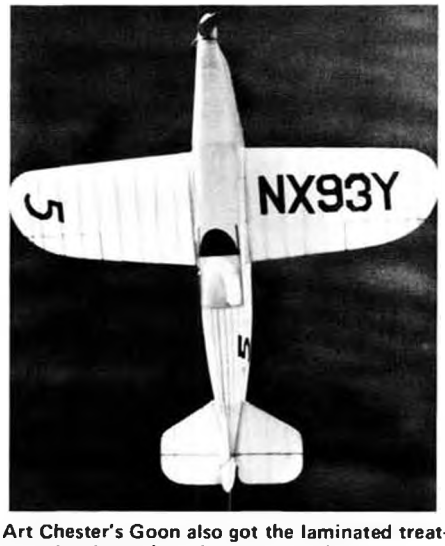
Before getting into the "how" of this method, basswood can be obtained from any model shop that handles model railroad supplies for the scratch builder. If it is unavailable to you, you may write the following companies for their price and stock list (Send 25¢ for handling and postage.)

The Scratchbuilders' Lumber
P.O. Box 1102
Medley, Alberta
Canada

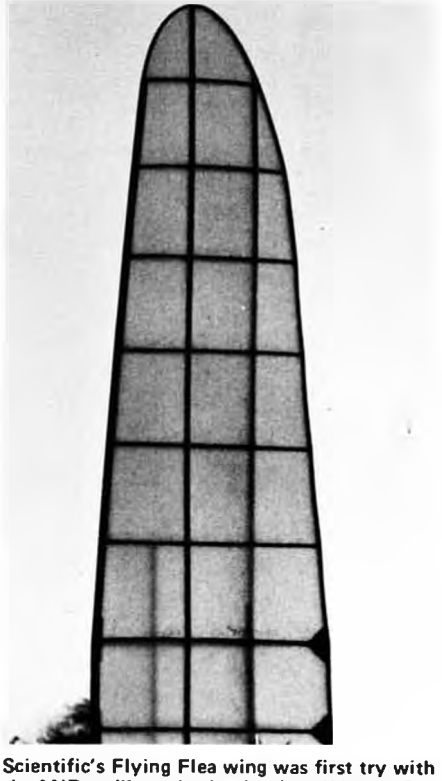
Northeastern Scale Models, Inc.
Box 425
Methuen, Mass. 01844

Cardboard templates are best made from matt board, available at any art supply store. However, the type that typically comes with new shirts will work. After you decide on the width that your total laminations should be, take a pair of proportional dividers and set them at this width. Now merely pinhole trace around the surface onto the cardboard. Then cut out the pin-hole tracing using both a sharp modeling knife and a pair of scissors. Once your template is cut out, it may require a little sanding to smooth out the curves. After this is done, wax the edges of the template thoroughly. Soak the basswood in warm water for about 20 minutes. Dry off the excess water, then glue laminations together. Water-base glues such as Sig-Bond or Tite-Bond must be used. Immediately, before the glue drys,

Continued on page 42



Art Chester's Goon also got the laminated treatment by the author. Just more evidence.



Scientific's Flying Flea wing was first try with tip AND trailing edge lamination. Why not?

Tonnie Pegue checks the engine mounting on his beautiful Arrow tethered race car. Dooling ignition engine. All highly polished.

R/C (?) AUTO NEWS

Why the question mark after R/C? Our subject this month is about an interesting phase of model car racing that has been somewhat dormant over the past 25 or thirty years. How about "'Round the Concrete?" Ted Maciag tells us about it.

PHOTOS BY AUTHOR

●Yes Virginia, the old tethered race cars are coming back. Interest in the cars of the post-war era is being revived in various parts of the country. Starting just before World War II and reaching a peak in the late 1940's, the miniature cars provided a spectacular sight unequalled in any other phase of modeldom. Powered by the hottest .60's available, these cars screamed around the track at speeds of 150 MPH and higher.

For those of you who have never seen a tethered car or heard an engine reaching 24,000 RPM at the end of a 35 foot cable, here is a brief description of a typical car.

The most common engine used is still the venerable Dooling 61. Although it was designed twenty-five years ago, with careful reworking it can be made competitive with any modern racing engine. A magneto is used to provide the fire because the Dooling was designed for ignition and still seems to run best with a spark plug. All of the cars have a fuel shut-off, actuated by a trip wire, to kill the engine after a timed run or to stop the car before it is damaged in case trouble develops. To stop the car, a broom handle is held near the track and the shut-off is tripped as the car runs underneath.

The drive train is quite sophisticated, with every effort being made to reduce friction. Bevel, or occasionally spur gears with a ratio of 1.50:1 or 1.75:1, are run dry because running in oil would cause drag. Tires are bolted on, since they can turn 10,000 RPM on a good run and no glue could hold the forces generated at these speeds. Radio control car designers and even R/C boat enthusiasts could learn a lot from these drive systems. A cast aluminum pan is used as a rigid chassis to hold all the parts in perfect alignment. It is a lot like an airplane but much heavier, to stand the strain involved. Bodies of the cars are usually wood, but the Dooling Arrow cars that were manufactured in the late 40's have a fiberglass top. The overall length is about 15 inches and the cars weigh a solid five pounds. With all this fancy machinery, starting is still accomplished by a good healthy PUSH!

The tracks are very smooth concrete because the slightest bump can upset the car. Safety is a prime consideration, with a double layer of cyclone fence enclosing most tracks.

Lack of parts for both engines and cars and the considerable skill necessary to produce a winning racer caused the gradual decline of tether racing. Until a couple of years ago, all of the winning

A line up of tethered race cars ready to run. Top speeds are in excess of 150 mph. Tires must be bolted to wheels to prevent shedding!

Phil McDonald, current AMRCA president, gets one off. Start is rather primative, but very effective. Get out or start jumping!

cars were powered by the Doolings. While the Dooling type engine still holds the world record at 159 MPH, new engines, notably the Super Tigre 60 ABC and the OPS, have the potential to be in the winner's circle. Interest is also being revived in the smaller cars powered by .15's and .29's.

Some of the best news for car racers is the fact that Craig Asher is now producing a new car powered by a ST 60, that is complete with engine and ready to run. The car is within the price range of almost any modeler. Craig can be contacted at 11654 Hamlet, Cincinnati, Ohio 45240.

The governing body of miniature car racing is the American Miniature Race Car Association. The current president is J. Phil McDonald, 5217 Knollwood Lane, Anderson, Indiana. At the present time Phil is hot after the record speed with a glowplug, Super Tigre powered car, which has already turned 155 MPH.

For people interested in tethered cars, either participating in a race or just watching a car running 150 MPH propelled only by tires turning near the point of disintegration, here are the places to go. In California the track at the Whittier Narrows Recreation area, east of Los Angeles, is the finest in the country. Races are held there on the third Sunday of every month, starting at 1 PM. Ed Baynes, 762 E. Hawthorne Street, Ontario, California 91762, is the man to contact for further information.

In the East, a letter or call to Phil McDonald will bring all of the particulars on tracks and race dates in your area.

After a lull of many years tethered car racing is coming back with sounds and sights unlike any other branch of modeling. ●

No, it's not Mr. DeGaulle, it's Ed Baynes, sparkplug of California group, hooking up cable on Guy Eaves car. Whittier Narrows.

Lloyd Torrey makes final adjustments. Magneto fired engines turn 24K rpm, on 50 percent nitro! Ouch!

f/f scale..... *Continued from page 39*

tape one end of the lamination onto the template and pull slightly (very important) as you bend the wood around the form, adding tape as required. Then pin down flat on a wax papered surface, or equivalent, to dry.

The next step will save you quite a bit of time later so, it is recommended that you do it. Because basswood is harder than balsa, it is a good idea to do a lot of the sanding after removing the lamination from the template and before it is glued into the structure. If you are doing a trailing edge wing tip unit, now is a good time to put in a slight taper on the trailing edge section. All that is left is to put your handiwork directly on the plan, and put in the remainder of the construction.

I personally feel that this method makes wing and tail construction much easier, better looking, and stronger than the more conventional way. A few other suitable uses for basswood are for cabane and interplane struts, landing gear struts, wing struts, and whatever else you may think of. Give it a try . . . I'll guarantee you won't go back to the "other" way of building wings and tails!!!

As promised last month, this column will maintain a contest calendar for any club in the country which is sponsoring a F/F Scale contest (This includes rubber, gas, and P-put) Indoor Scale contests will also be included.

We will have more contest dates as they become available.

North American Rockwell Flightmasters
Inglewood, California

May 27-29 United States F/F Championships. Flightmasters will be running the flying scale portion, both for rubber and gas.

June 11 3rd Annual R.O.W. Flying Scale at Lake Elsinore for rubber and gas F/F and R/C.

August 20 Scale R.O.W. Contest for rubber, gas, F/F and R/C at Lake Elsinore.

Carl Hatrak CD
3825 W. 144th Street
Hawthorne, California 90250

Detroit Cloudbusters
Detroit, Michigan

June 11 Michigan State Model Championships. Utica, Michigan. Ford Test Track F/F Scale.

July 2 Thompson Trophy Races. 11 miles - Franklin Road, Southfield, Michigan.

a) T.T.Rubber Scale
*Flying Ace's Club rules
b) Rubber Scale
* Rules on request

Ralph Kueng CD
14645 Stahelin
Detroit, Michigan 48223

Chicago Aeronuts
Chicago, Illinois

April 22-23 1971 Indoor Contest. To be held at the Brig. General Richard L. Jones Armory - Chicago, Illinois (Site of indoor meet at the Nationals) This event will be flown and judged in accordance with rules covered in 1972 Model Aircraft Regulations. ●

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seahorse..... *Continued from page 12*

Match the holes for the interfloat struts by cutting through both keels at the same time. Clean, round holes are easily cut with a piece of metal tubing that has been sharpened on the inside with a rat-tail file. Rotate the sharpened tube back and forth such that it saws its way through the balsa sheet.

3. Mark the former locations on the outsides of each keel and glue the outer half-formers in place on both keels.
4. Carefully cut and drill the eight soft pine inter-float socket blocks. Drill the holes for the struts using a drill press and a simple jig to assure that all the blocks are alike. Rough-cut the curved surface of these pieces; an approximate fit between the float covering and this surface is structurally OK.
5. Pin the two keels together, inside-to-inside, and align the strut holes using the 5/16 dowel inter-float struts.
6. Install the outer sockets, again using the 5/16 dowel struts to align the sockets. Leave the struts in place while the glue drys but make sure the struts don't get glued in place!
7. Firmly pin the two keels to your work board (insides down), install the outer chine strips and then the top outer sheeting. Use 1/16 scrap to block up the edge of the covering at the top; this will make room to glue the opposite side covering to the top of the keel when it is installed later. Moisten the outside of the outer sheeting to make it bend more easily. Allow to dry thoroughly.
8. At this point, the two float halves you have treated as *outer* halves will *become and remain* the *inner halves. (Surprise, Surprise! Ed.)* Carefully cut the holes in the outer covering for the inter-float struts using a piece of 5/16 O.D. tubing sharpened on inside with a rat-tail file. This will make a nice clean hole if you pass the tubing from the keel side through the socket block and twist the tube as it goes through the outer sheeting.
9. Insert the inter-float struts in their normal locations, pin the two floats upside down on your work surface and then install the outer interfloat strut sockets. This set-up aligns the two floats and all of the inter-float strut socket blocks.
10. Install the outer former-halves, chine strips and the top sheet covering on the outer sides.
11. Trim the outer sheeting at the steps and install the extra sheeting supports in these areas.
12. Dope or epoxy (dilute Hobby-Poxy Formula II 1:1 with isopropyl alcohol or thinner) the inside of the structure at this time. Also coat the inside of the bottom covering material.
13. Cover the aft bottoms with 1/16 sheet balsa.
14. Install the step risers and forward bottom covering.
15. Install the rough cut nose blocks, trim and sand to final shape.
16. Install the chine protectors.
17. Drill No. 28 holes for 1 inch, No. 6 round-head float retainer screws through the outer sheeting and outer inter-float socket blocks. Install the inter-float struts, mark the screw positions on the strut ends. Remove the struts and drill No. 36 starter holes at the marked locations. Reassemble the struts and floats and install the retainer screws.

Perhaps the most dreaded part of model airplane construction for many people is the construction of wire assemblies for mounting wings or floats. Fear not in this case! Follow the directions below and you will make a strong, straight set of struts without any trouble at all.

1. Carefully form the front and rear struts from music wire. Lay the formed wire over the true-length drawings on the plan to check them. Rough up the parts of these struts that will later be wrapped with thread to attach them to the inter-float struts. This is most easily done by nicking them liberally with a file.
2. Install the inter-float struts in the floats.
3. Temporarily attach the main struts to the inter-float struts with soft wire or spring type wooden clothes pins. Wrap wire firmly but leave enough play so that it will be possible to adjust the strut positions in the steps that follow.
4. Attach the front main strut to the fuselage using the clamps intended for that purpose.
5. Bridge the two floats with scrap lumber, boxes or what have you. Build the height of the bridge so that the fuselage will rest upon the bridge in a position approximating its final position. Shim as necessary until the rear main strut can be attached to the fuselage. Shift the bridging material as necessary to align the

fuselage and floats in their final position.

6. One at a time, remove the temporary wire attaching the main and interfloat struts and replace it with a final wrap of heavy nylon thread. Coat each of these wraps with epoxy and allow them to dry thoroughly.
7. Remove the bridging material, fit and install the "X" braces. Wire and solder them as indicated on the plan. If you use clean copper wire, sand the music wire, and apply a bit of soldering paste, these joints will flow together easily and look very professional.

There now, easy wasn't it?

We found no bad traits in Seahorse II. It handles easily in the air, on the ground and on the water. My son was flying quite well after about five ten minute flights. His next step is to practice landings with his own airplane. Father reserves the right to complete his pilot training with the Seahorse!

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soaring..... *Continued from page 32*

lift to drag). Increase flight distance potential by decreasing angle of attack from normal flight speed (Vms) to improve aerodynamic efficiency. To say it another way, pull the nose up to sink, and push the nose down to run.

(New pilots should go back, read and absorb the above three paragraphs again. They are the keys to the two most common errors made in landing approach, by both power and glider pilots: When they begin to realize that their plane is going to be short of the runway, they pull the nose up, thinking it will stretch the glide . . . when just the opposite is true. Conversely, when the approach appears too high, they dive for the runway, actually building up flying speed and increasing lift, and proceed to overshoot the field. Ed.)

At this point, a pause. Some of the duller R/C sailplane experts and/or kibitzers of our acquaintance by now may have assumed that old Double-O Nine is going to tell the world how to spot land an R/C sailplane. And there may not be a dry eye within the West Coast Soaring Circle. The kinder and more sympathetic souls would be tearful out of pity and embarassment. Those of a harsher humor are no doubt crying from hilarity at the mere audacity of it all. So a pause is in order . . . to let them all dry, snort and sniff as they recall with mirth and exactitude all of the backstops, the goal-posts, the trees, the lightposts, the highlines, the fences, and old folks, that, at various times, have interrupted numerous of our skillful approaches to precision landings. But this discussion shall relate neither our own trivial trepidations nor soaring sagacity. No way! Rather, as we have walked with giants, we shall attempt to present an objective analysis of Their performance . . . so that those of us who are of lesser stature and skill can perhaps in some small way grow in Their shadow. Let's face it. Some of these clowns are good!

There seem to be three primary concepts: The Pattern, the Window and the Straight-In. These may overlap and augment one another in the real world, but each will be discussed as an independent.

The Pattern. This technique is most fundamental and probably the easiest to work. It is the basic landing procedure followed at full-scale airports. As the name suggests, this routine establishes a mechanical series of events which transition the sailplane from flight to touchdown.

There are three basic elements or "legs" to The Pattern . . . the Downwind Leg, the Base Leg, and the Final Approach, which terminates in the landing flare and touchdown. The Pattern may be initiated, or "entered" at any point, but for simplicity, assume the normal entry point to be on the Downwind Leg, directly opposite the desired landing point.

The Downwind Leg is flown parallel to the runway . . . which may be real or imaginary . . . with the sailplane moving with the wind in a direction opposite to that desired for landing. This leg is flown off to either side rather than directly over the runway. The Base Leg is next, and starts immediately following a 90-degree turn toward an extension of the runway from the Downwind Leg. The Base Leg, or Base, tracks a path over the ground that is crosswind and at right angles to the runway, and just beyond the end of the landing strip. The Base Leg ends with a second 90-degree turn, into the wind, which brings the sailplane in line with the runway on Final Approach to landing.

Now, if the wind never blew, and if a sailplane entered The Pattern at exactly the same altitude over exactly the same spot each time, and if each turn onto Base and then onto Final were always the same, precision landings would be a snap. But the wind does blow, and it's impossible to hit the perfect entry altitude and position each time, or fly exactly the same Base and Final. And precision landings are not a snap.

However, by establishing and following a routine . . . by flying The Pattern . . . there is a basis for judgment . . . a norm from which variances can be recognized. With this as a baseline, corrective actions can be taken as necessary from time to time to maintain and/or re-establish the path of flight to the desired landing point.

At the outset, the ideal pattern can only be set by trial and error . . . and error, and error. After a while, an image will come to mind that will represent a desired and practical flight path. From that time forward, the secret to success would seem to be early recognition of a problem or variance, should one exist, and initiation of immediate remedial action. That is, at any time that the pattern is not as it should be, do something immediately to improve it. Most poor

situations can be resolved, provided that the pattern is entered at sufficient altitude.

A brief analysis of The Pattern will indicate several key positions which should be used as judgment point. The first is the Entry: Is it low, just right, high or possibly out of place over the ground? The Downwind Leg: High? Low? Too close to the runway? Too far out? The Base: Too far off the runway? Too low? Too high? Too close in? And Final: Too high? . . . Too low?

Lots of decision options . . . and that means lots of chances to correct and "work in" to the final landing.

If the entry is high, for example, plan a flight path that covers more ground by moving the Downwind Leg away from the runway or extending it further before turning Base. Or, pull up the nose to create drag and increase rate of sink. Or any combination that seems to get the job done. The idea is to correct early so as to have the pattern as it should be at the next judgment point . . . the turn from Downwind onto Base.

If the sailplane is getting low before the planned turn point onto Base comes up, turn onto Base immediately. Don't wait to reach a specific point at the risk of being too low. If the sailplane is too high, extend the Downwind before turning . . . or increase sink.

On Base, the idea is to fly a path over the ground that is at right angles to the runway. If the sailplane is high, fly a longer Base then cut back onto Final with a turn or more than 90 degrees. If low, angle towards the runway . . . straight in if it seems the thing to do. Get the nose down and fly at L/D max . . . but get to the runway with a little altitude left if possible. By the time the sailplane is on Final Approach, earlier corrections should have improved the pattern to where all is in pretty good shape. If the sailplane is low . . . or if the wind reduces penetration towards the desired landing point . . . the only technique left is to fly at L/D max. Don't try to "stretch" the glide by holding the nose up. It'll sink . . . fast . . . without covering much ground. If the sailplane is high on Final, an "S" pattern will increase flight distance and provide more time to settle in before overshooting the spot. Or, pull the nose up to increase rate of sink. Or both. Or overshoot. But don't "dump" it if there is a chance that such would bust up your bird.

The one big problem in flying The Pattern, is wind. Even a light breeze will carry a sailplane downwind faster and farther than may be realized. Remember, add wind speed to flight speed to get ground speed. This makes for a "long" Pattern which requires a "long" Final back into the wind . . . and in this case, subtract wind speed from flying speed to get ground speed. Landings which are short of the runway are most common in a bit of a breeze. So, if there's wind, fly a high and tight (close in) pattern. Chances are, you won't overshoot, though it may look as if you might. Experience helps. And experience may indicate that in a fresh breeze, the Window concept may have advantages over the Pattern.

The Window. This technique dictates that the sailplane be flown through an imaginary, vertical rectangle located off the downwind end of the runway. The principle is that with such positioning. the Final Approach and flare to landing can be very nearly a hands-off operation.

The exact location, height and width of this mind's-eye rectangle . . . or Window . . . varies with each sailplane, each pilot, and with the strength of the wind. In a dead air situation, The Window might well be positioned some distance beyond the end of the runway, and be fairly wide and quite low. With a wind that is stirring up problems, The Window may be narrow and most certainly should be high and close to the runway. When wind speed equals or exceeds normal flying speed, The Window might be located almost directly over the intended landing point.

The size and shape of The Window must be defined by each pilot in relation to his own capabilities. The Window is just an imaginary frame, but it defines the area from which the pilot can make the necessary adjustments on Final Approach to land on target. As experience and skill develop, The Window size enlarges.

In using The Window concept, there need be no pattern, per se, prior to Final. This "casual" approach, however, demands rather keen judgment, and it's surprising how many pilots have it. It may also be disappointing how many have it . . . depending on your point of

view. For those who don't, there is a routine procedure that can be of help. Call it a "Holding Pattern" for lack of another name, and that's a fairly good description.

In using the Holding Pattern/Window technique, the sailplane is flown back and forth, crosswind, beyond the end of the runway and behind The Window. This Holding Pattern can be entered at any point and at any altitude. The higher the entry, the longer the crosswind legs can be . . . but always the legs should be flown about equal distance to either side of the runway. As altitude is lost, the crosswind legs should be shortened so that the sailplane is never out of "reach" of the runway. The idea is to fly the Holding Pattern until sailplane position, altitude and distance are right to "break" from the pattern and fly directly to and through The Window and on to Final to touchdown.

Depending on wind strength, the Holding Pattern can be flown as a long, narrow Figure-8, with all turns into the wind, or, in blast conditions, as a straight line track . . . crabbing back and forth and never making a turn, but rather just changing headings. In severe winds . . . when only a Nut would be flying anyhow . . . the pattern actually may be upwind of the desired landing point. Under these conditions, The Window is directly over or perhaps only a couple of feet downwind of the touchdown target. As altitude is lost, the crosswind track is allowed to drift slowly back toward the landing zone, so that Final is actually a near-90-degree approach from the side of the runway. The big advantage here . . . as opposed to The Pattern discussed earlier . . . is that the sailplane need never be turned downwind and given the chance to "run" further than it can penetrate back. Once the sailplane has passed through The Window . . . under normal and reasonable flying conditions . . . and is on Final Approach, adjustments for altitude and distance are as discussed for The Pattern.

The Straight-In. The title of this third concept describes the horizontal, not the vertical path of the sailplane. Another title might be "The 747 Approach." No pattern of any kind is involved. The Straight-In presents a non-varying glide path from some distant and usually downwind position to the desired landing.

The execution of this technique is one of the most amazing displays of judgment and just plain old country good flying that will be seen on any soaring field. When done properly, it's a real mind boggler . . . and can be accomplished with regularity by few men and no boys at all. When done improperly, the sailplane is usually left hanging in the top of some tree . . . or strained through some field bordering highlines. Or just down in a field about a half a mile "South of here."

The Straight-In obviously takes a great amount of skill. At a point in time that a return to the field and landing is appropriate, the pilot . . . make that "Pilot" . . . establishes a straight line course and sets up a constant glide slope that both terminate at the downwind end of the runway. No Pattern. No Base Leg. Just straight in through The Window on to Final . . . from way . . . out . . . there.

You'll probably see The Straight-In flown a time or two at any major R/C soaring contest. And when you do, pay attention and be polite. You're walking with giants.

How to do it: That's like asking "how do ya get to be seven feet tall?" Maybe you can learn, but chances are you've either got it in ya, or you're going to have to do without it. That's why most of us fly some variation of The Pattern or The Window.

Just a couple of random comments now, and we'll take a break for a month or so.

Always try to land with wings level and in a straight path. This will help reduce wingtip "snags" and resulting cartwheels. Cartwheels are impressive on the gym floor, but rough on sailplanes.

Try never to get in a circling pattern around your intended landing target. Chances are you'll be in too close and overshoot . . . or will get so low as to catch a tip on your final turn. Besides that, you can lose your lunch with this trick on a warm day.

If necessary, land downwind rather than pulling a low turn to land into the wind. You'll probably come out better . . . and there's no rule that says downwind landings don't count. Besides, it could save your sailplane. Many times

downwind landings are smoother and safer . . . though a bit faster over the ground . . . than ballooning in gusts into the wind.

Don't be afraid to land fast if it's a choice between that and some upcoming obstacle. There is even the technique of touching down fast and fairly hard to kill off speed, and then bouncing back in the air for a slower approach to final landing. But keep the wings level. This can be tricky.

Try and keep a clear shot between you and your sailplane. Depth perception is difficult, and it is hard to know for sure which side of an obstacle your sailplane is on. So try and find a route where nothing comes between the two of you.

Develop a mental picture of your landing area and its obstacles. Also, keep your eyes ahead of your sailplane while landing. So many pilots hit trees or other vertical hazards that just happened to "show up out of nowhere." And what surprised expressions!

As your sailplane loses altitude, keep it over safe, clear areas. Only with sufficient height should you be over non-landable ground. Ever see a guy try to fly through a maze of outdoor basketball backboards? Ask him about it at home any night next week . . . he'll be there rebuilding the wings.

If you are working towards LSF membership, and fighting the spot landing requirements, try this. Use the minimum legal line length . . . 75 meters, which is 246.1 feet . . . and make consistent tows. That is, with a high-start, pull back to exactly the same launch place each time. On a winch, count . . . like "one, two, three, four, etc." . . . and release at the same "number" each time. The idea is to release as nearly as possible at the same altitude and position on each flight. No need to go for maximum altitude . . . just get up and get off.

Next, set up a pattern . . . any pattern . . . from release to touchdown. Fly the same path over and over again, adjusting as necessary to "target" in on the spot. When you get close, try and repeat the pattern that worked. As soon as you start landing consistently in the same place each flight, you're on your way home. Just extend or reduce the pattern length to get it to end where you want. Fly as smoothly as possible . . . and rapid re-flights are a great help.

Hey, was that the recess bell? ●

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whetstone.... *Continued from page 35*

tank you are on your own. The conversion should not be difficult.

The motor mount is cut out of 1/4 inch, 5 ply plywood, in one piece. It is easier to drill the motor mount holes at this time but be sure that the thrust line is neither up nor down. A 0^{o} thrust line is very important. Be very careful both now and when installing the mount.

ASSEMBLY: Tightbond or a glue of this type is recommended for all joints unless otherwise noted. The lower portion of the trailing edge has to be shimmed approximately 3/32 inch at the front and 1/8 inch at the rear. This will keep the angle of the ribs parallel to the trailing edge and insure a good glue joint. Pin the lower spar to the table and glue the ribs to this spar and the lower part of the trailing edge. Whengluing the two center ribs, a scrap piece of 1/4 inch square should be used to insure proper spacing and alignment.

The motor should have approximately 2^{o} out-thrust. This can be put in

using washers under the front mounting lug holes, but it looks better if the whole mount is glued at this angle.

Install the leading edge while the wing is still pinned to the table. Use rubber bands to hold this in place 'till the glue dries.

Sand the stabilator to an airfoil shape and assemble to the booms, using "L" shaped pieces of wire (.032) and silk or nylon for a reinforcement. A good solid assembly is needed here, so use plenty of glue. Ambroid or other glues of this type are recommended. Rub it into the cloth to get a good joint.

While the glue is drying the bellcrank assembly can be constructed. I recommend Carl Goldberg's nylon 1/2 A bellcrank sets as I have the smoothest action with these parts. The leadouts can be made out of old .35 size control line wire or .020 music wire. Don't forget to put on the short aluminum leadout guides before forming the outer ends.

The motor mount and top spar are installed at the same time. Epoxy should be used on the motor mount area. When these are dyr, install the top part of the trailing edge and the wing tips, with braces. Next, install the bellcrank and tank assemblies where shown on the plans. A small wing tip weight should be glued to the outside at this time. When these are dry, install 1/16 inch pushrod wire and plank the center section with soft 1/16 inch balsa.

Cover the plane with light weight silkspan or tissue. I have found that the best way to cover is to sand the framework and then apply two coats of dope that contain about 25 percent model cement to all the outside surface. Then to cover, the tissue is just laid on the surface and thinner is brushed on over the tissue. Install the boom and stabilator assembly using glue generously for a good joint.

The plane should be finished with 4 to 6 coats of thin clear dope. Add AMA numbers and decorate. Use colored dope sparingly as this can add weight quite rapidly.

FLYING: When flying this model you should be on your toes, as it really performs. I would recommend a 5 1/4-4 Tornado prop on a Tee Dee and a 5 1/4-3 for a Cox Medallion. I urge you to use only steel lines when actually flying combat as dacron lines are too easily cut. I fly on 35 foot lines and don't recommend a shorter length. Adjust stabilator movement, using plywood stops glued to the booms, until the tightest turn without stalling is achieved. The crepe paper streamers that I use are 1/2 inch wide and 5 feet long. Use a 2 foot button-thread leader.

Good luck and happy hunting.●

C/L..... *Continued from page 19*

bladder/pacifier will sound like it is cutting on and off, much like a rich engine on a non-pressure fuel tank. A rich setting, as I mentioned will signal its presence by the motor simply slobbering to a stop and dripping fuel everywhere!

One very sneaky problem that is hard to detect is holes in the fuel line. Usually, the motor will run like crazy and then go very lean or stop suddenly. It may even alternate rich . . . lean. Anytime this happens, inspect the system for holes. I've only had one bladder break in the air in 15 years of using them on ukie and free flight, and I never take good care of them, except for drying them off and squeezing the fuel out between flying sessions.

It is axiomatic that while filling a bladder/pacifier it will get away from you and squirt you or your helper in the nose and mouth or crotch at least one time. When this happens to you, remember that I'll be laughing.●

r/c scale..... *Continued from page 22*

Because of the size of the model, the wings are made removable. Tubes are installed in the fuselage to accept the one eighth diameter music wire spars that stick out of the wing root ribs. These wires can be bent to give the desired dihedral angle. The dihedral shown on the plans was designed for a free flight rubber model and has worked well in R.C., but as an R.C., less dihedral might be acceptable.

The struts are more for show than for strength on the model and merely fit into two small loops of wire let into the wing and into a tube in the fuselage. Because of this slip fit and the wire wing root attaching method, the wing and struts will flex and even come off in the event of a collision, absorbing some energy in the process and reducing the damage.

Access to the radio and the battery and the Stomper actuator is thru the

top of the airplane at the cockpit area. A hatch is made that includes about four inches of the top, extending forward from about a half inch behind the pilot. The On/Off switch is accessible inside the cockpit opening. Three compartments are provided under the hatch, separated by balsa bulkheads. The forward compartment is for the battery and has a snug fitting cover in which is installed the switch. The next compartment is for the radio, and the most aft compartment is for the actuator. The Stomper actuator is attached to a piece of one sixteenth birch plywood by its own mounting screw, and the plywood is cemented permanently in place on the fuselage bulkhead at the back of the compartment. The model uses pushrod actuation as described in the Ace '72 manual, with a rudder horn on the right side of the rudder below the horizontal tail.

The radio and the battery are simply wrapped in foam rubber and pushed into their compartments. Just a light snug fit will keep them in place. The antenna is threaded through the top of the hatch behind the pilot and extends back to the top of the vertical fin where it is held by a small rubber band.

Scale details can be added to the model to the limit of your impatience to get out and start flying. Look at the photos in "British Civil Aircraft 1919-59," vol I to get as many as you want. On this model we didn't try for too many, but we did add the tail struts and a couple of old Cox cylinders to the cowl to indicate the real engine. Williams Brothers wheels were used. The tailskid was fabricated out of ply and uses a length of "bobby pin" for the iron shoe. Wing tip skids are bent up out of music wire and installed in holes let into the wing spars out near the wing tips. The narrow track landing gear required them on the real plane and they keep the wing tips from getting scuffed on the model too.

I'm no expert on R.C. but the model seems to have plenty of control, and is a real joy to fly. All of our flights have been from unassisted takeoffs and it's easy to get it to land nearby at the end of the glide. Bill Northrop's idea for R.C. Free Flight makes a lot of sense. For a modest investment you can install the Ace '72 and with the rudder control you can eliminate that bad turn on the first flight of your new scale ship, you can keep it from flying into that tree, and even possibly save a few steps in retrieving it.

Of course, you also have the opportunity of learning about pilot error, and the effects of showing off in front of your friends at low altitude, but these lessons are good for your personal growth too. ●

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in the lee..... *Continued from page 37*

Engineering, 210 East Ortega Street, Santa Barbara, California, 93101.

This design was created by Tom Protheroe about 7 or 8 years ago and has had excellent acceptance by the R/C skippers. This is due to the high quality of the kit and the excellent sailing characteristics of the boat.

Vortex sponsors a Santa Barbara owners association and produces an excellent newsletter. So, owners can compete in their own association for mantle and wall decorations.

This boat also meets the requirements of two AMYA racing classes. First, it fits into the Santa Barbara One-Design Class which is limited to Santa Barbaras. It can also be made to fit into the Ten Rater Class, which is an open design class. But, to sail in this class, a skipper has to watch the weight of his R/C installation so that the Class Rating Rule for the Ten Rater Class is met. But, this is accomplished easily and presents no difficulties to the skipper.

If your orbs have sprung from their sockets at the pictures that grace this month's column, you've been looking at the Santa Barbara! (Vortex informs me that S/B 319 is now registered to Bill Northrop, 12552 Del Rey Drive, Santa Ana, Calif.)

This beautiful boat is an example of the fiberglass kits that are on today's market. The hull, deck, rudder and keel are made from fiberglass and require no finishing. Various color schemes are available for the hull and should be specified when ordering your model. Some trim parts are made from selected woods. Stock sails, from 2.25 oz/yard dacron with nylon stitching are available from Vortex. A sail control system is also offered. So, this means you can order the hull, the sails or the sail control system independently or you can order it in one neat package. Instructions consist of two semi-scale blue

prints, and a step-by-step manual that contains a concise building sequence. And there is a big bonus! A fantastic section on sailing, totally accurate, is also included! This will make any novice a skipper to be reckoned with! (That is if he reads it and practices!)

The Santa Barbara is a medium sized craft compared to the modern International A boats. It is 70 inches overall length, floats on a 62 inch load water line length, has a 13 inch beam, a 13 inch draft, and carries 1,100 square inches of sail. It displaces 26 to 28 pounds with a 12 to 14 pound detachable keel. Overall height is 88 inches.

Transporting this boat is no problem if you can fit a package six feet long by one foot square into your car. The detachable keel pays off in generous dividends when it comes to ease of handling the boat off the pond!

Last month we went into controlling a model by R/C, and presented some examples on how to rig the sail control unit.

In the multitude of details given, one important fact was omitted! So, if you have been in a quandry in trying to set up your rigging, place the blame on the guy who did it, namely ME!

If you use the two-to-one ratio for running your sheets, the distance from the pivot point of the arm to the eyelet in the arm will be one fourth the amount of the sheet to be taken in, since the arm swings approximately 170 to 175 degrees, and this will move the end of the arm over a distance that is very close to one half of the amount of sheet to be taken in. If you use the one to one ratio, the length of the arm will be one half of the amount of sheet to be taken in. *(Ben, how well do you know Casey Stengel? Ed.)*

In the January issue there was a picture published of the East Coast 12 Meter Yachts sailing for the cups at the Annual Class Championship Regatta in Memphis, Tenn. A future column will be devoted to the construction of one of these boats. This boat comes two ways. First, a bare hull is offered by a couple of manufacturers and a decked hull is offered by another manufacturer. The article will cover the bare hull and how to deck it and install the ballast. You may or may not want to build this particular hull, but the information given will show you how to proceed from a bare hull to a completed hull.

Coming up in a future column will be a review of the Regatta One-Design by R/C Model Sail Yachts. This is a full keeled boat patterned after the full sized R Class boats. The Dumas 45 Star will be featured also. This boat is an example of a "sharpie" and features all wood construction. There will be a review of the fantastic Ghiblie that has many interesting rigging features.

One final construction tip for the month! Remember the pilot who filled the wings of his Beechcraft Bonanza with ping-pong balls when he made his round-the-world flight? This same trick is a good idea when you are using a fiberglass hull, because fiberglass does not float! So fill those watertight compartments with ping-pong balls and it will pay off in case you split a hull! 'Nuff for now - see you next month! ●

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peanut..... *Continued from page 27* is made of sheet balsa, it is very important to select light but strong balsa. I prefer the lighter colored sheets from a looks stand-point. The fuselage is simply a box with flat sides and bottom and a rounded top. The grain should run lengthwise except on the bottom aft of the landing gear wire where it should be crosswise of the fuselage. Do not cut out the cockpit hole until the whole fuselage is covered and has had time to dry. The nose block on this model is laminated out of three layers of one eighth sheet with a backing block that is cut out of former number 1 which is also one eighth. The other formers are made from one sixteenth sheet. There is a triangular doubler at the aft end of the fuselage to support the tailskid. Leave a hole on the bottom just behind former 6 so the rubber motor can be seen during installation.

The wing is of very standard construction, as is the spreader bar. The tail pieces are simply cut out and sanded smooth. Assembly is also simple. Slip the wing through the fuselage and put a drop of cement at the leading and trailing edge on both sides. Cement the tail pieces in place. Make the top of the Dummy engine from scraps of balsa and install the bondpaper headrest and the thin plastic windshield. Cut the tail braces from thin wood (the model shown uses one sixty-fourth plywood), and install them, "x" marks the spot on the horizontal tail.

The only possible difficulty on this model is installing the landing gear. Bend the wire as shown on the plans. Slit the bottom covering between 2 and 3, if you didn't leave a slight gap at this point and cement the landing gear wire in place. Note the little notches on each side of the spreader bar. These accommodate the wire. Using masking tape, hold the spreader bar on the wire in the proper position. Now cut and fit the landing gear legs out of thin hard wood, or one sixty-fourth plywood, and cement them in place. After they are dry, give each joint another coat of cement and let it dry. Do not cement the landing gear wire in the spreader bar notches. When everything is quite dry remove the tape and install the wheels. The brace wires that show as an "X" in the front view of the gear can be very thin wire or monofilament line. The landing gear wire should let the wheels flex free of the spreader bar assembly and thus take all the hard knocks without damage.

Any small plastic prop will work. Don't forget a winding loop to make the use of a winder easier and more efficient.

Flying the Fokker V-23 is the best part of the whole project. The original flew right off the board. It balanced at the CG shown on the plans. As the motor ran out it did have a slight tendency to wallow, that is, to rock its wings back and forth. This can be caused by too small a rudder or by too much incidence at the wing tips so we washed out our wing tips. That's an aerodynamic engineer's way of saying that we warped the trailing edge of the wings up at the tips. A warp that results in having the trailing edge of the wing about a sixteenth of an inch higher than it would be if the wing were untwisted, stopped the wallowing.

A single loop of one eighth rubber is just right for power. Use rubber lube and a winder, and stretch the motor out 3 to 5 times its unstretched length at the beginning of winding in order to get maximum duration. Shim the noseblock for side or down thrust to adjust the powered part of the flight.●

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pylon..... *Continued from page 15*

with a lot of activity in FAI, the committee members, who are all mature, grown men, may be able to have their opinions swayed a bit more than one vote normally should when they see the upswing in activity in this country.

MB — You mentioned that the current FAI rules leave something to be desired. Could you elaborate on this?

Faber — Number one, I feel that to fly a fuel mixture of 25% castor and 75% methanol is totally invalid. There is another FAI formula presently being used which is 20% oil and 80% methanol, which I think would be much more suitable to our category, since we have to go along with this yuck anyway. Number two, the most difficult rule to enforce, and one of our biggest hangups, is mufflers. As we proved at the 1971 Nats, there is a rather wide disparity in noise levels. The technical committee is still working on the interpretation of all the readings they did collect and how they could enforce a specific noise level at a certain distance. Some of the currently so-called "commercially available mufflers" don't do too awfully much to muffle the engine. Number three, the FAI rules specify 2.67 inches wheel diameter and at the same time they permit retractable landing gear. Why should this be a factor?

MB — I have heard that the larger wheels are specified to give the aircraft better ground handling on rough fields.

Faber — But why penalize everybody? If a contestant feels that he would have better control at some of the local grass fields, then he can use larger wheels.

MB — The smaller wheels would definitely simplify retract systems.

Faber — Another thing I am very much afraid of is the rule that allows anything to go within the engine as long as it holds to .40 cu. in. displacement. I'm afraid that the event could go the same direction as C/L Speed in this country. That is, if you have the funds, you can go fast, which is exactly the opposite of my thinking. The event should be made available to the maximum number of people.

MB — What are your opinions concerning the semi-scale requirement of FAI aircraft?

Faber — I feel that the present ruling, which states that you can use pieces and parts from different designs, is not conducive to creating the scale-like effect that I think should be a part of the event. I like the scale aspect of Formula I very much because we have seen over the past two or three years the very rapid development of truly beautiful airplanes. We don't have to go in with calipers and rulers to measure scale, but I think that scale is an important aspect of racing. Some of the monstrosities that we saw at the 1971 Nats in FAI did not look too awfully much like real airplanes.

To sum up, let's race, not only among ourselves but let's race the rest of the world. Our only medium to do this is through FAI. We can hope that the rules will be modified and although

there is presently a moratorium until 1975 on the rules, I feel that we can show other countries the way through a lot of interest and activity. The AMA and I are checking the pulse, so to speak, of the CIAM, which is the modeling sub-committee of FAI, to see if, and there appears to be, a slight softening in their attitude toward no rule changes until 1975. This year's internats in England, I think, could help even more to get some of the changes through that are needed in the event.

MODEL BUILDER - Could you give us a short synopsis of your racing career?

Faber - My present teammate and partner, Howard Nupen, was the one that twisted my arm to get into the event. I started off with a Midget Mustang and had the usual run of beginner's luck; that is, when the airplane went, it went reasonably well. When I got myself and the airplane, radio and engine all going the same direction at once, it was pretty competitive. But experience, we have found, is a tremendous help in this, as in any other hobby. It didn't help much to be fast once in a great while, as against the boys who are fast *all* the time.

I started, you might say, by myself, and used a variety of callers, which is the case of many of the competitors today. However, I found out real quick that when I managed to have the same caller (Howard Nupen) three races in a row, I was capable of flying a much, much better course because he knew my manner of flying. Working as a team, we found, was very desirable.

During the 1969 and 1970 seasons, we were in the top ten in the nation, an accomplishment of which we were extremely proud. In 1969 we won the Western States Championships, which was actually our first big win. It was many miles from Turlock to home and I don't think that Howard or I touched the road once. The fantastic satisfaction in actually winning a big meet cannot be likened to any of my past successes in pattern. Wewere just elated.

The year 1970 was an unfortunate one for us. Because of the way the point system was set up, we covered 10,300 miles on the road in four months to get to the meets. It really didn't pay off, because we unfortunately lost many planes that year due to one thing or another . . . an awful lot of the time my thumb.

But 1971 was a very proud year for us. In the whole year of racing we lost only one airplane. As circumstances would have it, it was our best airplane due to a mid-air collision. We feel very proud of ending up second in the Southern California District behind Terry Prather. The tremendous amount of good times and total enjoyment that we have had at all the meets is what I really remember the most. We value the companionship at the meets. There may be a small amount of discussion and/or arguments at any one place out on the flight line, but two minutes later you're still borrowing props, plugs and drinking each others beer. One thing about Howard and myself, particularly, is that we of course go to all the meets to win but we also go for the pleasure and the enjoyment, which really is what the hobby is all about.

MB - Would you say that your most enjoyable win was the one at Turlock?

Faber - No. Although we were extremely proud of it, the two wins we did have this year were equally enjoyable. Ending up tied for fifth at the 1970 Nats was certainly another high point. Being able to go and participate totally is what I enjoy the most of all of it. The excitement, the adrenalin flowing, shaking hands, the palpitating heart, I don't think can be equalled anywhere.

MB - Even though you are an experienced racing pilot, you still get butterflies at a contest?

Faber - It starts off usually about four or five days before and really hits the apex after the engine has been started and you're standing there holding the transmitter in the first heat. It never really lets down until Monday. Tuesday, however, it starts again for the next race.

MB - If you look at the most successful racing pilots in the country, you'll find that most are part of a team. A partner in racing seems to be of much importance. What specifically does Howard do to make your team click?

Faber - Howard is more a full fledged partner, than just a caller which means we build together. Howard, who owns a hobby shop, just happens to prefer building fuselages and I build the wings. After the two are mated, both of us finish up the rest of it. I do most

of the finishing. Since we travel together, Howard invested in what we laughingly call the "Tiltin' Hilton" (a Winnebago). It is a total joint effort all the way around. When things are needed for the airplane Howard usually has it in stock. Comes the contest time, we share expenses to make it a little less expensive for the both of us. We set the sirplane up together, we work as an extension of each other really. When you're in a heat, your caller can make you or break you. Thank goodness that with Howard he's mostly been making me.

MB - Do both Howard and you work on your engines?

Faber - To be perfectly honest, we both know an equal amount about engines, which unfortunately is very little. We did try a few years ago to improve on the stock engines and after spending months and a certain amount of expense incorporating all the tricks that we thought we knew and had picked up, our combined best efforts managed to lose 300 rpm's over the stock engine.

Part way through last season we changed from a stock K&B, with which we had had extremely good luck, but we were consistently getting beat. We then procured a George Aldridge Custom Supertigre and have flown it successfully. The parts situation, however, is very drastic. I'm tickled to death that an American manufacturer, K&B, is coming out again this year with a top quality competition engine for which parts will be available so that we can get back to "fly American."

I think we should mention that George Aldridge, in addition to his well known work on Supertigres, also does fitting and set up of K&B, HP and others.

MB - Not many people know that Paul Benezera was top Formula I qualifier at last years Nats with an Aldridge K&B .40.

Faber - Not everything is wrapped up in the engine, however. It is a combination of engine, prop, fuel and plug for a certain set of conditions which are the deciding factors. This is where the rookie gets into a little trouble because he has not learned how to alter any of these factors to fit certain atmospheric conditions.

By no means is it preordained who's going to win a meet, even though someone may have an almost unbeatable engine, for example, followed by a good run of luck. It still takes a good pilot, a good airplane, a properly needled engine *and* Lady Luck smiling on you.

MB - Do you make any modifications to a Supertigre that you get from Aldridge?

Faber - No. The only thing we do to an engine that comes back from Aldridge is simply treat it with the gentle loving care it deserves and run it in right.

MB - What is your technique for breaking in engines?

Faber - We start off with a tank full of K&B 100, running from the *first flip* (which can be all important in ruining a good engine) at a very rich setting; in fact, so rich that the engine is slobbering and usually difficult to start. Getting it started very rich is extremely important. We run through this tankfull with just an occasional leaning out and then back off to cool it again with a rich mixture. This is all done on a test stand. I realize that some opinions state that it doesn't do a bit of good to run it in on the stand but we have had good luck doing it our way. We then run a 50 percent NITRO mix, again starting out rich, for at least three tanks and steadily lean it out but never a sustained lean run. Just lean it, let it sit for 8 to 10 seconds and then richen it back up again. After this, I stick it in an airplane and go fly.

On our first race after this we do not peak out the engine. We set it about 800 rpm's from the peak on the ground, making sure that it won't run lean. There again, a lapped engine can take a lean run seemingly without damage, whereas a ringed engine cannot make it.

MB - The prop on an engine can really make a difference in not only the top rpm's that an engine can reach but also the aircraft's performance in the air and in the turns. This seems to be a big stumbling block for many rookies.

Faber - Yes it is, but the commercially available props today are really highly competitive as they come from the factory, except that you must meticulously and religiously use a prop balancer. We sometimes spend hours reworking a prop and yet we do not gain all that much but we do gain some. To reach toward the top, you need everything you can get. We have found that even though you sit on the ground with a fantastic 19,500 revs, this is no guarantee that the plane will go. What you have to find is the engine/aircraft combination that gives you the maximum airspeed coupled with good acceleration out of the turns. This can occur at 17,000 or 19,000 rpm's. There is no way to write it up as a rule of thumb. You just have to try it.

MB - What props do you use?

Faber - On the K&B, we used the Top Flite Pylon Racing Props, cut down to various diameters and pitches, usually staying around the 8 to 8 1/2 inch pitch range. We did find that on the Aldridge Tigre, the engine was more comfortable with more blade area. Consequently we changed, and used some of the old style "clubs" that we reworked to give us the pitch and diameter and general blade area that we felt was going.

I think that the prop theory in racing is of utmost importance, but it is also the field about which most people know the least. We have seen top competitors, who were going like a storm, bust a prop and in their next heat they get lapped. It is extremely hard to duplicate a prop with the exact same pitch, dia-

meter, and especially flexibility. As long as we have very understandable wooden, fixed prop rule, there is really no way to mass produce or even duplicate exact props.

We were extremely lucky last year, in that, from June 'til the end of the season, we lost only one prop, and that was in the mid-air at the Nats.

MB - Have you done much experimenting with fuels and plugs?

Faber - We had to learn what plug worked in our specific engine in our airplane with our particular cooling system and fuel. There is up to a 150 rpm difference between various plugs. But to go for the absolute peak doesn't mean that a plug will hold for ten laps. It doesn't do you much good if you get 1000 extra rpm's and only go for eight laps. You have to reach a compromise as to what plug is dependable and gives you good rpm's. We change our plug after every heat. Even though the plug might test perfectly good and look perfectly good, we still change the plug.

As far as fuel goes, in 1970 we used our own mix that stunk to high heaven but also gave us the horsepower we needed. It also proved reliable. At the start of 1971, we went to stock K&B Super Speed Fuel. We used this fuel even in the Aldridge Tigre in some races. It is a very reliable fuel, very broad on the needle, and it could be run at sea level and at altitude with no change. We did find, however, that we could eke a little more out of the Tigre with a higher nitro fuel, so we went back to mixing our own with 60 to 65% nitro, depending on where we were flying.

MB - In this area, I have seen some flyers check their barometer and thermometer before each heat and then go to their chart which tells them what plug and fuel to use.

Faber - The difference, I think, between the consistent winners and the also rans is basically a matter of dedication. How much time and effort do you want to put into it? How much is it worth to you? I don't think money, really, makes much difference. It isn't like automobile racing where the amount of money you spend determines how fast you are. In our hobby, thank goodness at least up to this time, it is really only a matter of dedication.

MB - I've noticed that you use the Pylon plastic tank. Have you tried metal tanks also?

Faber - We have always used the plastic tank primarily because we have seen what vibration can do to soft solder, however, we do two things: Number one, even though a fuel shut-off rule is in effect, we go to a one piece fixed pickup; number two, we take four pieces of 3/32 inch medium balsa and wrap them around the tank before installation. This is in turn wrapped with tape to prevent any rupture. The front and back of the tank are obviously not wrapped because the basic configuration of the tank does not need it. It is here where you have the maximum strength. Where you have minimum strength is on the sides.

MB - How many lines do you use in the tank?

Faber - We have used a three-line tank but we found the advantages to be rather small because we still had to pinch the tubing going to the carburator to prevent flooding the engine. Also, the extra line is one more thing that can go wrong and leak. So, we use a basic two-line setup, which means we disconnect the pressure and fuel lines during the refueling operation.

MB - What type of engine mount do you use?

Faber - We have found that the more solid the mount, the less loss of rpm we get from vibration. We have found the *CB* mount to be the best available so far, although we have also used the machined Tatone mount successfully. It seems as though the mass, which dampens vibration, robs less rpm from the engine.

MB - In the area of vibration, a perfectly solid mount and balanced prop mean nothing if you have an out of balance spinner. What spinner do you use?

Faber - There aren't, unfortunately, too awfully many good spinners available on the market today. Though we shudder at the price of the top spinners, we have found that the decreased vibration is less damaging to the radio and does increase the rpm, or at least caused no rpm loss. The fantastic centrifugal force on our 2 inch diameter spinners at the rpm's we're talking about, 20,000 to 21,000 rpm's in the air, demands that the spinner be perfect.

In the early part of our racing career, we lost an airplane because of a spinner. It was spun aluminum, as opposed to machined aluminum, and fatigue caused one third of it to actually blow out. The subsequent vibration shook the engine loose, which in turn shook the mount loose, which in turn shook the firewall loose, which in turn rattled the radio completely. The radio was a total mess, although the battery and receiver were wrapped totally in foam and not jammed in place so that the vibration could transmit through. The servos were also mounted with the perscribed rubber grommets in the tray, which in turn was mounted with grommets to the structure for maximum vibration absorption.

The out-of-balance spinner, missing a chunk the size of a 50 cent piece, was still enough to take care of IF cans, the crystal and some of the transistors in the servos.

MB - As far as construction of your planes are concerned, have you worked with both balsa and fiberglass?

Faber - We have used fiberglass fuselages in the past with good success and we were happy with them. Our present stable of airplanes, however, are mostly balsa and all are presently kits, Stafford, Garabidian or what have you. Like anything else, upon receipt of the kit we replace the pieces here and there that leave something to be desired. We'll probably never get away from that.

Actually, we don't use anything out of the ordinary in our construction. The only thing would be our extensive and expensive use of 5 minute epoxies, since time is at a premium. We have found that Jack Stafford's recommendation of using the standard stationery store brand of Carter's rubber cement for skinning the wings is a very good way to go. It has good adhesion with minimum weight and you don't get the voids in the foam that you can get from other types of cement.

In the area of fitting a canopy, which is a chore with any kind of a bird, we have found that Formula I Hobbypoxy glue does a very nice job. After initially attaching the canopy, we mask the canopy up from the edge about 3/16 inch with masking tape and then fillet the whole thing with, again, Formula I Hobbypoxy.

MB - Have you tried a mixture of epoxy and micro-balloons for fillets?

Faber - Yes, but we're disappointed in the strength of it. On the wing fillets, we have found that various recommended procedures didn't work out too well, such as Silastic and Epoxolite, which tend to shrink and pull the fillet away from the wing over a period of a week or better. We build up most of the fillets now with balsa chunks and just do the final fairing and filling with micro-balloons.

MB - What finishing technique do you use?

Faber - We have been very successful with finishing or coating resins, which really strengthen the wood. We put on one brushed-on coat of the resin, mixed with a lot of catalyst, again because of time since we want to be sanding in an hour because there's a race coming up. We sand this down as smooth as we can and we don't really worry about the places we sand through here and there, as long as the areas are small and not too numerous.

We then spray on a thick coat of K&B Superpoxy primer, since drips and runs don't really matter, and sand it off with 220 grit and then finish it up with 400 grit used dry. We take almost every bit of it off so that it only fills the depressions and pinholes. We then use a tack rag *and* spray on one coat of color, which is the same technique we used with Hobbypoxy. Since we usually spray our planes in the garage sometime after midnight, we hang the plane up to dry in the cleanest and most dust free room in the house, the bathroom. Ours, like most bathrooms, can be heated up to speed the drying process and the plane can be hung directly from the shower curtain. About an hour later it can be taken out and set in the garage to cure. The very next day, we use Scotch tape or black vinyl electrical tape for masking and then spray the trim on. In order to prevent getting a sharp built-up edge, I prefer to pull the tape while the paint is still damp.

MB - How long do you wait?

Faber - About 10 to 15 minutes. The following night we put on the decals and install the radio and go race.

MB - Would you like to discuss the merits of the different designs you have flown, such as the Miss Dallas compared to the midget Mustang and the Minnow.

Faber - This can all really be put in a nutshell. Basically, all the Formula I designs that are out in kit form today are good machines and well designed. They have been designed with safety in mind to prevent structural failures. I don't think any one of those machines is faster than any others. Basically a pilot should choose an aircraft with flying characteristics, (and they're all different) that suits him the best. I found that, personally, I didn't get along with the Minnow. Howard and I have lost more Minnows than anything else. Yet I know other people who flew the Minnow and then tried other designs and have come back to the Minnow because it suits them to a tee. I like the basic response of the Stafford Super Midget Mustang and the Garabidian Miss Dallas, which are very similar, in that they're both, to me, easy to handle once you set up the controls surfaces to suit your own style of flying.

MB - Do you like to have your controls sensitive?

Faber - Being extremely partial to single stick, I feel that I can afford to have very sensitive controls because I am more comfortable using my whole fist than flyers who use just their thumbs. But this is a matter of personal preference. I set up the elevator so that a full up elevator, full vertical bank turn will not produce a snap, but just barely not. I know that in the excitement of racing, under the strain of being pushed or being right behine someone else, that I will invariably, "pow!" pull full up elevator at the number one pylon.

MB - What is your secret of reliability on the starting line?

Faber - On the starting line we have just 90 seconds, therefore, we have a preflight check in the pits, which we do

like a ritual after every heat. Howard and I have a regular check list we go through. We start by removing the cowl and disconnecting and capping the fuel tubes, so that moisture does not get into the almost empty tank; spinner off and check for prop tightness; check the mount attach bolts in the firewall; check the engine attach bolts to the mount.

MB - Is this after each heat?

Faber - After every heat. Check the head bolts; check the fuel tubing for pinholes, wear, pinch or anything else; check the spray bar for loosening; check the carburator attach screw; check the landing gear for spread out and position and freeness of the wheels and to insure no dirt is packed inside the wheel pants; check the wing attach bolts; check the control surface horns, clevises and safeties; check for any stress cracks; pull the glow plug, check the new plug before putting it in and check that there's only one washer in the plug hole; refuel and cap the lines because it could be a while before we fly again and the increased heat could flood the engine. We leave the cowl off until we go from the standby to the ready line, at which time we hook up the fuel lines and put the cowl on. We then check the battery starting box to see that the battery is up to voltage, that the battery clip is okay, and generally give the airplane a once over.

MB - This sounds like a good example of the dedication you were talking about.

Faber - All it takes is the tiniest of the smallest things to win or lose a heat. On the starting line, we use two nicad cells, wired separately, so that I can instantly switch from one to the other just in case. One time we actually checked the battery in the pits, and then out on the line it didn't work.

We monitor the current to the plug so when it's plugged in we can immediately see if the plug and/or battery clip is good. We carry a spare battery clip just in case. After all, it doesn't do a bit of good to blister through and win one heat if something should go wrong in the next one. If you want to place high and get a zero, you might as well go home.

After every race weekend, we give the plane a further total check, such as the battery pack which comes out to see that the foam hasn't changed. The tank also comes out to see that it hasn't chaffed through anywhere. The servos get checked to see that no screws have vibrated loose. We also change the fuel lines.

MB - Thank you for being so cooperative in your answers.

Faber - It was a pleasure. ●

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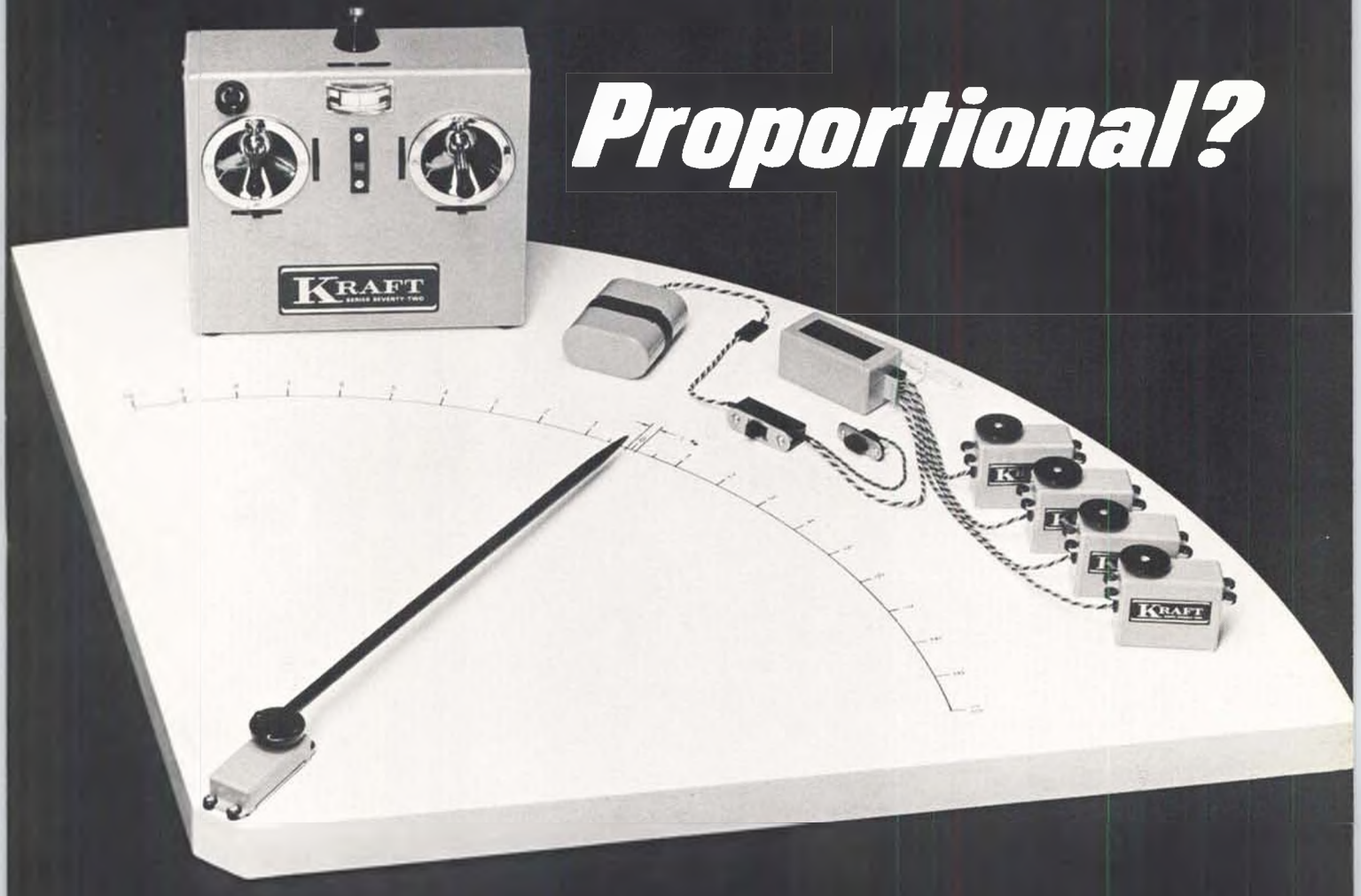

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