MODEL BUILDER

AUGUST 1974

volume 4, number 33

ONE DOLLAR

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The most versatile fun RC airplane. Build it as a glider, soarer, trainer or sports plane by changing wings, ailerons and tail. For engines up to .19

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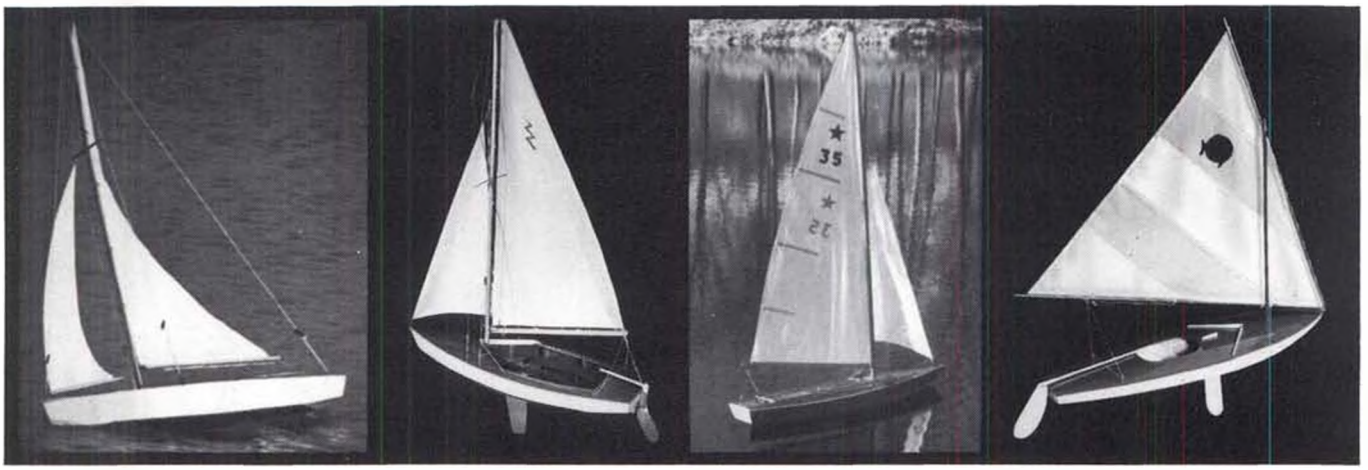
or on the water



ACE RACING SLOOP KIT RS-17
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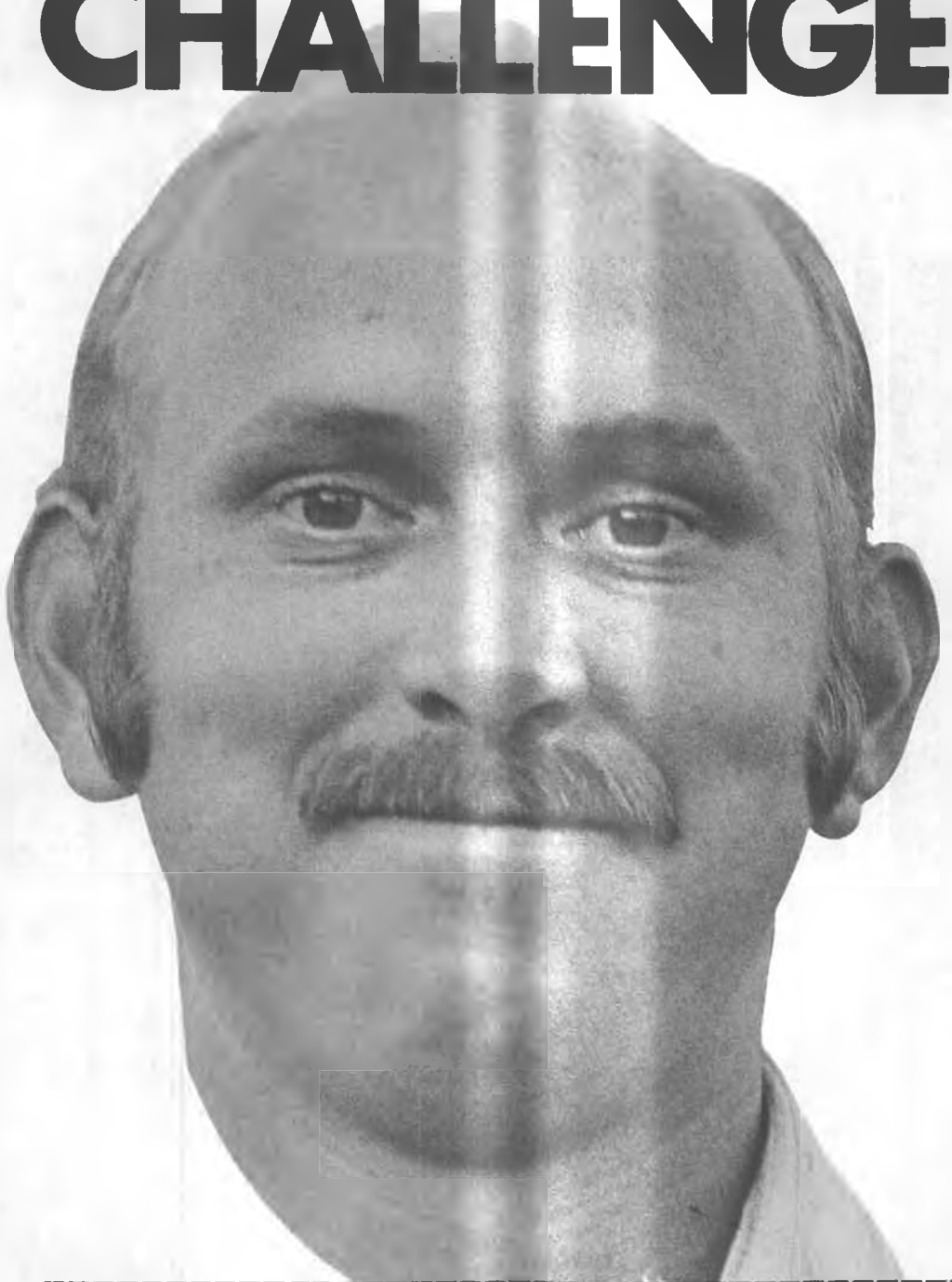

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MODEL BUILDER

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1105 SPURGEON, BOX 4336, SANTA ANA, CALIFORNIA 92702 (714) 547-3963

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CONTENTS

FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: The captivating smile belongs to David Moes, 11 year old control line flier, and brother of Chris Moes, author/designer of the Woody Pusher feature construction article which begins on page 8 of this issue. Chris was at St. Jeromes College in Waterloo, Ontario, when we wrote and asked if he had a color shot suitable for the cover. Not having one, he phoned his dad, J. P. Moes, back home in Peterborough, Ontario, Canada, who set up and took the photo on our cover. All in all, we'd say it was a superb family effort!

"Famous model magazine editor launches free flight gas model." Just shows to go ya how deceiving the news headlines can be. After a photo session at Lake Elsinore, Sal Taibi asked us to hold on to his famous Powerhouse as he cranked up the Forster 99. Sal then backed off and shouted, "Leggo!", which we did. If you call that launching, then I guess the story's true . . .

from Bill Northrop's workbench . . .

● Coincident with the publication of this issue, MODEL BUILDER is notifying all of its dealers and advertisers that the September issue will be combined with October. The combined issue will be mailed on or about September 11, the scheduled date for mailing of the October issue.

Actually, this will not really present any gap in the monthly distribution of MODEL BUILDER. As most of our readers have noticed . . . and we must thank you for your patience and understanding . . . each issue since January 1974 has been coming out progressively later in the month, until now . . . when we combine issues . . . we won't be noticeably dropping a stitch. It's been sorta sneaking up on us for some time.

Naturally, all subscriptions will be extended one month.

The explanation for all of this is somewhat like the "Good news–Bad news" routine used by so many comedians. The good news is that MODEL BUILDER is growing as if it had an overactive thyroid problem, while the bad news is that our much overworked staff is having a tough time keeping up with the expansion.

And speaking of time, the AMA Nationals is about to hit us with a two week slug just as this issue comes from the printer. Of course, like the Mohammedans heading for Mecca, we must attend the Nats. Can you think of a better time to do what must be done?

We're very proud of the way MODEL BUILDER has grown in 3 years, from 2,500 to better than 26,000 circulation a month. We started from scratch, have operated on a shoestring, without any outside help or "hidden" money, and in spite of offers to sell . . . with the chance to ease up a bit . . . we have chosen to do our own thing.

We're also very grateful to the talented modelers who have made their time and effort available, sometimes for very little compensation, in order to help us build the magazine up to its present status.

The growth is solid and we have come to know that most of our readers are the hard core, in-it-for-life modelers, a cut above the average . . . and we're proud of that too.

We often hear praise like, "It's the only magazine I enjoy reading from cover to cover," or, "All the stuff is good and I even read about the things I wasn't interested in before . . . never can tell where you'll find a gem," and, "Even my wife reads it. She gets a kick out of some of your captions," and the most often repeated comment, "Whatever happens, don't change what you're doing or the way you do it."

OK, we won't.

PIONEER PEANUT PROJECT

Possibly in the next issue, MODEL BUILDER will announce details of an international modeling contest that will be the first of its kind . . . a 100 percent proxy contest for Peanut Scale models. (Would you believe a Prodigious Parcel Post Proxy Peanut Program?)

Not only will there be prizes for the best models in various era categories as well as overall winners, there will also be awards for the farthest away entry, the best shipping container, the plane most damaged in shipping, the heaviest and lightest to qualify, etc.

The contest will be held indoors, probably in the Santa Ana Blimp Hanger, and the proxy fliers will be some of the best, including Walt Mooney, Bill Hannan, Clarence Mather, Bill Warner, and many others. Planes will be flown on a rotational or pick-out-of-a-hat basis in order to give all a fair chance. Local entries will be permitted, but the modelers will not be allowed to fly their own, or to coach the proxy fliers. All entries will be expected to provide complete flight instructions to guide the proxy flier, along with a supply of critical spare parts.

Watch MODEL BUILDER for the announcement and further details. In the meantime, start figuring how you're going to get that Peanut here in one piece!

LAKEHURST WORLD CHAMPS

We picked up a few brief words from AMA's Competition Newsletter Editor Carl Wheeley concerning the World Championships just completed at Lakehurst Naval Air Station, New Jersey.

Our R/C Scale team really cleaned up, taking 1st, 2nd, and 3rd, with Bob Wischer, John Roth, and Ralph Jackson finishing in that order. Bob flew his Emeraude, John his Volksplane, and Ralph flew a new Piper Comanche 180.

In C/L scale, Russia took individual first place and first in team. Valery Kramarenko, who placed first, flew a Russian AN-14N twin engine turbine. To duplicate the typical slim turbine nacelle, Valery built two special engines of his own design. We'll have pictures of one next month, in various stages of disassembly.

Second in C/L scale was Jerzy Ostrowski, Poland, with a P-38, and Michael Reeves, of England, was third with a Zlin Akrobat. Mike Gretz was the top U.S. flier, placing 4th with another Akrobat.

Continued on page 70

OVER THE COUNTER

● At long last, we have binders for MODEL BUILDER magazine in stock. Sturdily built, and covered in dark green vinyl with gold silk screened lettering, the binders sell for $4.95 each, two for $8.95, or three for $12.95. All prices include postage in the U.S.A. For Canadian and Mexican orders, add 30 cents per binder. Overseas buyers add 50 cents per binder.

Each magazine is bound in place by a steel wire which is placed on our Peanut Centerspread and then sprung into holes in the metal back plates. If you have all copies, one binder will hold the 14 copies published from the first through December 1972. One binder will hold all copies published in 1973, and one will hold all copies to be published in 1974. Extra wires are available at 5 cents apiece, but must be ordered when the binders are ordered.

* * *

Williams Brothers, 181 Pawnee St., San Marcos, Calif. 92069, manufacturers of many molded plastic and nylon parts for all types of aircraft models, has released the second in a series of 1/72 scale plastic model kits of planes from aviation's "Golden Age". This newest model is the Martin B-10B Bomber from the 1934-1942 era. When first introduced, the B-10 was ahead of its time, with retractable landing gear, controllable pitch propellers, revolving front gun turret, and enclosed accommodations for the crew. B-10s were employed by the United States, Holland, Russia, China, Siam, Turkey, and Argentina.

Martin B-10B bomber in 1/72 scale plastic by Williams Brothers.

The $4.95 kit features choice of landing gear position, two types of wheels (hard or flexible tires), external bomb rack and bomb, decals by Micro Scale (with choice of markings), clear plastic display stand.

The first model in this series is the Boeing 247 . . . same scale, same price.

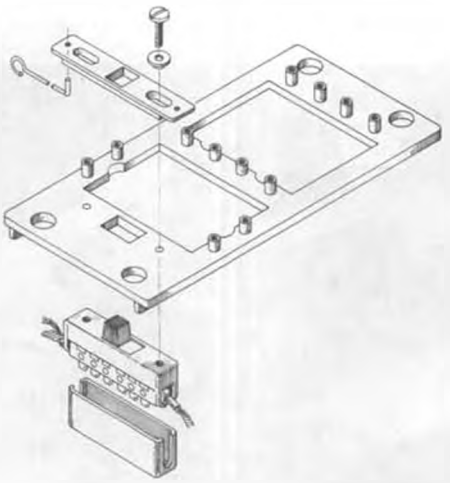
* * *

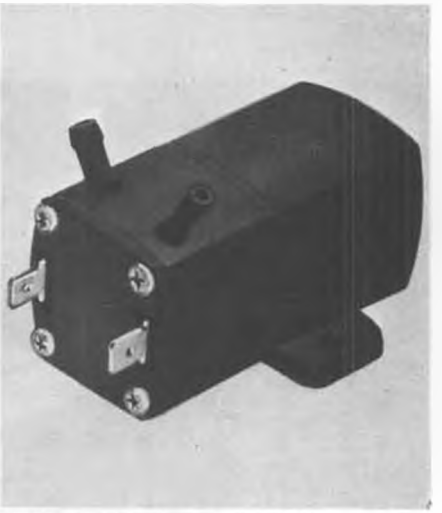
Look out, Jonathan Livingston Seagull! The Gyrfalcon gonna getcha! Associated Hobby Manufacturers (AHM), 621 East Cayuga St., Philadelphia, PA 19120, is importing a molded styrofoam replica of the Falcon Hawk. Designed for 2 channel radio control, it is unfortunately a little expensive at $59.95, but should really shake up the troops (and the live, feather-coated type birds!) at the local R/C slope or thermal glider hangout.

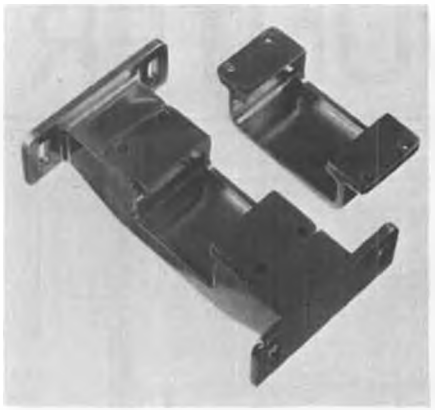
MODEL BUILDER's Workbench now has one of these birds on top of its clutter, thanks to AHM's Jim Martin . . . and a Cannon Tiny Twin brick will be installed in its . . . er . . . fuselastomach. We'll give you a review on it in the next issue.

AHM has also developed a new line of Beechwood propellers based on a new wood cutting technique. Designed primarilly for the competition flyer and .60

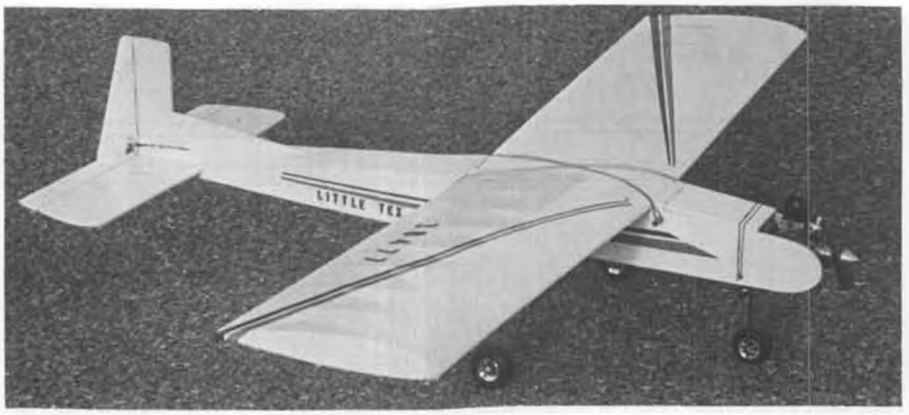
MODEL BUILDER binders now available.


Through-the-fuselage switch toggle by Kraft.


Fuel/water electric pump by Polk's.



Interchangeable mount for 40's and 60's by Marine Specialties.



"Little Tex R/C Trainer" by Johnnie Casburn Mfg. Co.

powered pattern machines which nowadays weigh 7 to 9 pounds and fly at speeds of 80 to 120 MPH, the props will also be popular with the sport flyer who wants top performance from his engine and plane combination.

Called the "Super Streaker" (bare wood, we assume) the STPN props come in 5 pitches with 11 inch diameter; 7, 7-1/4, 7-1/2, 7-3/4, and 8. Also available are new 11-1/2 inch diameter props in 6 and 6-1/2 inch pitch. The 11's sell for $1.29, and the 11-1/2's sell for $1.49.

* * *

Kraft Systems, 450 W. California Ave., P.O. Box 1268, Vista, California 92083, has released a new Servo Tray Switch Actuator (Part No. 200-120) which sells at 98 cents. The device fits all Kraft servo trays, provides through-the-fuselage operation of the airborne switch, and eliminates the need for cutting slots or drilling holes in the switch handle . . . which often results in breakage.

* * *

Polk's Model Craft Hobbies, Inc., 346 Bergen Ave, Jersey City, N.J. 07304, is now marketing the Little Squirt, a fuel or water pump which operates from 12 volt D.C., 2 amp power. Developed for use on luxury cars to operate the windshield washer, the pump is 1-1/4 by 1-3/8 by 2-3/4, and is priced to retail at $8.95.

* * *

"Flying Fish" by Terry Plane. All sheet balsa sport F/F for .010 and .020.

Custom-Bilt Models, Co., P.O. Box 503, Seal Beach, Ca. 90740, jig-builds all-balsa airplanes ready for your choice of coverings or paint primer. Write the company for further details. The choice of airplanes includes the following Bridi kits: 15-500 Club Racer $59.95, Kaos $65.96, Super Kaos Jr. $62.95, RCM .60 Trainer $64.95, and RCM .40 Trainer $60.95. All shipments are insured and freight collect.

* * *

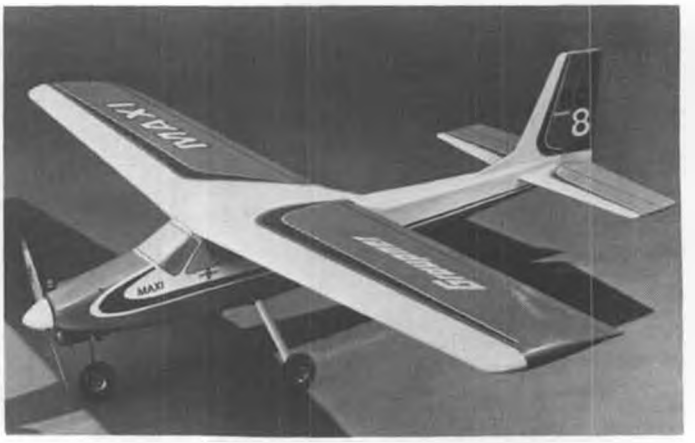
Marine Specialties, P.O. Box 588, Saratoga, Calif. 95070, has a new quick change motor mount for R/C power boaters. Logically called the "Q-C", this is an aluminum die cast motor mount with interchangeable insert adapters to accommodate both .40 and .60 engines. Designed for all types of hulls, including Deep-Vee, it features complete adjustment of alignment, simple installation, and fast engine change. Complete unit, including mounting hardware is $16.95. Master mount and individual inserts sell separately for $7.95 and $5.95 respectively. Write for further details.

* * *

A new 2 or 3 channel R/C Trainer is being introduced by Johnnie Casburn Mfg. Co., 5821 East Rosedale, Fort Worth, Tex. 76112. Designed for .15 to .20 engines, the "Little Tex R/C Trainer" features jig-built fuselage with steerable nose wheel bearing installed, formed landing gear, die cut parts, and hardware. Price is $29.95.

* * *

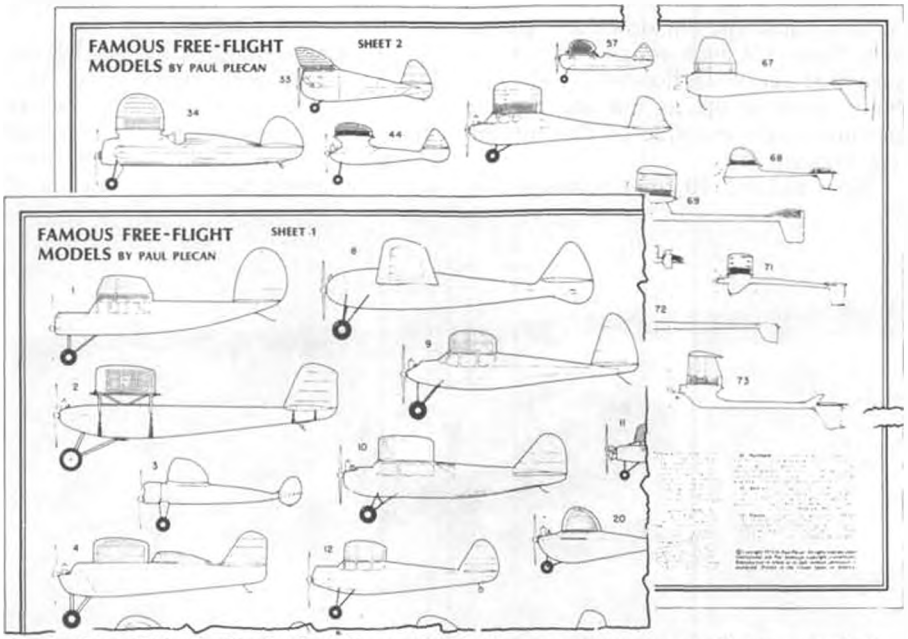
Semi-scale BO 209 Monsum by Graupner. For .40 size engines, it has a wingspan of 62-1/4 inches.



The "Maxi" is an advanced trainer, which can be flown with or without ailerons. Span is 63, powered by .40 engine. Graupner kit.

Peerless/Kyosho Newport Cabin Cruiser with twin electrics, for R/C.

"Bugsier 3" R/C tugboat by Graupner, is 32 inches long.



Famous Free Flight Profiles by Paul Plecan. All 77 planes are to the same scale, span a period from 1934 through 1963. Fine decoration for wall of shop or den. Size 24 by 36 inches.

Peerless/Kyosho Newport R/C Sailing Yacht, 32 inches L.O.A.

Terry Plane, Inc., 3233 Skyway Dr., Santa Maria, Ca. 93454, is marketing a novel little all sheet balsa sport free flight model for .010 and .020 engines called the "Flying Fish". The body is fish shaped in profile and all the flying surfaces are fin-like in appearance. All parts are precut. The 21-1/2 inch span model retails for $3.95.

* * *

MODEL BUILDER's Art Director, Paul Plecan, after several years of part-time effort, has finally completed a set of 77 famous free-flight profiles of the 1934 to 1963 era. All drawn to the same scale and covering two large 24 by 36 inch charts. A short commentary, with basic data, on each model illustrated, runs across the bottom of each chart.

Beautifully reproduced on a sheet-fed, offset printing press by MODEL BUILDER's printer, these collector's item works make an excellent wall decoration for your den or workshop and are available, rolled and mailed in a sturdy tube, for $4.00 postpaid. Send check or Money Order (California residents include 6% rip-off) to Paul Plecan, Box 1556, Garden Grove, Calif. 92642.

* * *

Peerless Corporation, 3919 "M" St., Philadelphia, PA 19124, is importing for U.S. modelers, the Japanese Kyosho line of kits. Two new offerings are for the boating enthusiasts.

The Newport R/C Cabin Cruiser is said to be an authentic scale model of a modern cabin cruiser, is 33 inches long with 9-3/8 inch beam. The kit, which retails for $79.95 includes two Mabuchi electric motors, drive unit, scale chrome

Continued on page 65

No doubt about the origin of the Woody Pusher design in this photo. It's a squared off Curtiss-Wright Junior, and that's that!

The WOODY PUSHER

"Different, yet fun and easy to build and fly." This was the author/designer's objective when creating this model. To that we add, "What's more, it's scale!" By CHRIS MOES.

● In their search for something a little different, full-size aircraft homebuilders have come up with some pretty nifty configurations. The Woody Pusher is a classic example of this type of thinking. Powered by a 65 h.p. engine, mounted on the wing center section, it "pushes" pilot and passenger along at a comfortable 85 m.p.h. The reason for the first half of the name is twofold. First of all, the prototype was designed by Harris L. Woods (Woody), and secondly, it features a largely all-wood construction.

In looking for an R/C sport flyer, I had much the same objectives in mind as Mr. Woods and his colleagues. It had to be different, yet fun and easy to build and fly. I think the Woody is a solution to the problem.

Actually, I don't even classify this model as a stand-off scale, since it has a number of changes made to the structure and areas, and no real attempt has been made to add "detail". But, just the same, the character of the full size Woody is still very much there. The model is powered by engines in the .10 to .15 range. A .19 is perhaps a little hot for this plane, but if it is all you've got, and it will run on an 8 inch prop, why not?

WING

Start the wing by cutting out and assembling the center section/motor mount from 1/8 ply. Note that the 2 center section "ribs" are notched to accept two 1/8 ply dihedral braces which should also be added at this time. Be sure that everything is perfectly square. The tank fairing and 1/16 balsa sheeting could also be added at this stage.

Incidentally, I used Titebond glue for the entire model except for the fuselage doublers. Epoxy is wonderful stuff, but for wood joints, there is still nothing that matches aliphatic resin for strength and low weight.

Now, take out that perfectly flat building board, put the wing plan on it and cover it with old Monokote or Solarfilm plastic backing. I have yet to find any adhesive which will stick to this stuff.

Cut out and pin down the 1/16th bottom sheeting, and this includes the bottom capstrips. Pin down and glue a very hard 1/4 inch square spar. Now take that center section you've already built, prop it up to the appropriate dihedral angle and glue to the bottom sheeting and spar.

Now add the 10 ribs, including one which is butted right up to the ply center section. Note that the tip rib, which is 1/4 inch sheet, also serves as a wing tip. Glue and pin down all the top sheeting and cap strips and take a break (or better still, start on the fuselage).

Once the glue has dried, remove the wing from the plan and add the 1/4 X 3/8 hard balsa leading edge. Set the center section down flat and measure the dihedral of that wing (it should be 1-3/4 to 2 inches, but it's really not that critical). The second panel is built the same as the first, but, prop the first panel up twice your measured dihedral (about 4 inches).

The wing is finished by shaping the leading edges and adding wire reinforcements to the trailing edge where the rubber bands will pass. For added strength, you may wish to add fiberglass reinforcing tape to the bottom of

With the non-scale grass missing, this winter shot of the Woody Pusher on skis is of the take-a-second-look type. Plane is a real prop-saver.

Draggin' in for a touch-and-go, Woody is about to plop on its own shadow.

the dihedral breaks.

TAIL

What can I say? Cut 'em out and sand smooth, but be sure to use medium light wood, since even though the tail moment is short, the engine is fairly far back, and some difficulty in balancing may arise if the tail is too heavy.

FUSELAGE

Fuselage sides are cut from medium 1/8 inch balsa. When choosing wood for fuselage sides, I always try to pick two pieces that were side by side in the log. This is easy to find out by simply comparing the grain patterns of one piece to another. Usually, they are packed close to or next to one another in the stack.

Nose doublers are added (use contact cement for a quick job) and all longerons and uprights are glued in place. Be sure to make one left and one right side! Making two identical fuselage sides doesn't exactly do much for the ego. *(You can cover up by going on to build two models! wcn)*

The fuselage is first framed up using Formers C and E, and the 1/8 ply landing gear mount, keeping things square. Former A is then added and at the same time, the nose is pulled together. Masking tape is excellent for this job. Pull the tail together, using pins and clothes pegs, and checking for proper alignment.

Now add the other formers, cross pieces (dimensions from top view), and tailwheel block. Sheet top and bottom with 3/32 sheet crossgrain. Curve 1/16th sheet over formers A, B, C, and D. The rear headrest could be made from a soft block, 1/16th sheet, or if you're really lazy, omit it altogether. The nose cone is now added, carved, and sanded to shape.

The wire cabane is formed almost entirely of coathanger wire. I find this is quite sufficient for models of this size, but care should be taken to make clean, strong solder joints. Don't use coat hanger wire for the wing rails; these should be made from 3/32 or even 1/8 music wire.

The fuselage should be covered before adding the wire cabane. Once it's covered, the cabane structure, which is bound and cemented to notched hardwood cross pieces, can be glued in place. Form and solder up the landing gear and bolt in place. The windscreen too, is added at this time.

FINAL ASSEMBLY

Strap the wing in place and use this as a guide for lining up the tail pieces as you glue them in place. Finish covering everything and hinge the tail surfaces. Use some scrap pushrod wire as an elevator coupling. It is far more substantial than 1/16th wire and doesn't crack or split like a dowel torque rod can.

Don't use a steerable tail wheel on this model since it receives a fair amount of abuse when starting the engine. Besides, with that prop blasting directly over the rudder, the plane, with its free swivelling tail wheel, will out-taxi anything on the field!

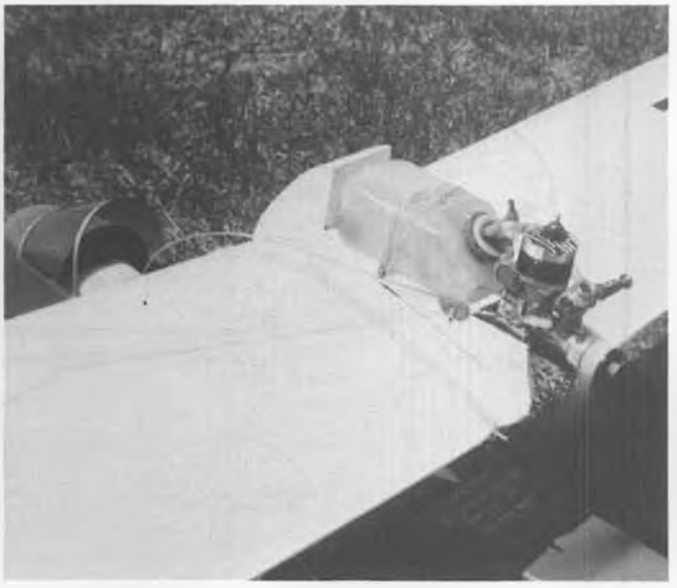
The author/designer maneuvers Woody into a slow fly-by for the camera.

Radio installation is a cinch. Just put that battery as far forward as possible. I didn't put any hatches over the radio bays and found that absolutely no oil gets in this area. But a big, smiling pilot would look great in the cockpit, in which case he (or she, I'm not a chauvinist) could be attached to a removable front hatch. However, put the receiver and battery pack in plastic bags, just in case.

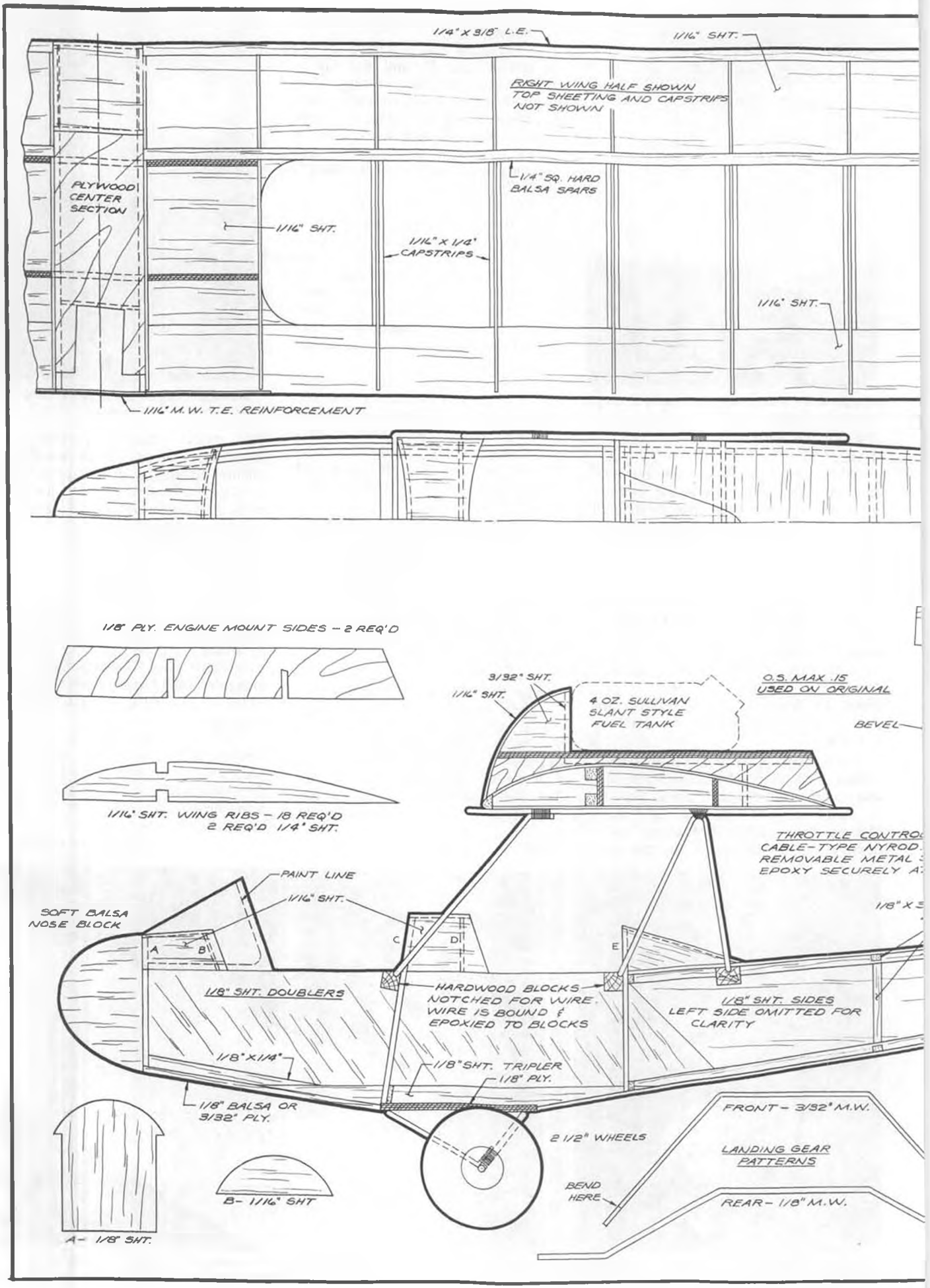
Flex-Cable control is used for the throttle, with a nylon link at the motor end. The nylon tube is attached near the motor with a metal strap and a small woodscrew since this has to be uncoupled each time the wing is removed.

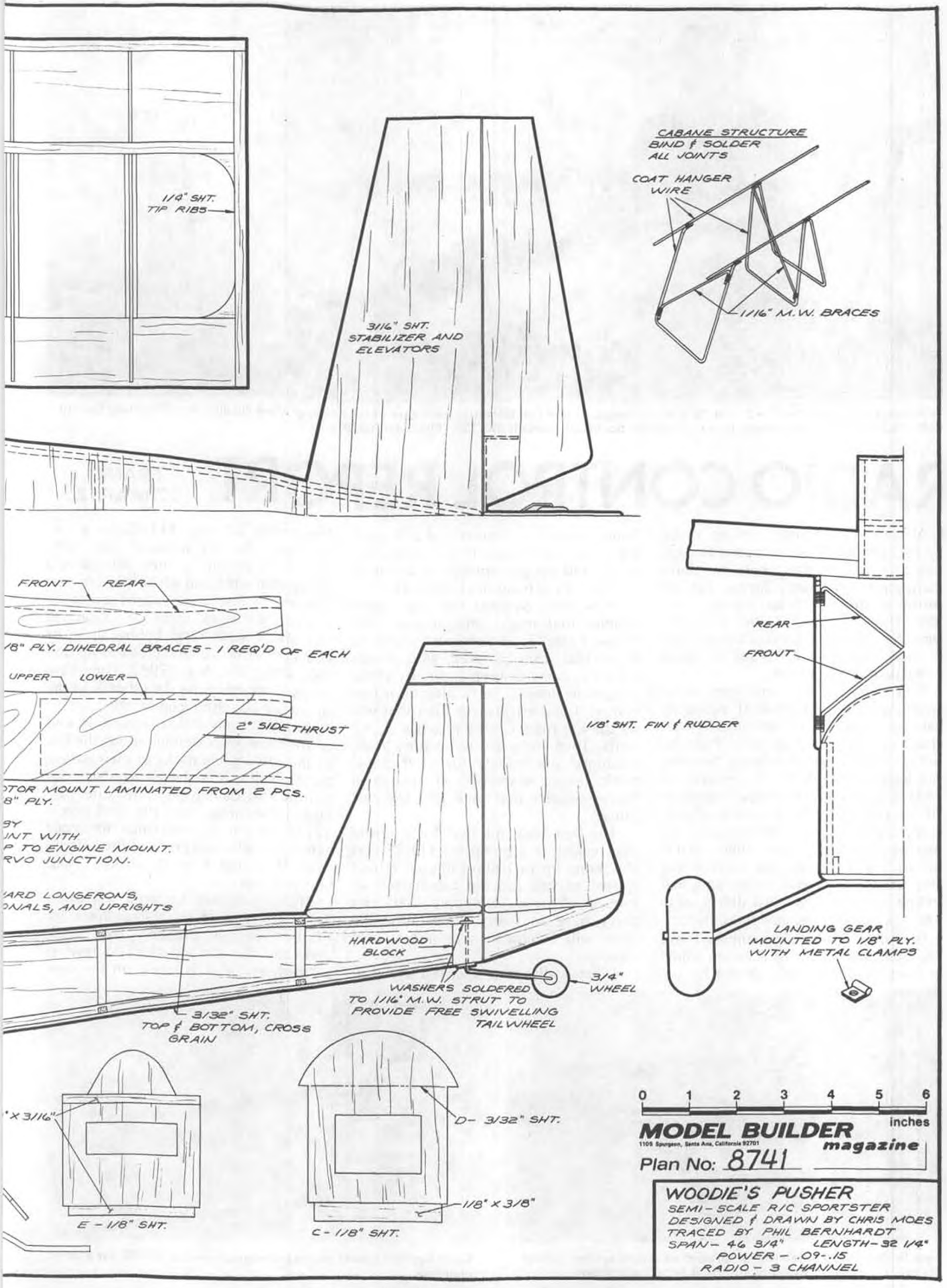
Continued on page 55

Though cockpits have been left open, Chris says no exhaust residue gets in. Pilot and passenger on hatch/floors could be added.



Nylon left-hand props are available for .09's to .15's. In theory, a short fuel pick-up at back of tank is best for pushers. Experiment.


1/4" X 3/8" L.E.
1/16" SHT.
RIGHT WING HALF SHOWN
TOP SHEETING AND CAPSTRIPS
NOT SHOWN
PLYWOOD
CENTER
SECTION
1/4" SQ. HARD
BALSA SPARS
1/16" SHT.
1/16" X 1/4"
CAPSTRIPS
1/16" SHT.
1/16" M.W. T.E. REINFORCEMENT
1/8" PLY. ENGINE MOUNT SIDES – 2 REQ'D
3/32" SHT.
1/16" SHT.
4 OZ. SULLIVAN
SLANT STYLE
FUEL TANK
O.S. MAX .15
USED ON ORIGINAL
BEVEL
1/16" SHT. WING RIBS – 18 REQ'D
2 REQ'D 1/4" SHT.
THROTTLE CONTROL
CABLE-TYPE NYROD
REMOVABLE METAL
EPOXY SECURELY A
PAINT LINE
1/16" SHT.
SOFT BALSA
NOSE BLOCK
A
B
C
D
E
1/8" X
1/8" SHT. DOUBLERS
HARDWOOD BLOCKS
NOTCHED FOR WIRE.
WIRE IS BOUND &
EPOXIED TO BLOCKS
1/8" SHT. SIDES
LEFT SIDE OMITTED FOR
CLARITY
1/8" X 1/4"
1/8" SHT. TRIPLER
1/8" PLY.
1/8" BALSA OR
3/32" PLY.
2 1/2" WHEELS
FRONT – 3/32" M.W.
LANDING GEAR
PATTERNS
BEND
HERE
REAR – 1/8" M.W.
B – 1/16" SHT
A – 1/8" SHT.



FULL SIZE PLANS AND STICK 'EM PATTERNS AVAILABLE — SEE PAGE 72

We're a sucker for any pictures of our "Big John" design. This is Carl Demming, secretary of the Coeur d'Alene (Idaho) Aero-Modeling Society (C.A.M.S.) and his version, which flew right off the board. Of course it did, Carl! Photo by Bob Petro.

RADIO CONTROL REPORT

FRANK SCHWARTZ

● Although I normally try to make the R/C column more of a commentary than a product report, there are times when some new items appear and are worthy of more than just passing comment. This in particular applies to some items by Sonic Systems. Perhaps you are not familiar with some of their products, so I'll brief you.

First, they make some very nifty pneumatic (freon operated) actuators that you can tie to any mechanical retract . . . such as Goldberg, Pro-line, Violett, and others. This Sonic Systems unit lends itself nicely to a variety of linkages, especially where you find yourself in trouble with a mickey mouse setup, trying to get three retract gears working off a single servo wheel. And if that isn't bad enough, the gears in the servo usually strip out, either on a bad landing when the gear just didn't quite extend, or through general hard useage.

One of our local club members, Hank Waechter, has a .40 size Kaos on which he used Violett retracts driven by the Sonic Systems actuators and a Wankel for power up front. This is some fine plane, and the performance is excellent . . . also, the retracts are trouble free.

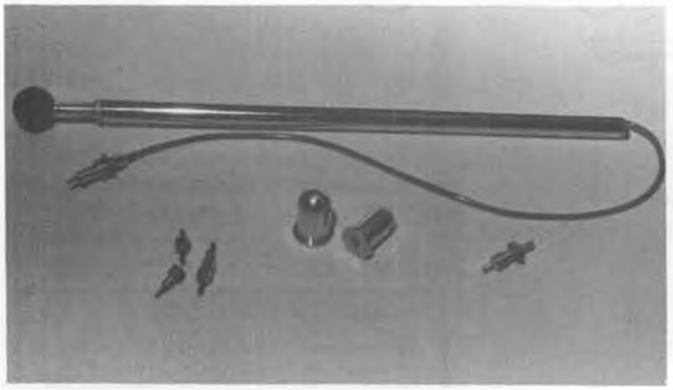
Now Sonic Systems has some other goodies that might interest you. The "Final Filter" is an aluminum machined filter that can be used with Freon retract systems to keep trash out of the pneumatic lines . . . or to filter your fuel system. It has a 100 mesh filter that will do the job right. Costs a pittance . . . 98 cents. Then there are some fine, brass, machined disconnects for your pneumatic retract systems, and also some fancy spinners that look like the real thing.

The best idea, for that freon bottle that leaked, is a pump for $11.95 that will pump up to 100 psi in your retract system so you can use compressed air instead of freon. Not only that, you don't have to worry about how the freon will behave in very hot or cold weather.

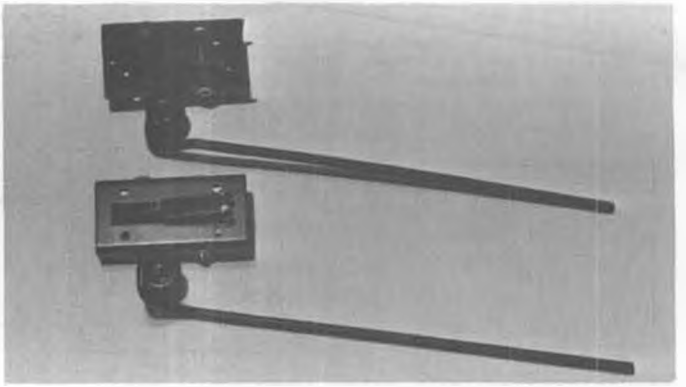
I especially like the retract gear. Inexpensive . . . only $14.95 for a pair of mains (for my stand-off scale Spitfire). Low profile . . . they will go in a pretty thin wing, and while they are best actuated by the Sonic Systems actuators, a servo will work them OK. I suggest you check your local hobby shop, or you can write to: Sonic Systems, Box 192, Whippany, N.J. 07982. They have pretty comprehensive data sheets on the entire line . . . also recommended . . .

For the really serious R/Cer, as well as for those who wonder about the life of the rechargable packs in their radios, there finally is a gadget you've been waiting for. Called the "Flite Life", by Misjon Industries, this little black box is $29.95 worth of insurance for your expensive radio and precious Bird. Here's what it is and how it works . . . and best yet, why.

Nickel cadmium batteries will often fail when you least expect them to. Further, as you probably have read, these batteries can and often do develop a "memory" that is based on the very



Sonic Systems hand pump for compressed air retract system. Eliminates cost and concern with Freon. "Final Filter" also shown.



Sonic Systems retract gear is quite inexpensive at $14.95 for a set of main legs.

PHOTO BY JOE PASS

Winners in the Mid South R/C Championships, Nashville, Tennessee. Dave Brown, Don Lowe, George Hill, 1st, 2nd, 3rd in Class D/E.

Midwest foam Chipmunk, by Bill Mohrbacher, Beaver Falls, Pa. has Fox .19 power, Heath GD-19 radio, Sig Plastinamel finish.

short discharge and charge cycle that many modelers give them. In other words, the established memory or usable power is far less than the batteries are actually capable of, due to a very short discharge and charge cycle.

Many modelers use resistors or pilot bulbs to discharge their batteries and break the memory cycle, as well as to determine if all the batteries are up to par by seeing if they will stand up under discharge. Well, this little trick of using resistors and lightbulbs sounds well and good, except for one horrendous problem . . . and that is, that if you discharge nickel cadmium cells to less than 1.1 volt per cell (that is 4.4 volts for a 4.8 rated receiver pack or 8.8 volts for a 9.6 rated transmitter pack) you stand in real danger of having a cell suddenly reverse itself, or damaging a cell to the extent that it will fail you at a later time . . . usually in the air. Manufacturers recommendations for nickel cadmium cells specifically warn against this dangerous deep discharge.

Now, the "Flite Life" gadget works like this: You plug either your receiver 4.8 volt pack or your transmitter pack into the unit, and when the voltage in the pack gets down to the prescribed cut-off level, the "Flite Life" shuts off, the discharge on your pack stops, and you are *safe*. All this is done electronically and you don't have to stand around and watch a meter to be sure you don't forget and allow the pack to run down completely. Also, there is an AC socket on the "Flite Life". You plug the unit's power cord into the nearest outlet, put an electric clock in the socket on the "Flite Life", press the start button (assuming you have plugged in a battery to be cycled, set the clock at, say, 12 o'clock and when the battery pack is properly discharged, the "Flite Life" shuts off the discharge and also stops the clock. All you have to do is look and see how long the discharge took!

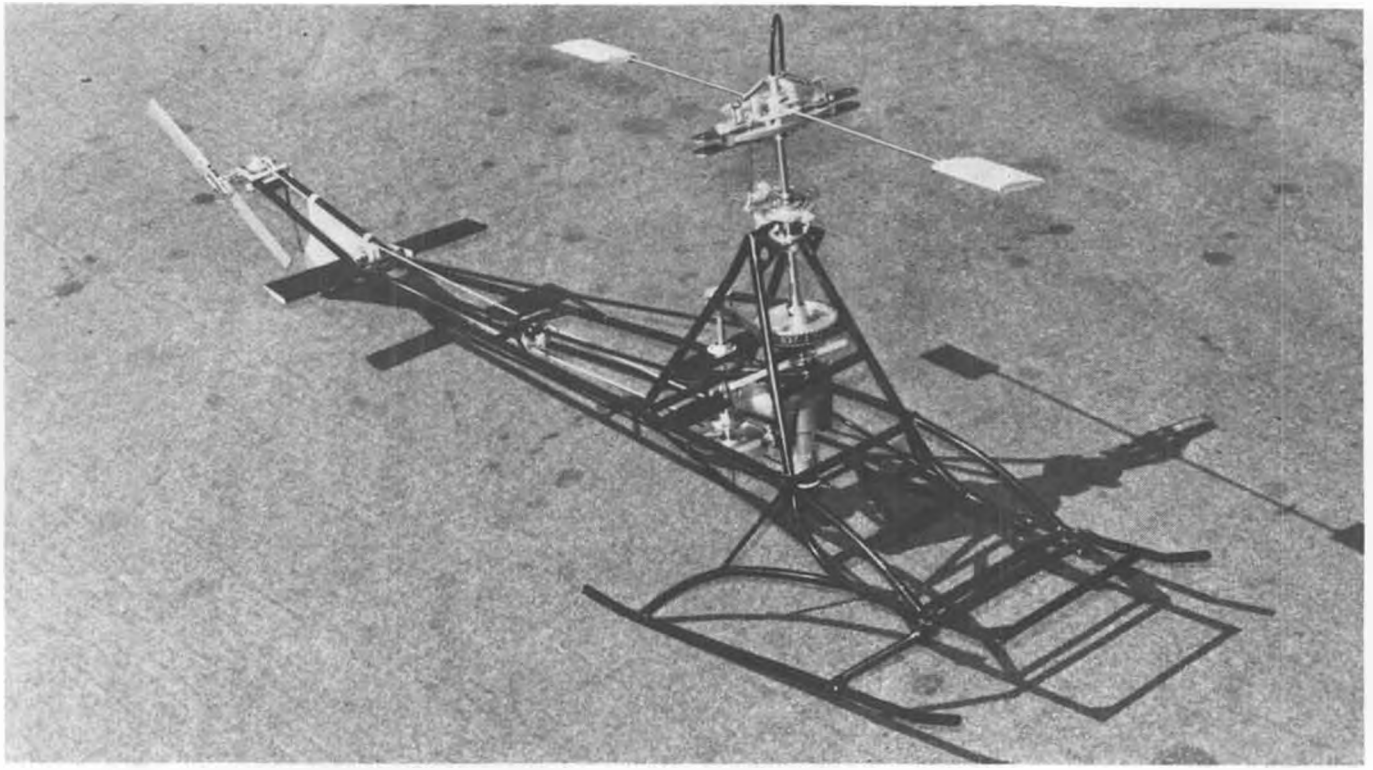
On my tests . . . and I tested every pack in my shop . . . I found that one receiver pack in my best pattern plane only had a life of about 45 minutes, but after a couple of charge and discharge cycles using the 'Flite Life", I established a correct life cycle of over an hour and a half. Another receiver pack showed up a weak cell (a possible crash prevented!) and I found a bad cell in one transmitter pack. Already the insurance paid off. You can get the "Flite Life" at most R/C hobby shops, or write to Misjon Industries, Inc. at 116 Toledo St. Farmingdale, N.Y. 11735 and they should be able to give you additional poop if you haven't already been sold! So . . . at the risk of stealing somebody's line . . . the Misjon Industries "Flite" Life" automatic battery analyzer has been tested, approved, and certainly is recommended.

Sometimes, when you have a particular problem, it is best to go to the

Continued on page 62

Bob Petro with his Ugly Stik at Henley Aerodrome, Coeur d'Alene. Used for air shows.

The 'Flite Life' by MISJON Industries Inc., could be the R/C flier's most useful accessory. Read about it in Frank's column. See ad on page 61.



Framework of the "Scorpion Too" by Model Helicopters, to be produced in the near future.

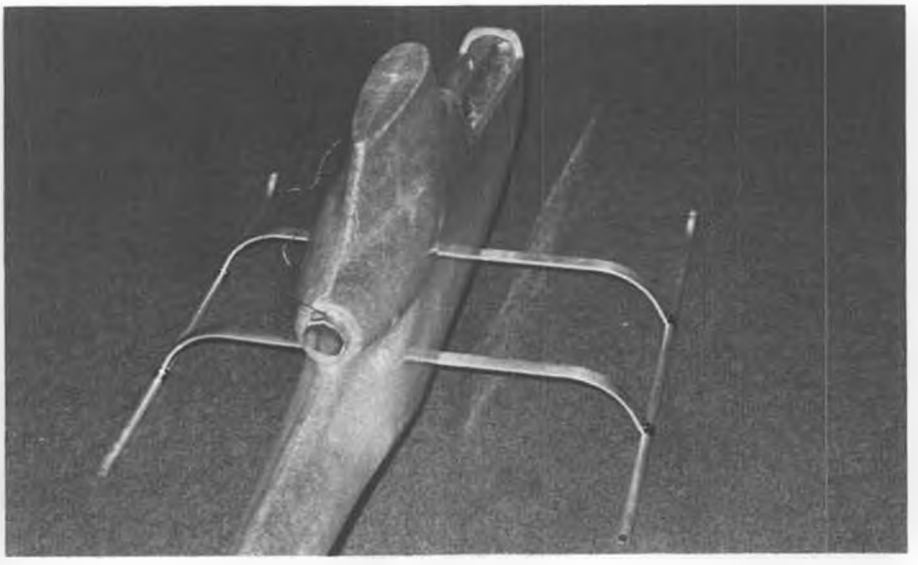
CHOPPER CHATTER

By JOHN TUCKER

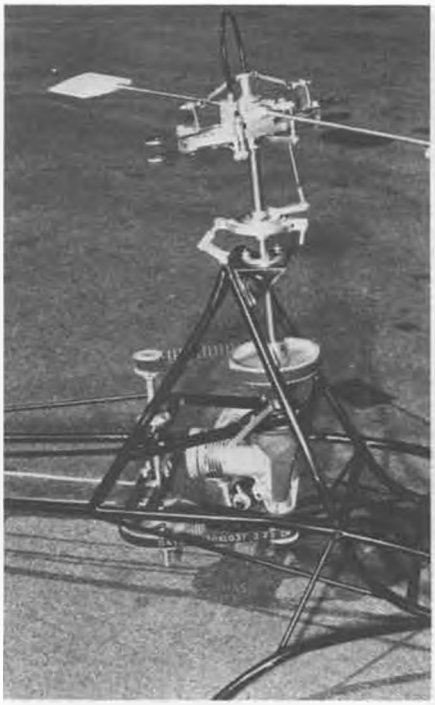
● Continually increasing availability of model helicopter kits and optional modifications spell the beginning of a boom for R/C 'copter devotees. For the past three or four years, we have had a limited choice in helicopter kits . . . or we could stratch-build, provided the engineering background was at hand . . . and not too many had the know-how to embark on even a relatively simple machine or the money to buy an expensive kit! Today however, the manufacturers are devoting much energy and money to the promotion of new ideas, production runs of parts and accessories, and adequate distribution of these items at an acceptable price level. Without any doubt, the demand for new ideas far exceed production capabilities, and this is what promotes the growth of the hobby. We have already seen price "break-throughs" in electronic equipment, and even the latest R/C helicopter kits are less expensive than the early "parts and pieces."

Although the sheer satisfaction of constructing a flyable R/C chopper, and

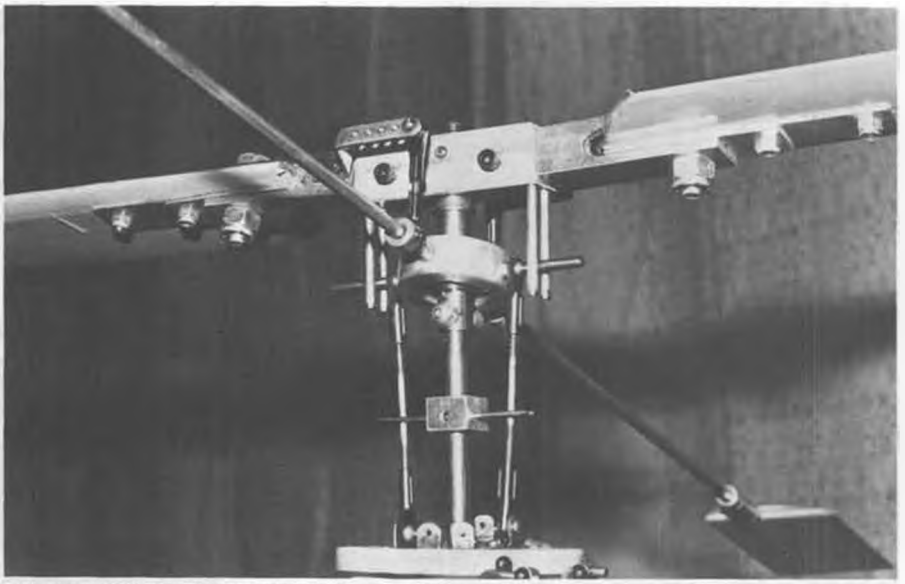
Louie Zienneker, well known Orange County, California, flyer, and his DuBro Hughes 300.



New Dieter Schluter wide-stance training gear on Huey Cobra.



Power train on the "Scorpion Too."



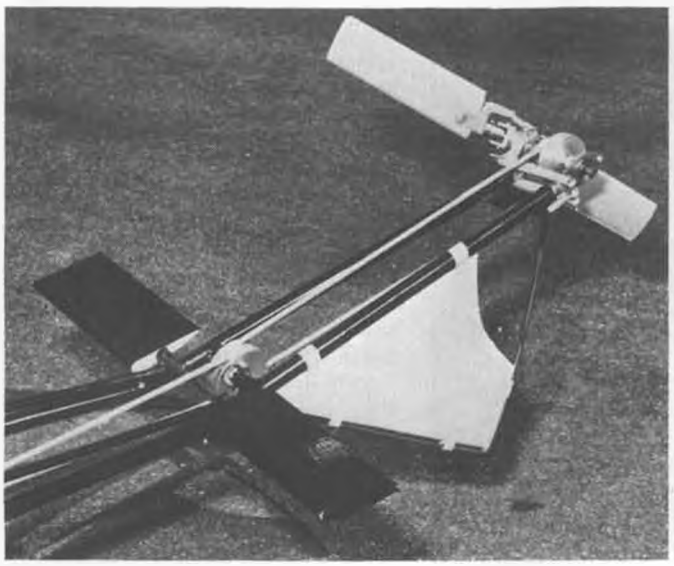
Collective pitch modification to Ed Sweeney's Super-Bird.

then mastering the intricate technique of keeping it airborne is justification enough, probably the best reason for the growth of the R/C model helicopter hobby is the ability to operate the machine from any number of flying sites. I would estimate 80% of the 'copter pilots do most of their initial testing and adjusting in their own back yard, close to the shop where needed changes may be made instantly. It sure beats loading up the wagon, driving out to the field and then discovering you forgot the starter, or??

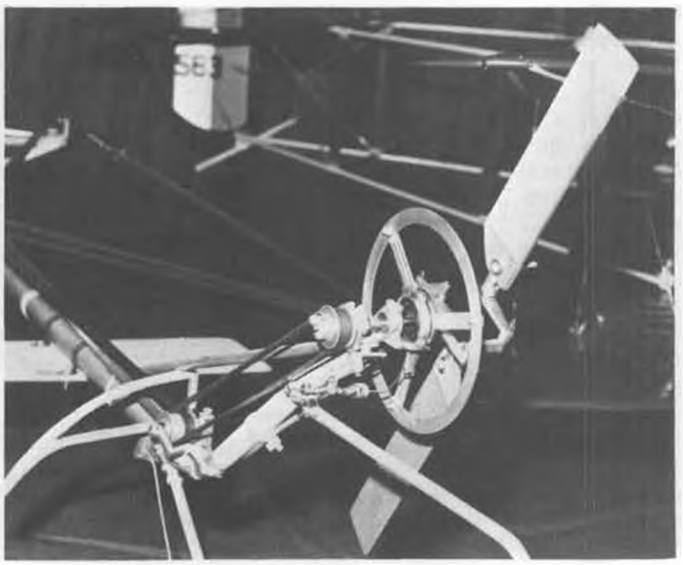
The helicopter's main role in life is to operate efficiently within very confined spaces. Most large parking lots which are vacant on week-ends (and isn't that when you like to fly?), school football practice fields, and cul-de-sacs on the outskirts of town, are all likely flying sites. On the other hand, I recently completed the installation of a new radio in my Aeromaster Biplane and looked forward to favorable weather for the flight tests. After waiting nearly two weeks (not because of weather, ha!) my son and I loaded up the car and drove cross-town to our favorite flying site at the City Stadium parking lot. To our amazement, the lot was full of cars for a special event taking place inside the stadium, so we started back home for another week of waiting. Within seconds, I was convinced by my son that we should drive to the model field approximately 16 miles north of town, so off we went . . . only to discover the field had been ploughed under for the development of a new housing tract! The finale to this story is that we drove home after looking for a suitable field for over two hours and without having any luck! Sure, we could have planned it better and headed south to a site which we knew was open, but that would have consumed most of the day, and the timing just wasn't quite right for us.

After unloading the airplanes and hanging them up, we got out our trusty helicopters, fired them up on a vacant baseball diamond a few blocks down the street, and had a ball! I made up my mind then that I would probably *not* start any new airplane projects in the future and instead, concentrate on choppers 'cause I could fly and experiment without having to worry about where to do it!! Of course, we are all going to be faced with more stringent controls regarding noise intrusion and other environmental aspects in the future, so we must be very selective in our choices of flying sites and cooperate with the neighbors lest we be run out of town on a pair of oil-soaked landing skids!!

Continued on page 55



"Scorpion Too" tail rotor assembly.



Tail rotor gyroscope on a Gene Rock "SSP".

For the benefit of native Californians, those are CLOUDS . . . C - L - O - U - D - S! Line up of contestants at the May 12th SAC races in Chicago. Temperatures in the low 50's and winds in the 30 to 40 mph range. Sepulveda should live so long!

PYLON

By JERRY SILVERMAN

● In spite of what Californians call blistering heat, a day in May with the temperatures over 75 degrees, the Valley Flyers hosted its first Quarter Midget race. The contest drew over 32 entries, which is the largest ever held in a single-day meet, that is for a Quarter Midget event.

The Contest Director, Ron Clem, had the un-enviable job of co-ordinating the workers, scheduling, and setting up of all the equipment. Of course, he was very ably assisted by the Valley Flyers, who certainly have much experience at putting on contests, usually Formula I type races.

QMRC rules prevailed; 400 ft. course, two full rounds of idle checks, and one judge at Number One pylon. With only one judge at Number One, the scoring differs somewhat from Formula I. Ten laps are flown, with no attempt to notify the pilots of any cuts, thus no make-up laps are possible. After the heat, finishing positions and number of cuts are recorded. One cut will bump any finishing position to fourth, two cuts is the same as a "no finish". All other finishing positions are moved up accordingly. Points are then awarded as in Formula I; first – 4 points, second – 3 points, third – 2 points and fourth – 1 point. "No finish" draws a zero. Dead stick landing will get you a half point reduction. The QMRC believes the 400 foot course and the above scoring method is the only way to run a Quarter Midget Race.

Quarter Midget racing has come a very long way in the past two or three years. The emphasis is still on providing an event for the novice racer, but with time and experience, speeds are certainly not going to decrease.

A short time ago, a semi-scale QM Spirit of St. Louis, with a worn out sport engine, would fly around the pylons with the best of them . . . not so now. To be competitive this year, you need a light, clean aircraft, with a very reliable engine. Don't show up with an engine which is not checked for reliability and consistency of starting and idling. You're .15 engine should turn at least 15,000 rpm on a 7/6 prop. If it won't, better find out why. Chances are you're not running a K&B, Super Tigre or Taipan, which are the most popular engines right now. Nuff said about engines. Check those out for idle.

A light, clean model is an absolute must. If the airplane, ready to fly, is over three pounds, forget it (or pump in some helium). At just over three pounds, you can expect to get lapped at least once by the time you get the checkered flag. It just won't get it. Fortunately, it is not very difficult to get a Quarter Midget racer to the scales at two and three quarter pounds. When building, always remember, "Light makes right". That wing saddle doubler you think can't possibly weigh enough to do any harm, really does. Those fractional ounces add up. Keep in mind one thing; you're not building a knock-around type airplane for flying every weekend or practicing touch-and-go landings. Hopefully, you are building a racer, and a racer *must* be built light, and therefore must be pampered.

Where many Quarter Midget builders go wrong is on the finish. Becuase the biggies in Formula I flaunt those beautiful, high gloss, fancy paint jobs with all the lines and three or four colors, don't think that paint goes on without adding a lot of ballast. Weight is very critical for a QM, and no scale or finish points are awarded for that pound of paint you put on. Try getting by with one coat of resin, rather than two. Sand off almost all of the first coat of primer,

MB's ex-pylon columnist, Tom Christopher, won Valley Flyers' QM race, also in May, but in better weather. CD Ron Clem turns back.

and spray the second very thin. One color coat will cover adequately . . . if you have applied the primer properly. Even with these weight saving tricks, a heat shrink film finish is much lighter than paint. We have seen several super-fast models with a fully sheeted, Monokoted wing.

The House of Balsa Shoestring kit employs many excellent weight saving ideas. The wing is built up on fiberglass arrowshafts, then covered with Monokote. The result is an extremely strong, light and easy to build wing. The soon-to-be-released "Miss DARA" uses this unique construction technique, plus some other time and weight saving features.

Some other weight saving tricks can be applied during construction. Hollow out any solid blocks (except where needed to reinforce front end). Get strength from proper construction, not from bulk. If the manufacturer recommends open construction, don't be a smart guy and fully sheet the wing. Don't use 1/2 inch triangle stock for the corner brace if 1/4 inch will work as well. Use 1/4 inch square *hard balsa* for push rods rather than hard pine or arrowshafts. Never use solid wire push rods. Think about using aluminum push rod ends rather than wire. Nylon tubing will substitute for copper fuel lines as well as aileron torque rod guides. A three ounce thermo-tab container (available at a drugstore) makes a nifty fuel tank and is considerably lighter.

We do not recommend using a 225 ma receiver battery, but you can save more than an ounce by using the new Ace 450 ma pack. This new battery is the most convenient size (3 x 1-1/2 x 3/4) for cramming up front with the gas tank. Weight is 2.6 ounces, which is 1.4 ounces less than the comparable standard equipment. We have tested the 450 ma battery for more than four hours constant and have noticed no significant slow down.

With today's competition, we must add a little to the old Quarter Midget axiom as follows; *Build light*, turn left, and have a ball. Remember, Quarter Midget can turn you on.

Results from the aforementioned contest were as follows:

1st	Tom Christopher	S.T.
2nd	Bob Nickle	K&B
3rd	Bob Emery	K&B
4th	Jim Kelly	K&B
5th	Gary Hawk	K&B

Dane Kane, who took first in the QM races during the SAC contest in Chicago.

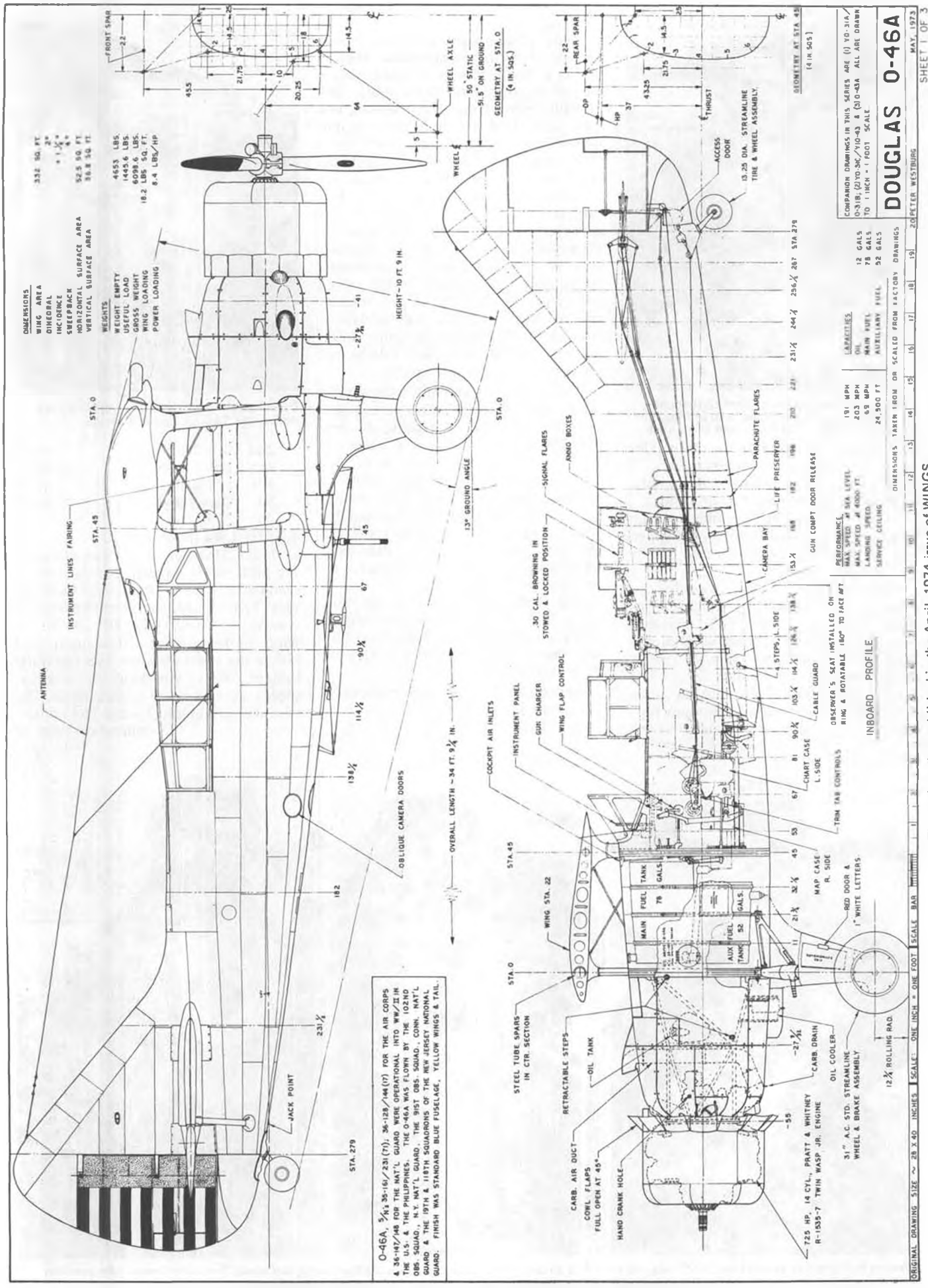
* * *

FORMULA I IN CHICAGO

Frank Morosky sent in some interesting pictures of a recent contest held in conjunction with the SAC Club on May 12th. Frank says the temperature was in the very low 50's, with the wind quite stiff at 30-40 mph, and before the event was over, rain was quite evident. With this kind of weather, speeds weren't worth talking about. The best was in the low 1:40's. The contest

Continued on page 57

Winners in Form I at the Chicago SAC races: (l to r) Bob Onori, 1st with Dara I and K&B Schneurle; Bill Preis, 2nd with Stengal Minnow and K&B Schn.; Rick Kuiper, 3rd with Dara I and K&B Schn.; and Jim Duda, 4th with Sig Mustang and K&B Schn.



These plans first published in the April, 1974 issue of WINGS.

Copies of the original 28 x 40 inch drawings of the Douglas O-46A are available at $4.50 a set.
Order direct from PETER WESTBURG, 834 Seventh St., Santa Monica, California 90403.

McDONNELL DOUGLAS and USAF PHOTOS

The first O-46A at Clover Field, Santa Monica, California, January 29, 1936. Compare this with the O-31A (MODEL BUILDER, Jan. 1974)

DOUGLAS O-46A (PART 1) By PETER WESTBURG

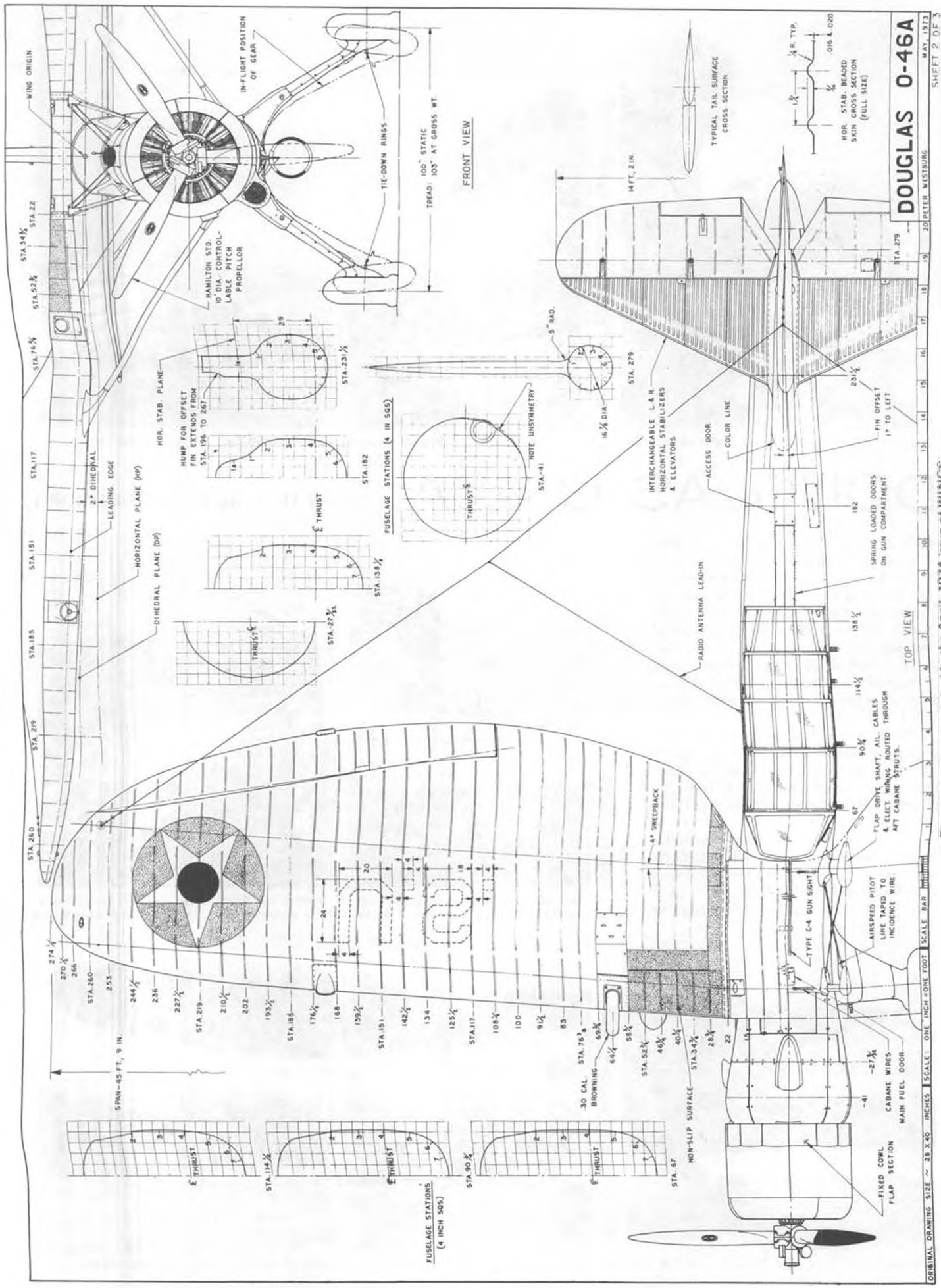
● Seldom do we see such a good example of evolution in aircraft design as we have seen in the development of the Douglas high-wing observation airplanes of the 1930's. Comparing the 0-46A to the 0-31B, (MB, Jan., 1974), we see an airplane that could meet today's FAA airworthiness requirements, compared to a quite primitive airplane with wire-braced wings straight out of WW I.

There were two reasons for this advance in the short span of five years. Engineers learned how to design fuselages of aluminum shells that took the place of steel tubes and fabric (later applying this monocoque design to wings), and big, high-horsepower radial engines were perfected. What resulted was what today's engineer calls a quantum leap in technology, and it came

Continued on page 66

Tail-on shot shows the canopy to fin fairing. LH elevator was flipped over and used on right side, was identical except for drain holes. Trim tab control on bottom left, top right. Note square cars!

At Wright Field, Ohio, May 1936. The O-46A was nearly 800 lbs. heavier and a foot longer than the XO. A beautiful scale modeling subject!



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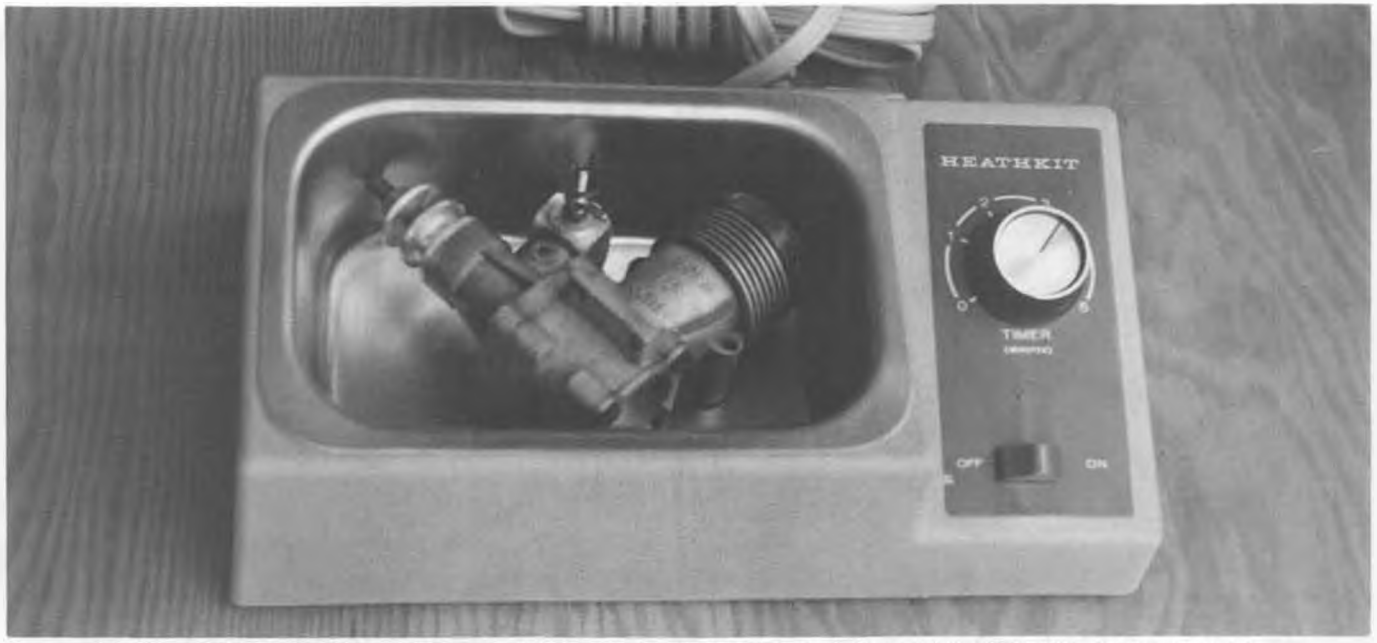


The completed Heathkit GD-1150 Ultrasonic Cleaner. A Webra Blackhead .61 R/C rests in the stainless steel tank to indicate capacity.

PRODUCT$ IN U$E

The HEATHKIT GD-1150 ULTRASONIC CLEANER
Review by BILL NORTHROP

● Most conscientious modeler/husbands are always on the lookout for ways to make their hobby more attractive, and therefore more acceptable to their wives.

The Heath Company, Benton Harbor, Michigan 49022, provides a unique method of achieving this goal. As most everyone knows, Heath produces kits for everything from trail bikes to electronic organs. In between, you'll find such things as electronic test instruments, TV sets, broadcast and amateur radio equipment, high fidelity/stereo and quad amplifiers, tape machines, microwave ovens, garage door openers, intercoms, electronic boating accessories, automobile testing equipment, and of course, several radio control systems.

Modelers (and we don't mean the "buyer-flyers") basically love to put things together (and sometimes take them apart), and even though their primary interest is creating models of their choice, the idea of doing things with their hands (mechanically, that is) always provides a great deal of satisfaction.

Obviously, then, Heathkits and modelers go together like ham and cheese, and being equipped with more than enough of the basic tools required and the ability (if not always the desire) to follow instructions, the modeler can create items for his family while enjoying his hobby.

The new Heathkit GD-1150 Ultrasonic Cleaner is a perfect example of a kit-building project that results in an item that is useful to all members of the household. In it, you can clean, through the use of ultrasonic sound waves, most any item that will fit into the cleaner bath. Most importantly, it will clean delicate jewelry items (except pearls and turquoise) without harmful scrubbing. For the modeler, it's just great for cleaning up that engine with which you "did it in the dirt."

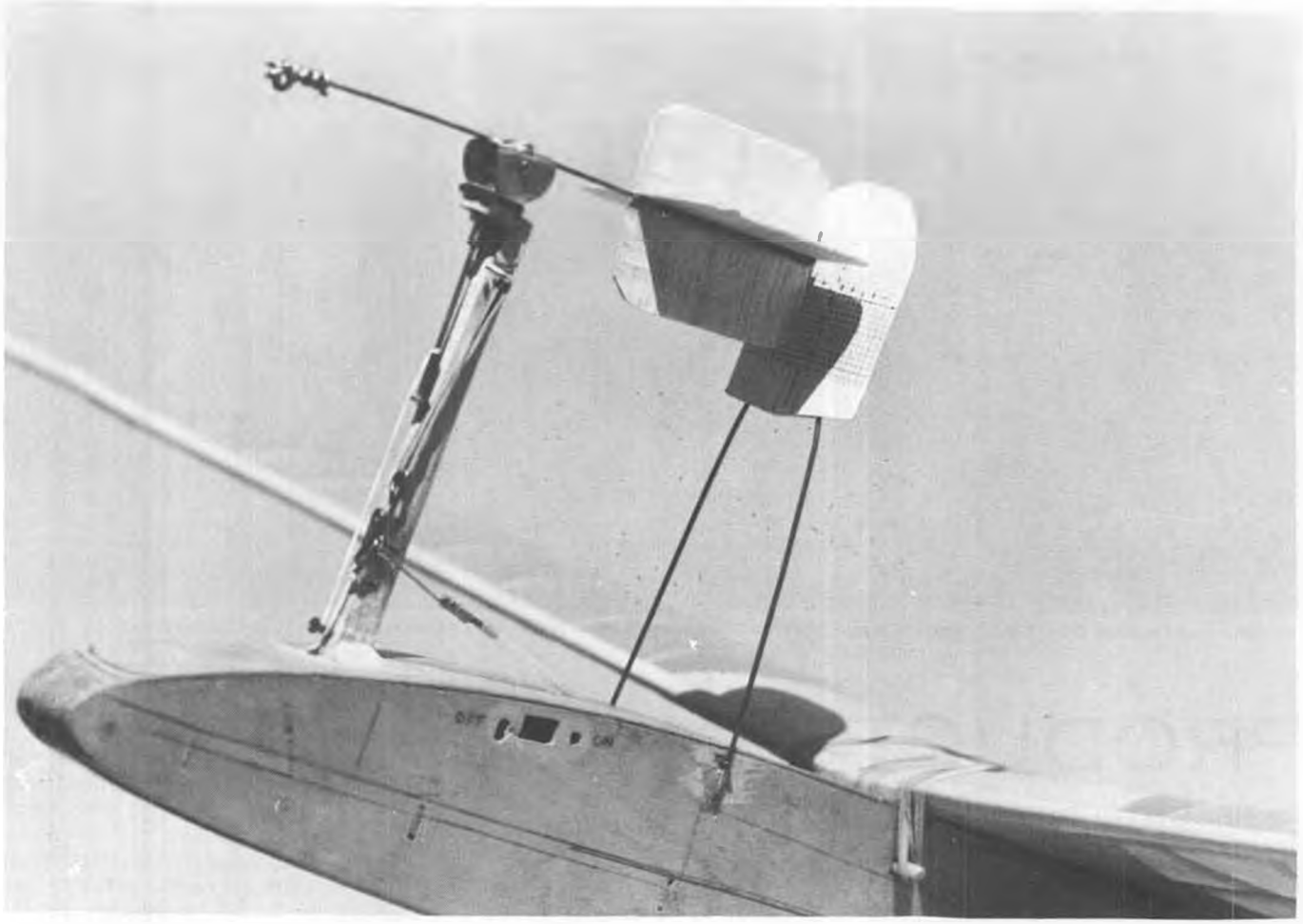
The theory of ultrasonic cleaning, as explained in the Heath instruction manual, is as follows:

"The electronic circuit produces a 41 kHz signal which is amplified and fed to a (41 kHz) lead-titanate-zirconate transducer. This transducer converts the electrical signal into a mechanical motion by the expansion and contraction of the transducer. This motion is coupled to the cleaner tank through the epoxy bond.

"The motion of the tank creates pressure variations in the cleaning solution which produces microscopic bubbles. These tiny bubbles grow and collapse in an action called cavitation. This cavitation causes high instantaneous pressures which force the cleaning solution through the contaminants so they can be dissolved.

Continued on page 65

Ultrasonic cleaner parts spread out before the project was started. Actual working time to finish assembly of the kit was under two hours. Wives will like the way it cleans jewelry.



R/C SOARING

ANGLE OF ATTACK and SKID or SLIP INDICATOR.

This month, guest editor FRANK ZAIC discusses some interesting experiments he has conducted, and goes on to explain how you can join in the fun. Results could change your thinking on R/C soaring.

● My curiosity has finally been satisfied. I always wondered what sort of an angle the airflow makes in relation to the fuselage when a model is circling under the influence of the rudder/dihedral combination. Now I know.

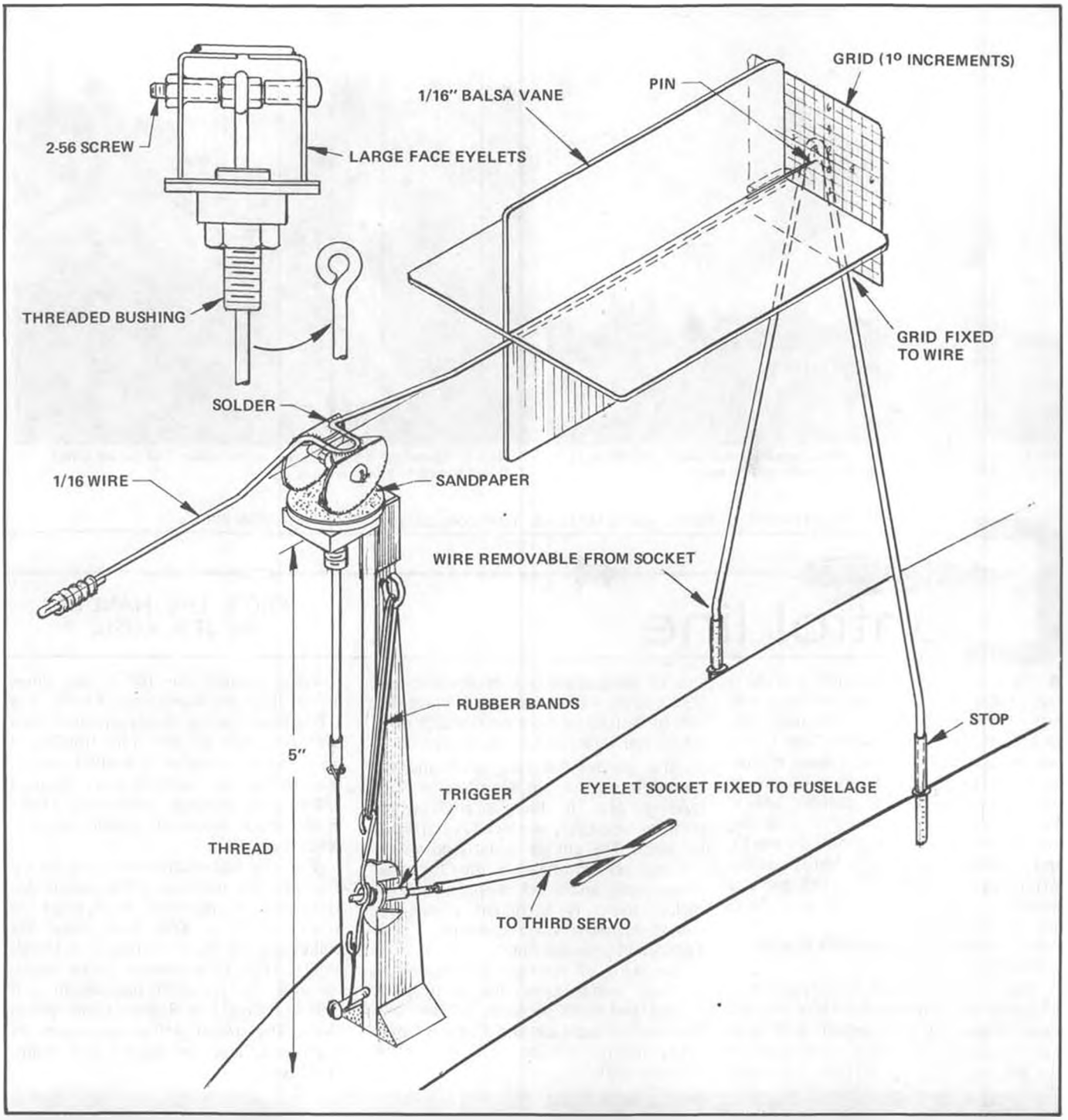
Back in 1942, I installed an angle-of-attack recorder on the original "Floater" and found that the angle of attack was around 5° when the glider was adjusted for best duration. But the drift angle remained an unknown factor until a few weeks ago when I checked it with the angle of attack and drift indicator, or recorder, on the new R/C "Floater".

During a straight away glide, held to seemingly best duration attitude, the angle of attack was found to be 5°. Then the "Floater" was set to a normal, shallow, thermal hunting circle. In this attitude, the angle of attack was 4° and the skid (outward) was 3-1/2°. This airflow relation to the glider was expected and was not a surprise. Left rudder will produce a right skid in which the right dihedral will cause the wing to bank into a left turn.

The surprise recording was made when the "Floater" was forced into an extreme left circle pattern with full left rudder and full up elevator. At this attitude the recorder showed that the angle of attack was 5°, and the left slip was 8°! This recording showed that the relative airflow changed from a 3° skid in normal circling to an 8° slip (inward) during the extreme banking turn. This means there was a change of relative airflow of 10°, and that the dihedral effect changed from right wing to left wing.

After a bit of thinking and trig, the 8° slip looks normal under the circumstances. The resultant of the dihedral and slip angle is 8° angle of attack for inner wing half and 3° for the outer wing half. Assuming a 50 ft. dia. circle and a bank of 45°, the difference in the air velocity between the inner and outer wing tips is considerable, and the difference in the angle of attack between the two halves makes sense . . . 8° on the fast side.

The above tests were to be just a beginning of a series, but someone took fancy to the E-K transmitter which was temptingly left in the garage with the door open. Not knowing when all incidentals will be again in form, it seems best to print the results now.



RECORDER

The basic requirement was for a two axis motion, with ability to lock the vane on R/C command. The design shown was made from parts on hand. Shaft is part of a true center shaft with a loop on one end. A 2-56 machine screw just fits into the end loop and is held in place with nuts . . . and the large face eyelets just fit on the 2-56 screw.

The cruciform vane wire is soldered to the eyelets so that vane motion is converted into eyelet and vertical shaft rotation. The only missing item now is how to lock the motion so that it will stand up under airflow changes while the glider is brought down for recording the setting.

To lock the vane position, the eyelets move over a base which is topped with emery cloth or sandpaper. And the eyelet edges are also serrated to assure firm friction lock. The lower portion of the shaft is attached to strong string which passes around a screw to the "eye" of the trigger arrangement. The other end of the "eye" is tensioned with enough rubber bands to assure tight lock of the eyelets to the sandpaper base. When the trigger pin is pulled by the third servo, the rubber pulls on the string, which in turns pulls down on the shaft and its top assembly and locks the vane. Total mechanism costs less than 50¢ (not counting the R/C portion).

The angular position of the vane is registered on a chart which is graduated into one degree scale. The chart is positioned so that when the vane is normally zero to the base line, the vane pin would register zero. When the glider lands, the chart supports are plugged into eyelets fixed to the fuselage and the chart is pressed against the register pin.

The usefulness of such a recorder is obvious. Just knowing the actual airflow in relation to the model will make it possible to change or modify your model . . . Besides, it may add a bit of truth to model aerodynamics (A paraphrase of a saying by Johnny Clemens, our AMA president). ●

No, disaster is not about to strike. Ron Wilson, W.A.M. president, is hovering his Skyraider in W.A.M. style carrier event.

Ron is "lowering" his ship down to the cable. The model is not flying forward. Text explains.

BELATED PHOTO CREDITS: KATE MANSKE, TOM ZON, DENNIS SCHAUER, DON WISE.

Control line

"FROM THE HANDLE"
By JED KUSIK

● My thumb is healing and I can use it for writing again. It now matches the rest of me for looks . . . it is ugly! My luck is still holding, however, and I have not gotten any smarter. I went motorcycle racing in the desert a couple of days ago, against the doctors advice. You guessed it. I was out of practice, not having ridden for about six weeks, and crashed, injuring both knees and my left hand. Oh well, you don't get any smarter . . . just older . . . if you don't kill yourself first.

ARF STUNT FOR BEGINNER AND EXPERT.

That's right, we can now forget how to build an airplane, just like the RC flyers (some never learned). L.M. Cox has released a foam wing stunt model of the ME 109. It is big, 30 inch span, with lots of wing area. It uses the two-port 290 engine with a new back plate that can be bolted to a conventional firewall when you wear out the foam plastic.

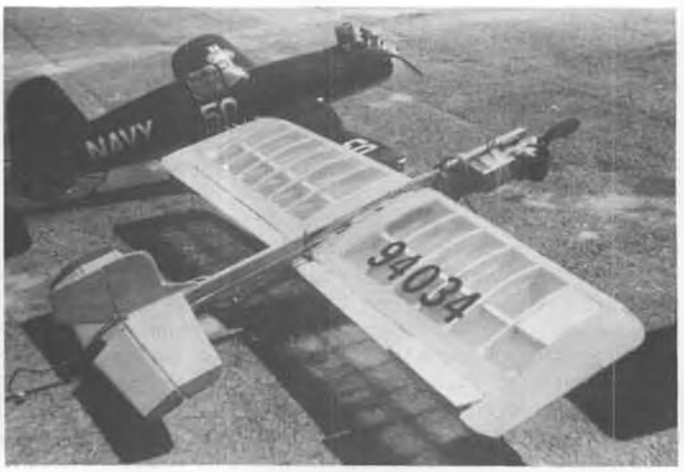
The stunter has long nose and tail moments and a big elevator. A 'CG' landing gear is incorporated, which permits beautiful, perfect take-offs and landings. The engine is detuned with a low compression head, a brass fly wheel noseweight, and a 6-3 prop. In this condition there is sufficient power for round maneuvers only; loops, Figure Eights and inverted flight.

Speaking of inverted, the model has a stunt wedge tank that is properly vented and feeds perfectly all the time. The tank is separate and I suspect that many people will be using it in other 1/2A models.

As a trainer, the 109 is ten times better than the company's PT-19. The 109 comes with a spring clip that slips over one side of the stab, holding it level, yet the elevator is flexible enough that full handle control gives about a 1/4 inch of elevator movement. Flight in this mode is smooth, gentle and self-neutralizing.

For the hot shots that want to fly a good crisp pattern, a few simple adjustments are necessary. First, hook up a set of 30 x .008 wire lines. Sig makes a good set of multistrand. Install a TD, High Compression Glow Head. Remove the flywheel noseweight and install a Cox 5 x 3 grey competition prop. The motor will now scream its heart out, and the model will really maneuver.

AMA style profile Guardian built by Jim Collin, designed by Dick Lietric. Plans will be in a future MODEL BUILDER.



The two extremes of carrier flying . . . the functional and the aesthetic . . . OK, who said which is which??

John Swift and magnificent Sea Fire AMA carrier. Veco 61R/C, 49 oz., throttle, flaps.

Dick Byron's winning Guardian carrier ship at the Mid Western Championships.

Jose' Martinez built this AMA profile carrier from Berkeley plans. Dig the Cox "fuel tank."

I received the 109 for testing, the weekend that I got out of the hospital and my right hand was completely wrapped up. It took me about 45 minutes to assemble and hook up the model. An average 10 to 12 year old will have it ready to fly in 15. The wings are held to the fuselage with mylar tape. I don't think there is quite enough surface area on the fuselage fillets for the tape to stick to and the wings might later pull away because of this.

Tony Naccarato and mom, Addie, are a pro carrier team. Skyshark, 60 powered.

The decoration markings are colored stickey paper and the first squirt of fuel washes them off. They are definitely junk, but they don't affect the flying so who cares?

The landing gear snaps into a slot in the fuselage and is supposed to be held in place by a plastic catch. On my first flight, the gear dropped away. It never really wanted to stay in, although it did occasionally, probably by accident. A rubber band around the gear and over the body solved this problem.

The needle valve is the fine thread (128 threads per inch) unit and tuning is aggravating, since a little tweek does nothing, and the running adjustment range is about a three or four turn variance. This is fine for the novice, I suppose, but it just aggravated me because I am used to quick needles and quick throttles that are always WFO.

On a 10 point grade scale, the 109 rates an 8, with all other Cox ready-to-fly's scoring a 2.

Speaking of stunt, I was very nearly mugged at the San Jose 4th of July Annual by the PAMPA contingent. Seems they were taking my previous articles personally. If they had only read everything before seeing red they would have known that I have been pointing my finger at the Southern California stunt image. There were nearly 80 stunt entries in 4 categories at San Jose on the 4th, while the last contest in Los Angeles had 12 entries. You can be sure that the next time I want to fly in a good stunt contest I'll be going to San Jose, California.

GOODIES FOR GO AND SHOW.

It's been a long time since we could buy a fuel shut off for controline. Tatone Products is now producing a nice shut off similar to the old K & B. It's a spring loaded plunger valve with a wire trip. Not too big, not too heavy, it seems to work just right.

* * *

Arnold Kosby of Technamics Corp., P.O. Box 1665, Scottsdale, Arizona 85252, has an in-line pressure check valve that is really trick. It's 1/8 inch dia. by 1/4 inch long, and it goes inside the pressure line from the engine to prevent any flooding or pressure loss. With this little valve in place, you don't have to complicate your system with a pressure line shut-off. Price is just $2.00. Arnold is also going to have available

Continued on page 50

Time to leave the deck! Charley Beverson's ship makes landing approach.

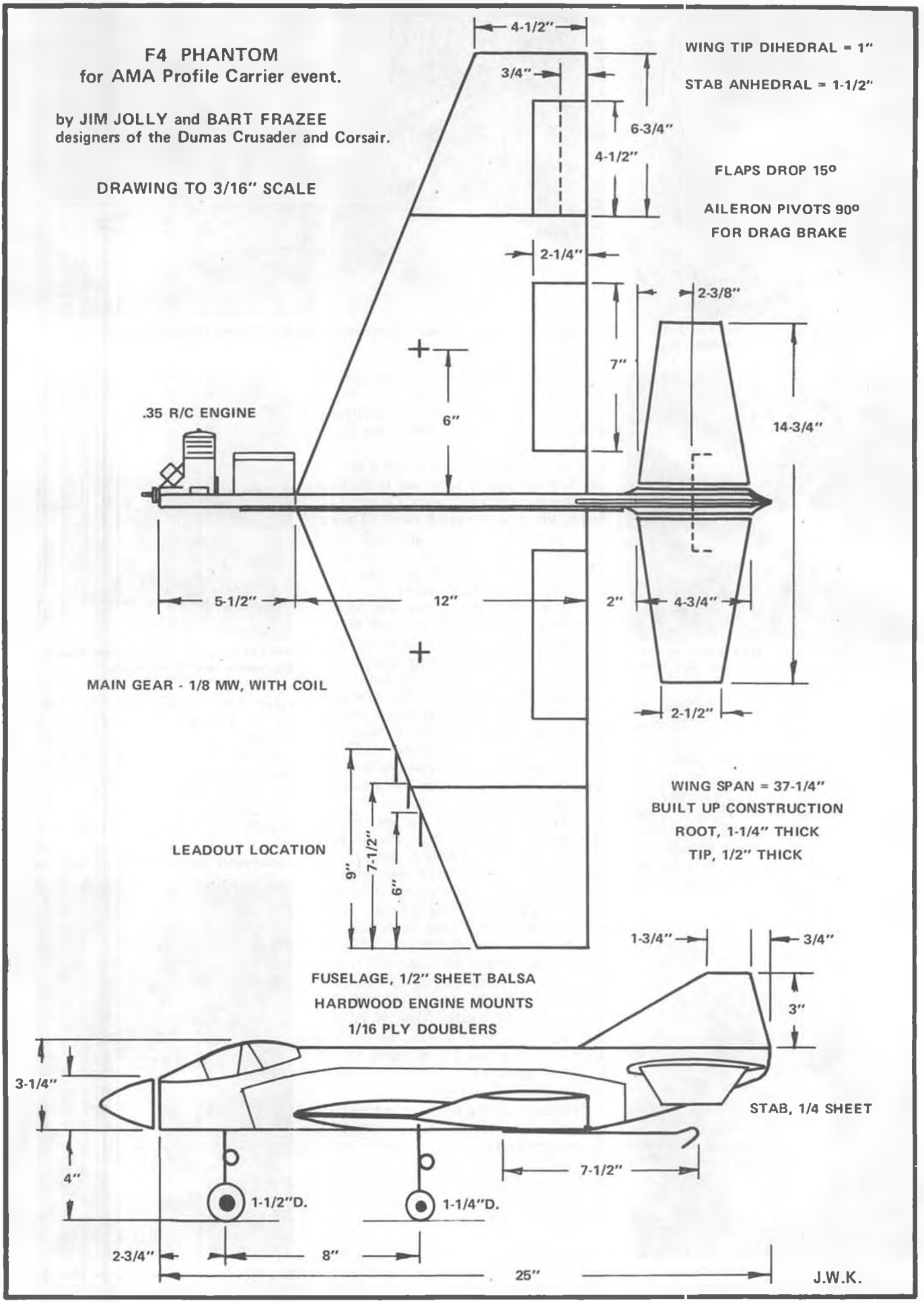
AMA Profile Carrier 3-Views on next page . . .

Ron Duly, carrier event director, checks John Swift's Sea Fire. Ron sticks to the rules.

F4 PHANTOM
for AMA Profile Carrier event.

by JIM JOLLY and BART FRAZEE
designers of the Dumas Crusader and Corsair.

DRAWING TO 3/16" SCALE



Chris, Andy, and Bill Sargent, with a whole bunch of "Yankees". Big ship is manufactured by Grumman American Aviation Corporation.

AMERICAN "YANKEE"

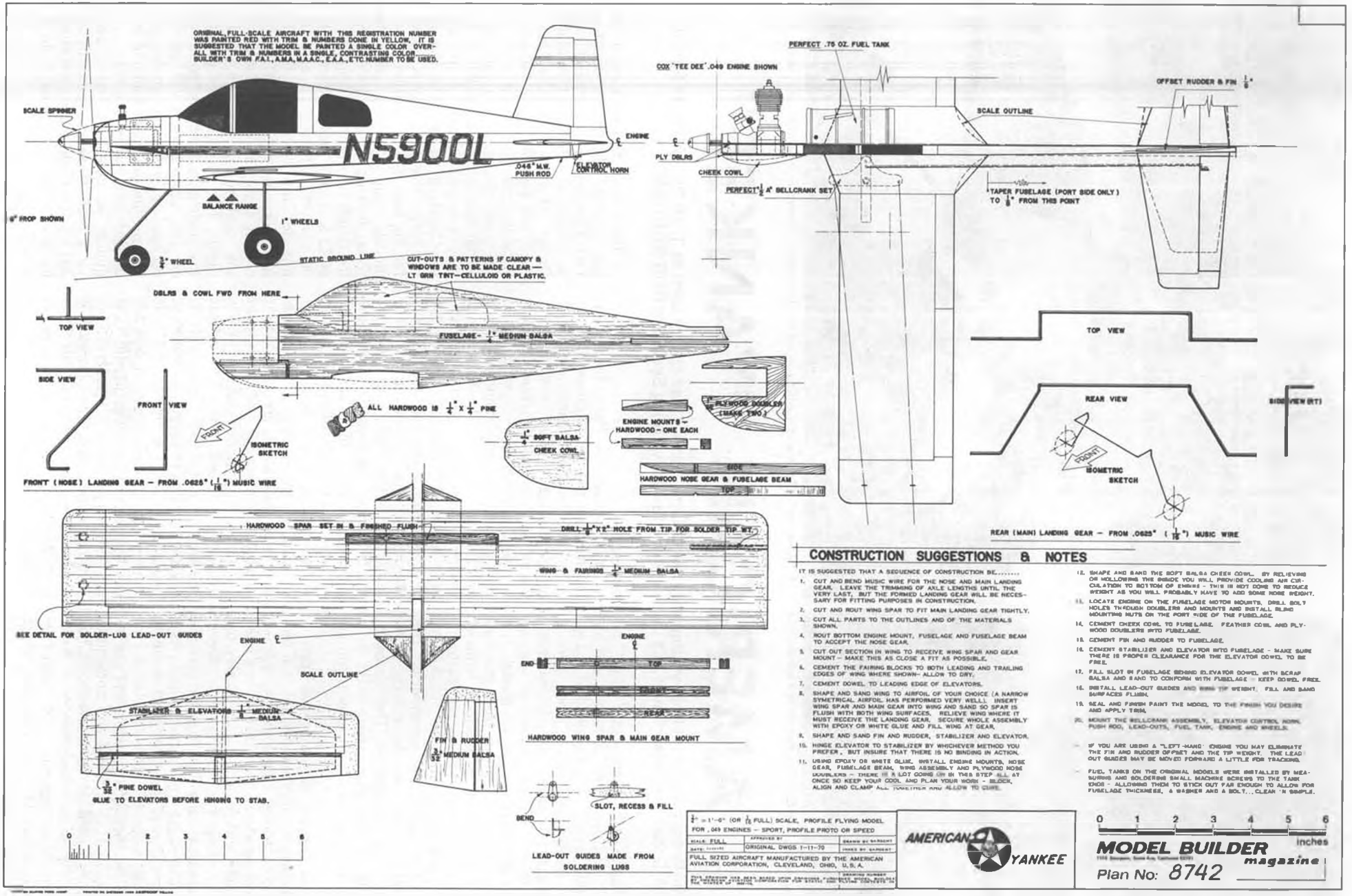
A multi-purpose model for young and new C/Lers, the Yankee can be used in 1/2A Profile Proto Speed, 1/2A Speed, has been flown as a Junior entry in AMA Flying Scale. By BOB SARGENT.

● The real-life "American Yankee" aircraft, and models of it, have scored big in the appeal department. For many, the smart appearance, compactness, bright performance, agile responsiveness, and relative low cost aspects of the real plane will carry over to the model. The model "Yankee" differs from the conventional control line model in terms of appearance, construction, and performance and yet it fits the bill for the novice or "pro"-type aeromodeler. The model can be flown for strictly sport, or in class competition. The durability of the model allows it to serve as a trainer as well as a multi-season contest ship.

The tricycle gear will save many a propeller, but more important, it allows the true novice flyer a chance to make a slow (gradual), even takeoff in a level attitude without calling for up elevator . . . avoiding the painful first flights which are usually that "half lap over the top and straight in" type of trip. As a competition model, the Yankee meets the AMA specifications for Half-A Profile Proto Speed for Juniors and can be flown in Half-A Speed and does quite well for itself in both events. It has been flown as a Junior entry in AMA Flying Scale and has been entered in Static Shows in both Scale and Sport categories.

In December of 1969, the manufacturers of the real airplane . . . then American Aviation Corporation and now, through recent merger, the Grumman American Aviation Corporation of Cleveland, Ohio . . . made three-view drawings of the American Yankee available to modelers. The Yankee parents had sponsored trophies for the best American Yankee entries in the 23rd National Plane and Space Model Show, which was held in April of 1970 in Cleveland. Our flying club (plug for the Skylarks) had recently toured the American Aviation plant and had been witnesses to the real ships coming out of their "nest". The tour had been stimulating, the receipt of the three-view was inspiration, and the contest provided the motivation. My boys (then 14, 11 and 7) were hooked, and so was the old man; it better suited our budget and was (I still believe) a good teacher. I was still trying to keep junior birdmen interested in Half-A flying. The first Yankee (our little N5900L) rolled off our minature production line in time for the show and made its static, fledgling appearance. The hardware it brought home was won in both Scale and "Yankee" Classes and was much larger than the model.

Three more Yankees came off of our line to make their flying debut in the first Cleveland flying contest in 1970 at Cleveland's "Control-Line-Modeler's-Dream" Flying Field. Yankees they were; one red, one white and one blue. With all three boys flying in the Junior age group that year, the contest really tested them and the birds. Between them they managed to bring home trophies for Cleveland Sport, AMA Half-A Profile Proto Speed and Half-A Speed. Not for the lack of competition either, the models really "turn-on" and made a good showing for themselves even in the hands of a novice. Flying on a pair of 42 foot .008 lines, the plane held well on the ends of the lines and handled fine for the boys. The first flights, naturally, were "right-off-the-board" official flights in competition without any preliminary, practice, and trim flights. This is not the best practice for any modeler, but even us "good" modelers (on white horses) will admit that occasionally our best intentions go afoul and we find ourselves building by candlelight just before a contest . . . even though we may have known about it for a year! (Now this is strictly against AMA Safety Code and not recommended by any of us . . . we have "told it like it is"!)



FULL SIZE PLANS AVAILABLE — SEE PAGE 72

An interesting study in the full meaning of 3/4" = 1'-0" scale.

The balance of the 1970 contest season saw much work on engines and practice flights . . . no modification to the planes . . . and they kept on winning more of momma's favorite dust collectors. Competition improved . . . with more Yankees being built and flown. Johnnie Smith (THE John C. Smith, the "Smitty" of old-time speed fame, the guy who now dispenses tomatoe juice . . . wow!, "it sure don't taste like it", certain ethnic background type jokes (?) and quick-fix resins at speed bashes in his "golden years"), his wife and his boys tried a few for practice and competition. Their trophy collection enlarged (they're thinking of adding a trophy room!).

John went exotic on us and, with Dale Kirn's help and a little assist from Bill Keller, smuggled in some left-hand engines. The left-hand engines *do* make a difference. During the 1970 season, John's youngest was still able to be tucked into a pop-cooler basinette at a contest, but his next youngest was an able competitor with a Yankee and also flew one in front of 20,000 people in the grandstands at the 1970 Cleveland National Air Races . . . before his 6th birthday! The helpful torque of the left-hand engines actually works for you in takeoff and flight . . . the tall grass on gentleman farmer Smith's estate caused enough line snags, resulting in ground loops and broken fins and rudders, that John just left the fin and rudder off one Yankee and it flew quite well without them! (If you're using the conventional, right-hand engine, we would suggest you set the fin and rudder at an offset as shown, and keep the tip weight.)

My oldest son, Chris (who now states he was never as young as he looked in the pictures with this article), placed his model with the winners in the Cleveland Sport Race event at the 35th Annual Cleveland Junior Air Races in 1970 (Bill, the middle-aged son, placed in the Half-A Profile Proto Speed event and Andy, the youngest, placed in Junior Half-A Speed with Yankees), and won, in addition to his trophy, a flight in a Cessna 180 which had been donated by a local sponsor. Word of this did reach the management of the (then) American Aviation Corporation and it didn't seem right to them to win a ride in a (BEEP)-180 with his Yankee. Chris was invited to visit American Aviation at their plant. He packed along his plane, lines, fuel, and battery just on the chance that someone out there would like to see it fly. (Bill and Andy managed to stow themselves and their planes in the trunk for the trip also.)

Yankee production was slightly interrupted that afternoon when Chris flew his model for the management out on the concrete apron behind the plant. It was a command performance for the

The brothers Sargent about to get the thrill of their young lives, a check ride in a 1 to 1 scale "Yankee". Modeling can have nice ties.

R. W. Meyer, Jr., President of Grumman American, with Chris and the little Yankee.

little ship, in front of many of its bigger cousins, and the little bird seemed to sense it as it sang through the air. Poppa was more than just a little proud of his brood that day, and must have gotten something in his eye about the time Chris picked out the only patch of depressed dirt and grass around the apron to grease little N5900L in for a hot landing . . . the nose wheel is still out there somewhere as a memento to this page in history. Mr. R.W. Myer, Jr., President of Grumman Aviation Corporation, was to be given a chance at the control handle on the next flight, but, instead, Chris had to show the Yankee's versatility by flying it as a tail-dragger!

Big N5900L was brought from around the corner that day, to our surprise, and Chris was so happy he could hardly reply when Mr. Myer asked him if he would like to fly in a Yankee with the company test-pilot. When asked if they would like to go along as "baggage", Bill and Andy were not so awestruck . . . they ran in a dead heat to beat Chris to the plane. Aviation meant a lot in their lives before that day, but it took on a greater, lasting meaning from that day on. No plane in the sky has as much vital meaning to them as a Yankee. Grumman American is readying three-views for modelers of the Yankee's big brother . . . the new four-place AA-5 "Traveler" . . . and the boys are waiting to start building.

Construction of the model, for the beginner, tenderfoot or novice, should be accomplished with some help and supervision (more like an advising eye and second pair of hands) as some of the materials and techniques of building which are required may not yet be in his bag of tricks. The advanced novice or junior builder should find this model a pleasant challenge. The seasoned

Continued on page 50

Loren Williams built this beautiful rubber powered Grumman "Widgeon" over a 6 month period. It gained top scale points at the Flightmasters R.O.W. meet. Flights were too short to place high overall, but sufficient to qualify.

FREE FLIGHT SCALE

By FERNANDO RAMOS

● The 5th Annual Flightmasters R.O.W. contest is now but a memory for the sun-baked contestants and spectators. The letter perfect day saw hundreds of spectators watching model after model successfully rise-off-water. The once difficult task of making a seaplane model R.O.W. is now almost common-place. The challenge now becomes, "What odd-type or complex seaplane should be built?"

This year there were several new models that fitted into these categories. Loren Williams had an exquisite rubber-powered model of a Grumman Widgeon and Bill Stroman, already known for his "weirdies", had an .020 power Fabre. A model of the only Grumman Wildcat on floats was built and entered by Bill Pardoe. Other unusual models were Walt Mooney's beautiful flying Macchi MB 308 (featured in this issue), and John Oldencamp's outstanding little 1912 Borel Hydro. Both of these models were rubber powered.

For the first time, the Flightmasters added a Schneider racing event for control line and restricted it to 1/2A engines. There were seven entries, which wasn't bad for a first time event.

The contest was in full swing by 8:30 in the morning, as most contestants wanted to get their qualifying flights in early, then retreat under one of the many tent-awnings, with a "cool one", to help alleviate the heat. There is so much activity going on at the same time that it is nearly impossible to see it all. In rubber power, Walt Mooney stole the show again with a magnificent flying Macchi MB 308, which took-off realistically, flew like the real thing, and proceeded to land on the water. Larry Moss bounced back to take second place after having to repair his Cessna C-37 fuselage, due to a broken motor. Bill Pardoe won 3rd with a Wildcat F4F-3S.

In F/F gas, Bill Stroman amazed the crowd with his Fabre. The Fabre is a very early "aeroplane" design of canard configuration, which when carefully examined looked like a flying truss-type bridge. Bill edged out perennial winner Jim Adams for first, but Jim and his Loening placed second. It is really a thrilling sight to see the Loening after take-off, fly overhead and shedding droplets of water from its pontoon. Third went to Walt Mooney and his Dornier Libelle.

R/C also has a perennial winner, Joe Tschirgi, with his unusual Hansa Brandenburg. Joe can really fly this unusual machine. Second place went to Granger Williams and his Al Williams "Mercury", followed in third place by Harry Apoian and a beautiful flying 1914 Blackburn.

In the C/L Schneider, Tony Naccarato

No, it's not a dragon fly that got caught in an electric fan. It's Bill Stroman's model of a Fabre, with which he placed 1st (!) in scale gas F/F at the Flightmasters R.O.W. meet.

Bill Pardoe's model of the only Grumman Wildcat on floats. It placed 3rd.

Walt Mooney's first place winning Macchi MB 308. Construction article begins on page 35 of this issue.

John Oldenkamp's rubber powered 1912 Borel Hydro. Note how water reflection picks up construction of wing and stab.

was edged out for first place by his mother Addie, both flying Macchi MC - 72's. Their speeds were both 59 mph. Third went to Jim Hale flying a Supermarine S-4 and his speed was 57 mph.

There is no question that scale R.O.W. has really gained in popularity, and rightfully so. It is a complete change of pace from indoor flying scale or regular outdoor scale. The spectators enjoy watching the models fly off of the water. If you missed this contest there will be another scheduled September 8, at Lake Elsinore. I might add that there are picnic grounds in the vicinity, and it would be a good opportunity to make the next R.O.W. contest an all day affair with the family.

I figured that rather than cover the contest in greater detail, it would be better to talk about float design as it applies to scale models. Fortunately, I have someone who is highly qualified to do just that. Bill Pardoe has competed four out of the five years that this contest had been held, and he has always been one of the winners. I cornered Bill the other day and asked him to reveal the technique he has employed in designing and building his floats. A good float design is important, because without it, your model will not leave the water. Even some R/C designs have difficulty in getting off, and more often that not, it is the excessive power that makes the difference. Obviously, this is not the solution for F/F. Let's see how he does it!

1. Use three-views of flat-topped and (relatively) flat-sided "Edo" floats suited to your model.

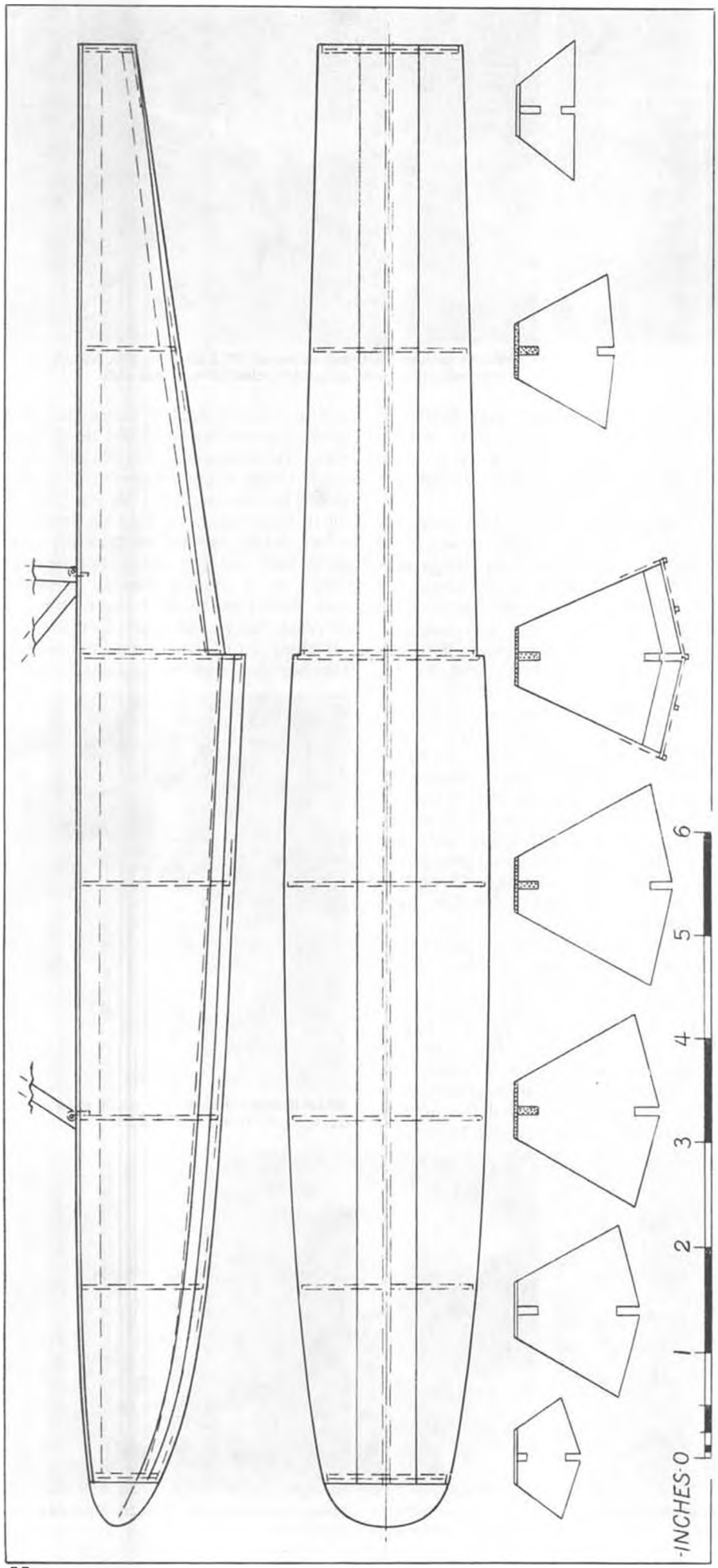
2. Scale up using your own personal method. I use the top line of a float in three-view as a base line, compute relative size multiplication factor, then take measurements at necessary locations (nose dip below extended flat portion of float top, distance to step from front and/or back of float, distance from top of float to various positions along float, including step, chine and bottom keel, etc.). Using measurements and multiplying by a factor, I plot "droop", which most floats seem to have up front, as other details needed to draw up complete side and top views. Formers are lofted in a routine manner, however, care should be taken to see that one is planned to be located at the front attaching strut, and others minimal in number (just enough to assist in form-

Loren Williams walks "on the water" to pick a launching spot for his Widgeon.

Addie Naccarato took first in C/L scale, nosed out her son, Tony, who was 2nd.

If there's ever to be a statue of Walt Mooney, the sculptor had better put him in this position or nobody will recognize him!

Bill Pardoe launches his beautiful little Fleet on floats. Next page has plans for the ones he's using here.



Another shot of Bill Pardoe's Fleet, just as it breaks water for a takeoff.

A rare bird indeed! Shows you how far modelers will go to avoid duplication.

ing 1/32 sheet skin).

3. Building is quite simple; attach the long flat top piece to a ruler or yard-stick (make certain that they are straight) using spring type clothes-pins one on each side at rear and at the position where nose droop begins. Lay top keel in place on a ribbon of glue, wedging up front portion of top piece to fit against keel, using scrap balsa. As this is setting up, put seam of glue on top of each former (it's assumed you've marked their location on the top piece), and set them in place, truing them with a triangle or square block to assure they are vertical with respect to the flat top line; next put drops of glue in the bottom keel notches in the formers. Assuming keels have been cut out, carefully insert them into the notches, starting with the straight keel from the step to the rear of the float. To keep things true I then prop a square block of wood (pine or spruce), against the rear of the rear former, preventing any tendency for the formers to shift as the front keel is put in place. The "step" former is actually two formers glued together, as can be seen from the drawings.

Loft the side pieces as accurately as possible, using the former dimensions. Remove the clothes-pins after the work is completed and you're sure the glue has dried. Remove the framework and place on a flat area covered with wax paper or "Saran Wrap". Put a bead of glue along each edge of the top (the float is still on its back), and on each of the formers, doing one float at a

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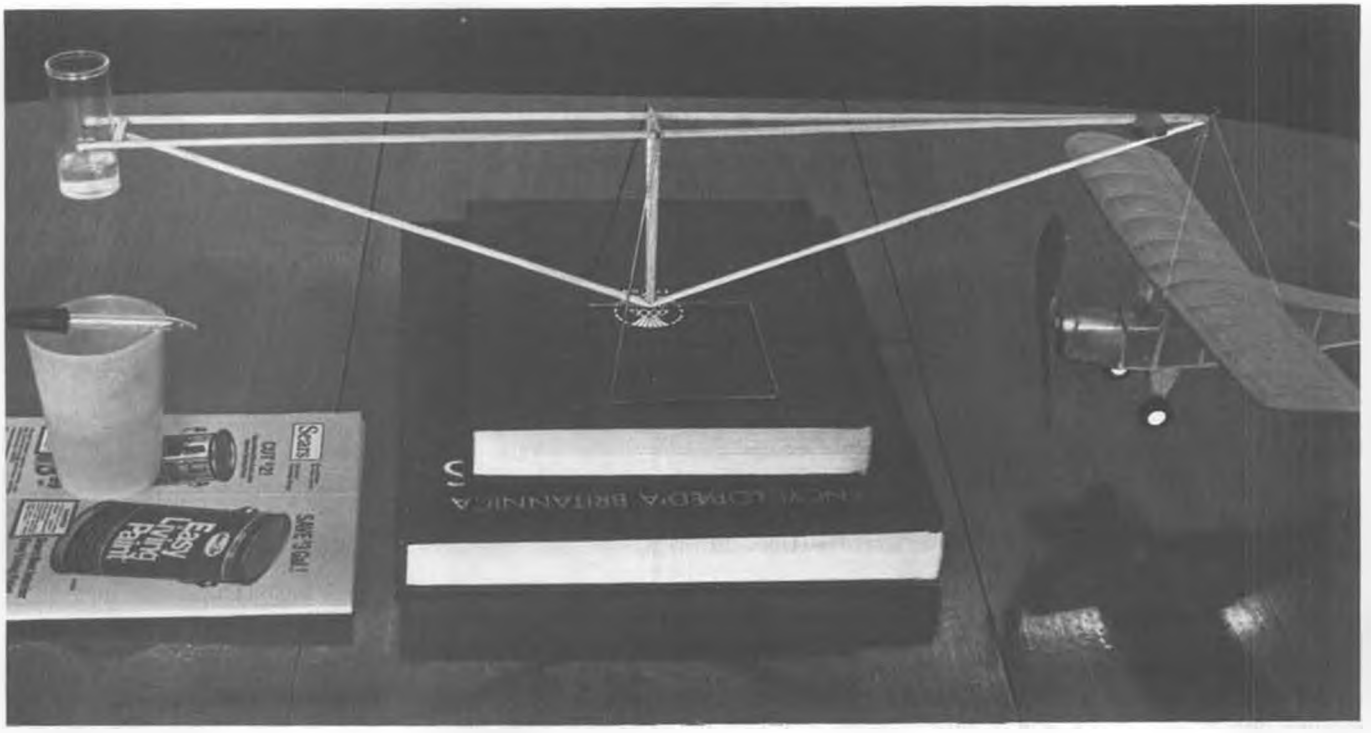


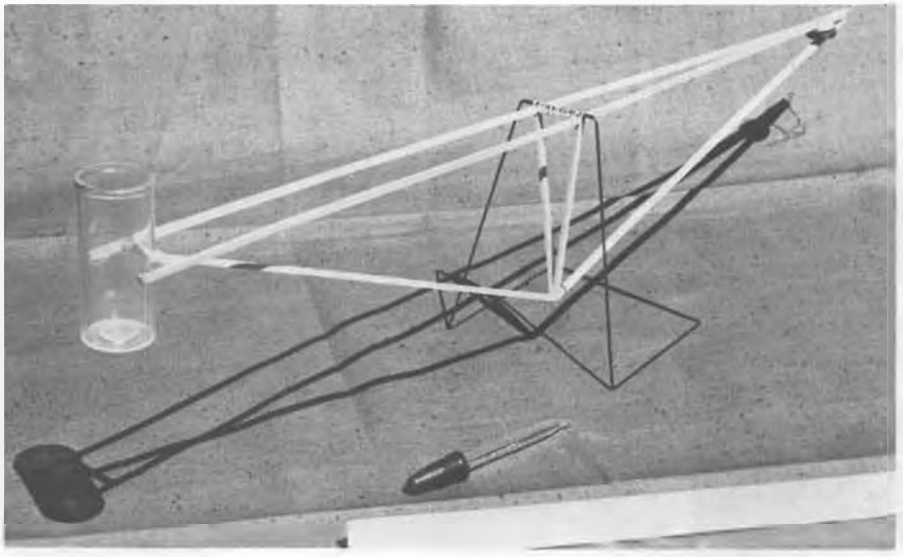
PEANUT SCALE... SCALE

Here's a one-evening project for builders of lighter-than-most-anything models, where weight is a very critical factor. No plans are needed . . . it's that simple. Text and photos by DANIEL WALTON.

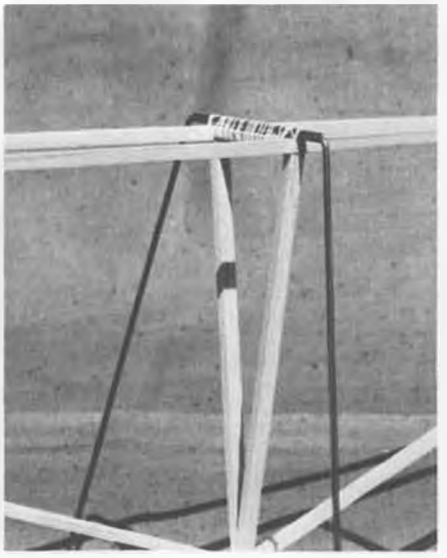
● The basis for this design is the centuries old beam balance . . . still a reliable and common device. The only difference is the substance used for balancing purposes. The principle here is that one cubic centimeter of water, under ordinary conditions, weighs for all practical purposes one gram. The variation in the density for a range of 40° to 140° F is a little less than 2%. To weigh a model, an eyedropper is used to count the drops used for balancing. My eyedropper gave 18 drops for one cubic centimeter. But because of surface tension and variations in orifice diameter you may wish to check yours with a graduated cylinder. Because of this small increment, accuracy is well within a tenth of a gram, which is sufficient for our purposes.

No plans are necessary, as actual construction of the frame is not very critical . . . except that the distance between the fulcrum and the ends of the beam should be exactly equal. Otherwise you will have a moment difference to take into account. The original was about 27 inches in length, which was enough to overcome the small amount of friction in the bearing used. However, a knife edge bearing could be used to advantage here, so there is plenty of room for improvisation.

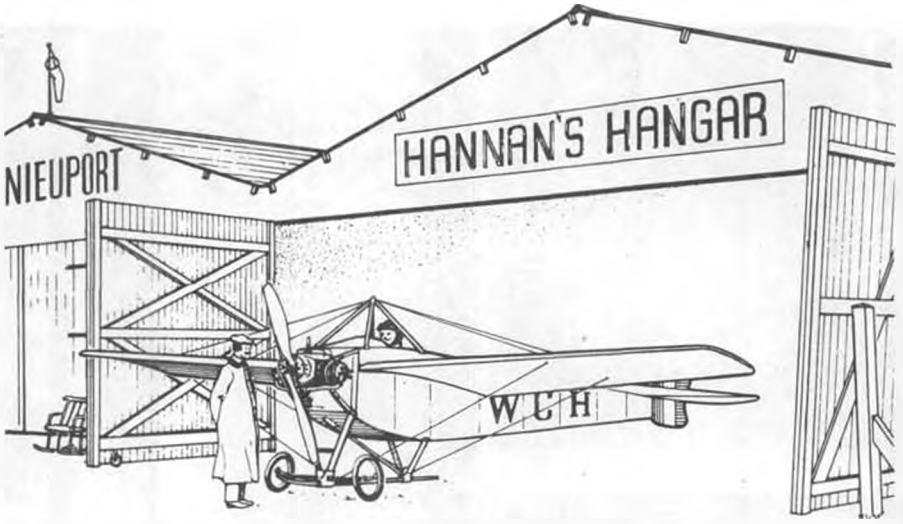
There you have it. A one evening project that is simple, inexpensive, and above all, quite accurate for measuring the weight of those Peanuts and small CO_2 designs. There is no excuse for using the SWAG method any longer. ●



Pay attention, folks! This is your detailed drawing! The little beam scale is so simple to build that no fancy drawing is really needed. Chemist's pipette will measure water more accurately.



Simple fulcrum does the job. You may prefer a knife edge, but why get complicated?



. . . being a collection of world-wide aeronautical cullings.

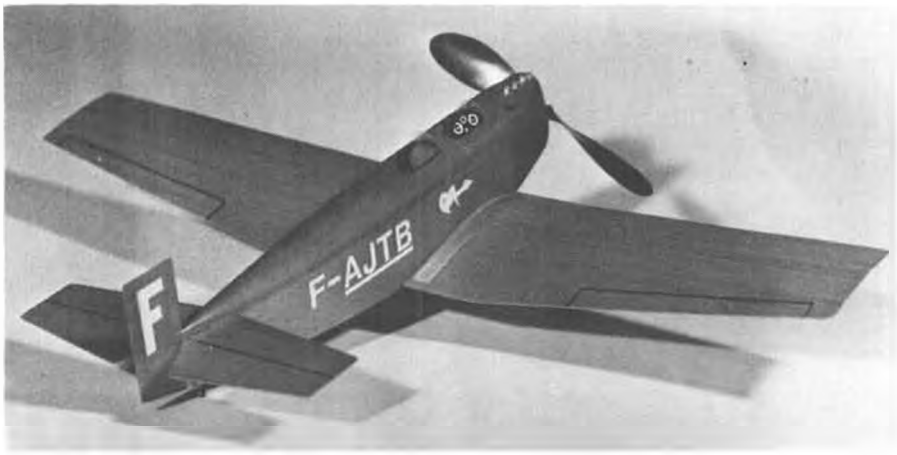
The lead-in this month is no exageration, as our mail bag has contained a high percentage of letters from other countries lately, demonstrating that aeromodeling knows no geographical or political boundaries. For example, take this little tidbit, courtesy of Mr. J.D. Gillies, of Scotland:

"A friend of mine was recommended by his G.P. (General Practitioner Doctor) that he should take mild exercise of the run-and-rest type, coupled with mental challenge. When my friend enquired what that might be, the Doc replied, 'Go home and make up an elastic-driven model aeroplane, then take it out into the Queen's Park and chuck it around for half-an-hour. Do this three times a week and you will not be visiting me unless you want to cadge some of my glycerine to lubricate your elastic."

Wonder what the OTHER A.M.A. would have to say about this fine, inexpensive prescription?

From the same source comes this little "life's like that" episode:

"Over at the flying club (full size aircraft) yesterday, a young lad was attempting to fly a stick 'n' rubber model of about 9 inch span, and was not getting much result (he was throwing it like a snowball), so I sat and talked to him, and gradually he got the idea of the smooth follow-through-with-the-prop running teknikky, with such success that the Air Traffic Controllers chased him off the runway! So then, his mother gave me a stern talking-to, and I crawled into my car and departed."



Peanut Farman 231 by J. Pouliquen of France. Photo by "Camera 2", Nice.

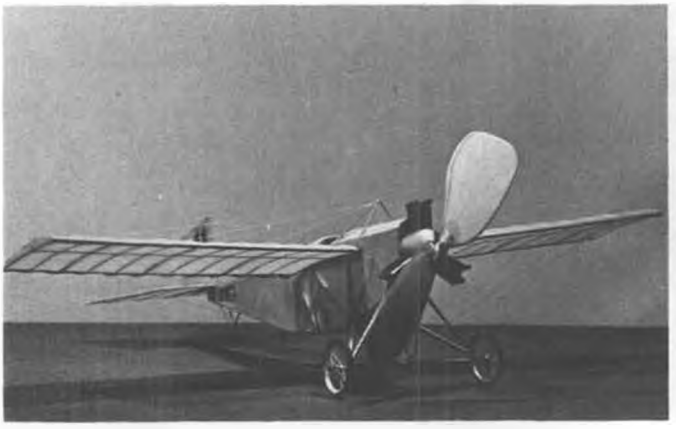
Hal Cover and his gear drive, rubber powered Bellanca observation. Photo by Joel Rieman.

JUSTA BUNCHA THOUGHTS AND HINTS

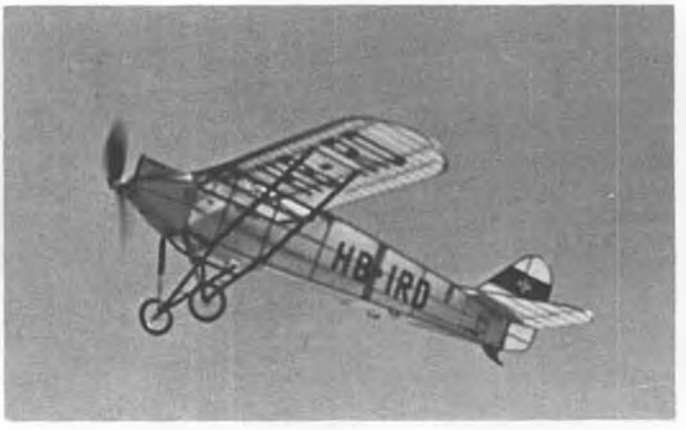
In case you don't already do so, try taking the few moments required to read AMA President John Clemens' monthly column. On top of his renowned sense of humor, John also drops in some real gems in the form of philosophy and even "handy hints". One of his latest was entitled SAVE YOUR BRUSHES, which we felt was well worth repeating here:

"Here is some advice that just might

Continued on page 64



Caudron Peanut by Bill Calwell, is said to fly "like a drunken humming bird." Who wouldn't, with a prop like that on your nose!



Bill Warner's rubber-driven Swiss Compte in action over Taft, Calif. Photo by Joel Rieman.

PHOTOS BY PHUDO

The Macchi MB 308 at rest on the glass-like surface of Lake Elsinore on the morning of its victory in the Flightmasters' R.O.W. contest.

PEANUT MACCHI MB 308 IDRO

Another 2-for-1 project, the Macchi was built at exactly double Peanut size, 26 inch span, so that the 50% reduction for the magazine is right on the button. Try 'em both. By WALT MOONEY.

For the Flightmasters' Annual Seaplane Contest this year, this version of the MB 308 was selected as part of an effort to win the rubber powered event. To be successful a model must be as aerodynamically clean as possible, and be stable enough to absorb the relatively high power that is required to get a seaplane off the water. What was required in my judgement, was a high wing airplane with as few struts as possible, this said, "cantilever wing", and my choices narrowed down to two; either the Cessna Airmaster on floats, or the MB 308 on floats. I opted for the Macchi because it had an opposed engine instead of a radial, and because the strut system for the floats was much simpler. It happened that I had a photo of the real item with the license "I-CARE", and that suited my sense of humor too.

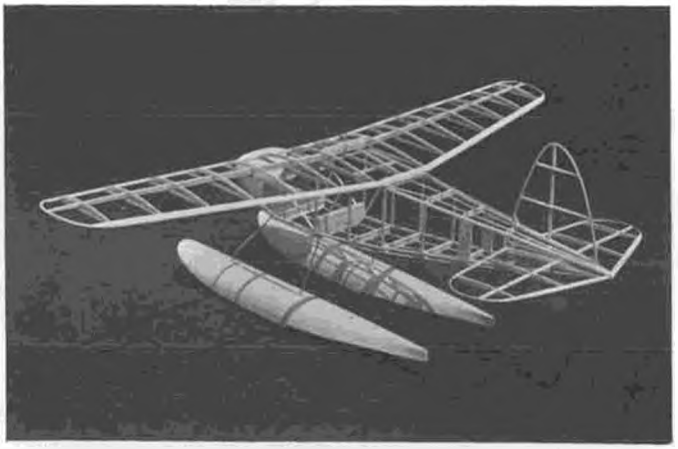
The model shown flys beautifully and did win the rubber scale event. Interestingly, second place went to a model of the Airmaster!

As has been the practice a couple of times before in MB, the model was designed with a 26 inch wing span so that when reduced in half, it is exactly Peanut scale. The 26 inch span model used 3/32 square longerons, so that 1/20 square can be used on the Peanut. Also, 1/16 sheet ribs were used on the large one, and 1/32 should be used on the small one. Stringers were 1/16 square on the large one so they should be 1/32 on the Peanut. I have found that Peanut Scale seaplanes are hard to R.O.W., mostly because the water is even further out of scale, so I have indicated the tricycle wheel landing gear on the plans for the Peanut enthusiasts.

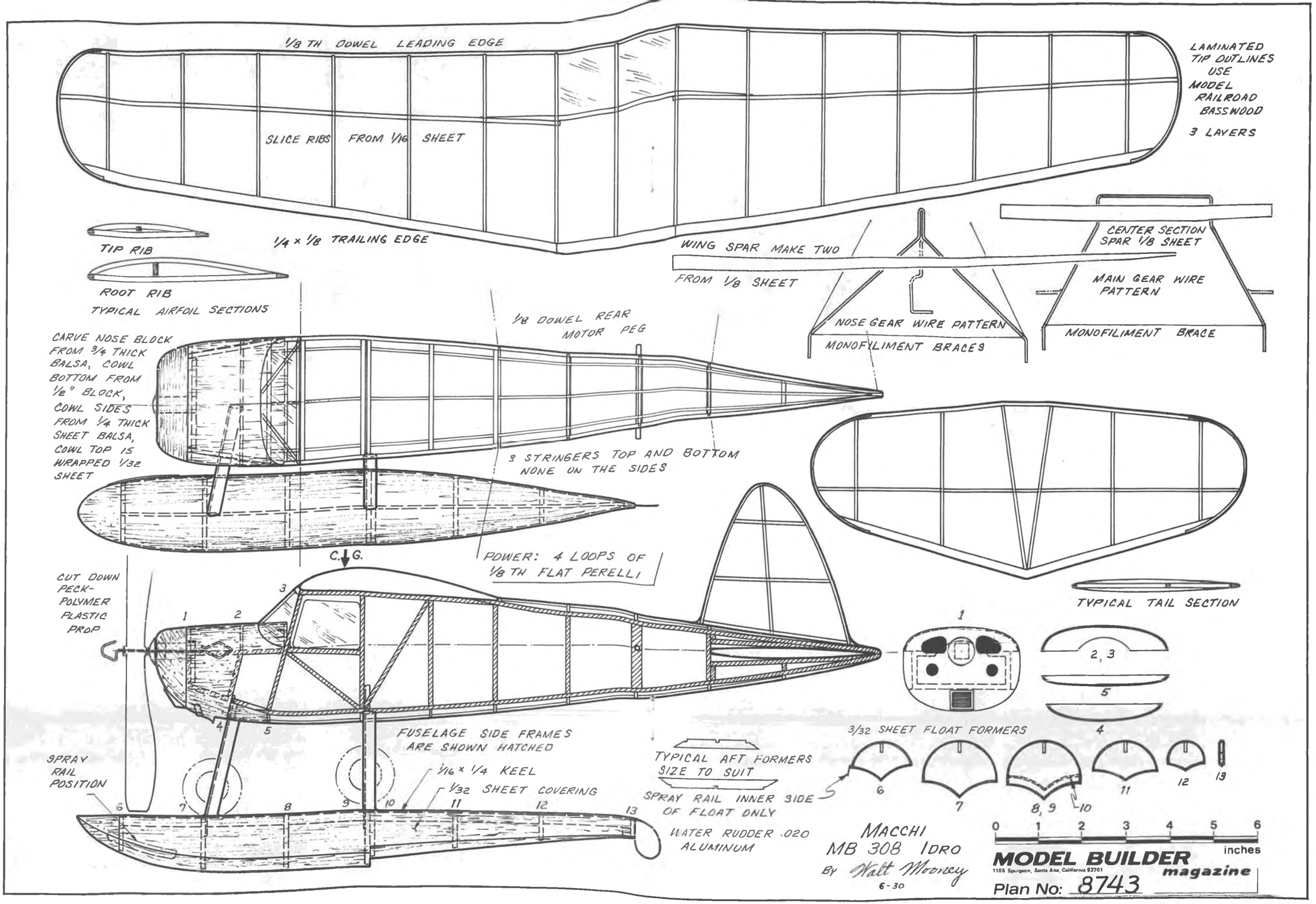
The airplane structure is the same old standard; fuselage sides built over the plans, sides removed and separated, cemented together at the tail and built into a fuselage box by adding cross pieces at each upright. Formers are added to the top and bottom cross pieces and stringers set in place. The noseblock is solid balsa and the bottom cowl aft of the noseblock is also carved from block. The upper cowl, back to the instrument panel, is wrapped sheet balsa. Wing tips, horizontal tail tips and the vertical tail outline were laminated, using model railroad basswood. The tail parts are conventional, flat, built-over-the-plans structures, which have soft wood caps added to the top and bottom

Continued on page 61

Howdya like that license number? It looks contrived, but Walt actually found pictures of the real thing. Nice, clean lines.



When you read how easy it was for Walt to dry-form that one-piece float top, you'll kick yourself for not thinking of it. Another gem!



FULL SIZE PLANS AVAILABLE — SEE PAGE 72

"Lucky Lindy" returns. Larry Conover's famous FAI design from the late 50's was enlarged half again by Dick Meyers, Gridley, California. With a Super Tigre 65, Dick flew 10 straight maxes to win at Taft, but didn't quite beat the Satellite's record of 13 maxes plus.

FREE FLIGHT

By BOB STALICK

As a columnist, one of the fears that I live with is the one which compares a previous column with the present one . . . and concludes that the more recent one is not as good as the earlier one. There are two ways of dealing with this problem. The first is to save the "better" material for later columns; the second is to shoot the works at first and hope like heck that someone comes to the rescue later.

Obviously, much of what you read here is not original. I depend a great deal on various club newsletters for information and ideas. Occasionally, you will read or see something completely "new" but these are the exceptions. Moral: Put MODEL BUILDER on your newsletter mailing list. Put Bob Stalick on your "new idea" list.

MODEL OF THE MONTH

While perusing some of the back issues of the magazines I have in the storehouse, I came across this one. It's .020 powered and has a 36 inch wingspan. A one year's subscription to MODEL BUILDER to the first person who gives the correct name of the model *and* the designer.

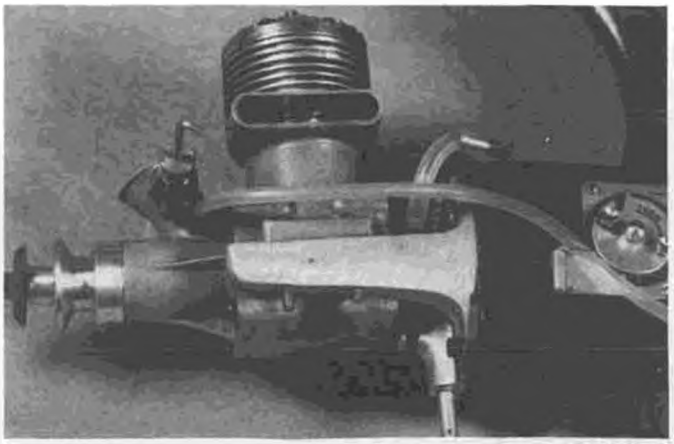
DARNED GOOD AIRFOILS

This month's DGA is the modified CH 407. This is a very "in" airfoil for Nordic and would probably do well for Wakefield. It has an excellent glide and was derived from a Wortman laminar flow sailplane section by Hank Cole, then modified by Phil Klintworth to thicken the trailing edge upper camber for strength. The blunt leading edge is supposed to give adequate airflow attachment without resorting to turbulation.

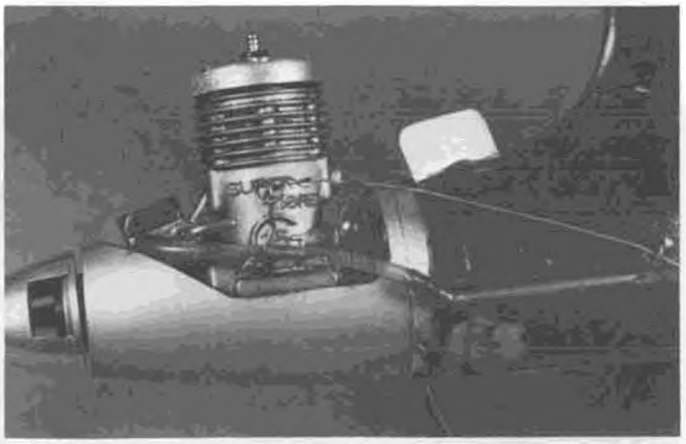
ODDS AND ENDS, HINTS AND TIPS, PLUS JUST PLAIN GOOD IDEAS I WISH I'D THOUGHT OF.

In looking over some of the newsletters which cross my desk, I have collected a series of good ideas which would be useful in making this hobby just a bit more enjoyable. Have you tried:

1. K-Mart camera timers. These can be simply converted for use as fuel shut-offs. They'll even fit the Tatone

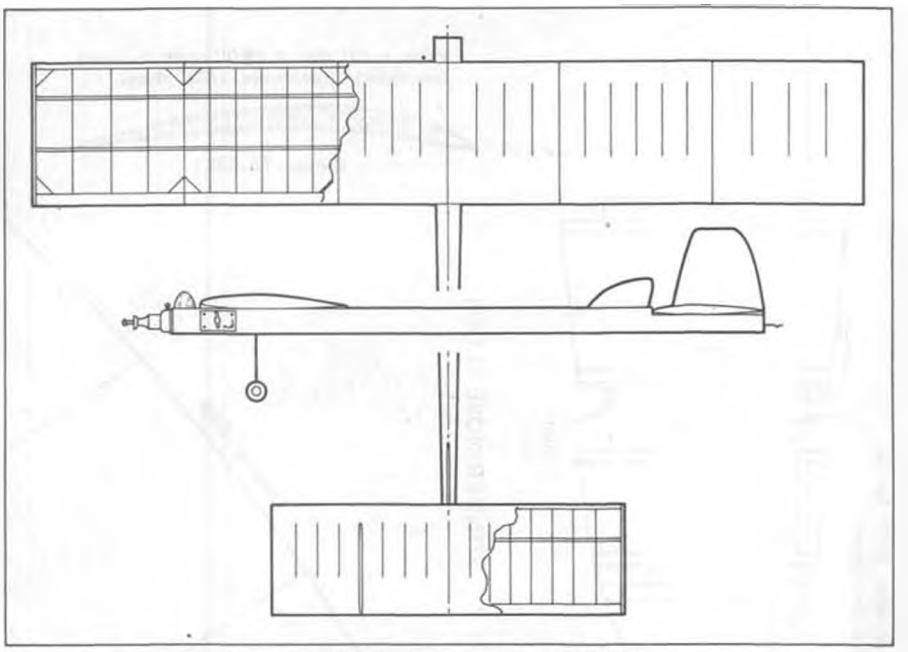


Typical regenerative style pressure system using flood-off timer. Top line is pressure from nipple on backplate of engine.



Another regenerative style pressure system uses remote trip wire to activate the flodd-off phase of the operation.

Joe and Wayne Friebus demonstrate use of electric starter to give engine a kick. An extremely useful tool for the free flighter, especially if he's using a pacifier system.



MYSTERY MODEL FOR AUGUST

box, and are rugged. The spring is a strong one and does a good job of pinching the fuel line. Price runs between $3 and $4.

2. Ultrasonic cleaners. For anyone who does much engine work, these devices remove varnish and baked-on crud as well as metal chips from new and reworked engines. Also great for removing mother nature from the mill after a critical zonk maneuver. *(See Heathkit "Product$ in U$e" this month wcn).*

3. Universal tinting colors. These are tubes of tint sold in hardware stores. They mix well with nitrate dope and can produce that odd color you might need on a rubber scale job . . . or other odd model. The finish is semi-gloss.

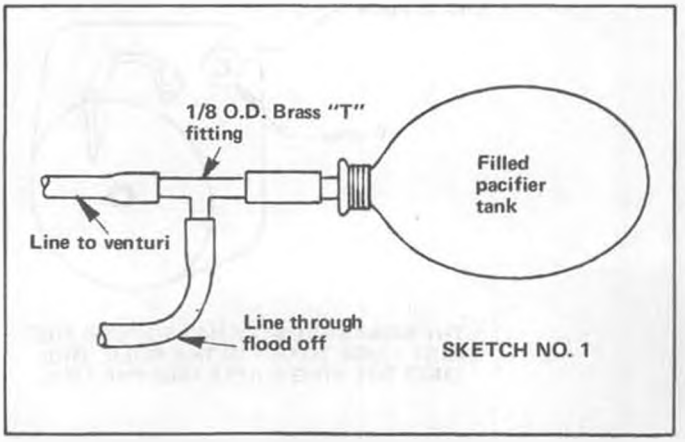
4. Hoppe's Gun Cleaning fluid mixed with the highest nitro fuel you can get will make that T.D. .020 run much better and eliminate varnish build up. Mix 1/2 oz. per pint of fuel.

5. Bamboo. If you need it, check the oriental foods section of your supermarket, they sell it in bundles for skewers. Also check any place (Pizzeria, etc.) where they give free balloons to the kiddies, often the sticks are bamboo or reed. *(Local hardware mart has packages of skewers in Bar-B-Q section. wcn)*

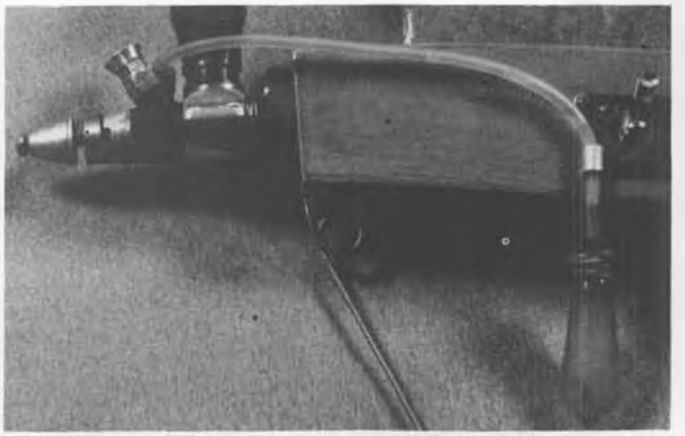
6. Tissue covering. You've always covered your flying surfaces with the paper running spanwise because the plans said so, right? Try it with the tissue grain running chordwise and you'll get a much better total airfoil shape as the tissue will not sag as much between ribs. This is good advice for a rigid structure, but not as applicable where the covering is a major source of that rigidity.

7. Wax paper. Still using wax paper as a plan overlay? You are probably getting wax in your glue joints. Use Saran Wrap or any other mylar wrap from the local grocers. It is impervious

Continued on page 67



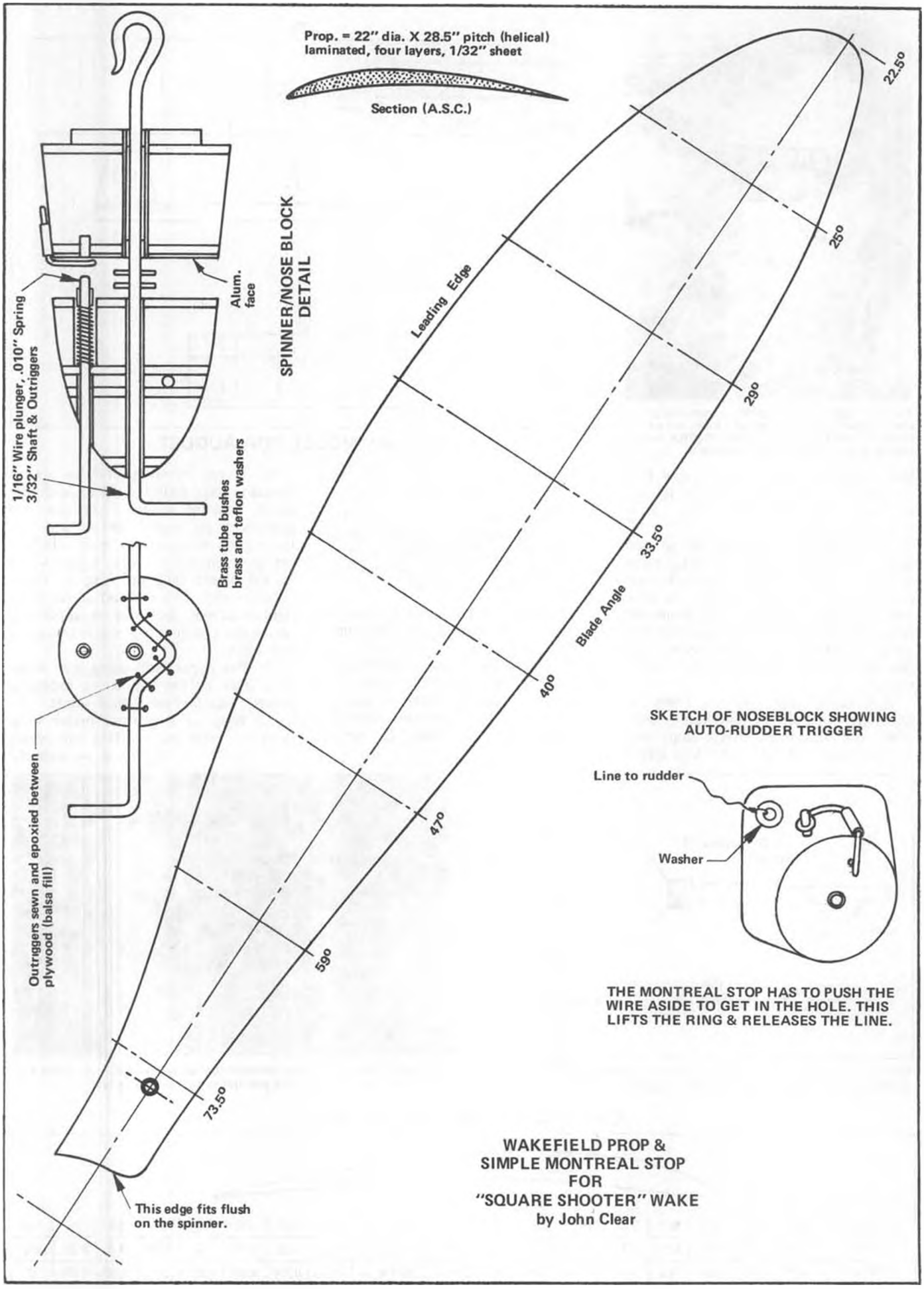
With a "T" fitting, the pacifier may be used with a flood-off. Only problem is it dumps raw fuel all over kingdom come.



A typical simple pacifier pressure fuel system installation, using a pinch-off style timer. This pacifier is obviously empty.

Darned Good Airfoil - CH-407 (Mod.)

STATION	0	1.25	2.5	5.0	7.5	10	15	20	25	30	35	40	50	60	70	80	90	95	100
UPPER	.011	3.64	4.46	5.94	6.74	7.4	8.34	9.0	9.4	9.6	9.66	9.6	9.2	8.34	7.2	5.66	3.6	2.26	.05
LOWER	.011	.07	.20	.74	1.26	1.66	2.4	3.0	3.46	3.26	4.14	4.26	4.54	4.46	4.07	3.4	2.07	1.06	0


Prop. = 22" dia. X 28.5" pitch (helical)
laminated, four layers, 1/32" sheet
Section (A.S.C.)
SPINNER/NOSE BLOCK DETAIL
Alum. face
1/16" Wire plunger, .010" Spring
3/32" Shaft & Outriggers
Brass tube bushes
brass and teflon washers
Outriggers sewn and epoxied between plywood (balsa fill)
This edge fits flush on the spinner.
Leading Edge
Blade Angle
22.5°
25°
29°
33.5°
40°
47°
59°
73.5°
SKETCH OF NOSEBLOCK SHOWING AUTO-RUDDER TRIGGER
Line to rudder
Washer
THE MONTREAL STOP HAS TO PUSH THE WIRE ASIDE TO GET IN THE HOLE. THIS LIFTS THE RING & RELEASES THE LINE.
WAKEFIELD PROP & SIMPLE MONTREAL STOP FOR "SQUARE SHOOTER" WAKE
by John Clear

The stock Jerobee is a great fun car and an excellent way to get into the sport of R/C auto racing. Of course, once you get the feel of it, the urge comes to make it go faster . . . and stay in control. Not all the modifications on the above car can be seen. The article tells you all about it.

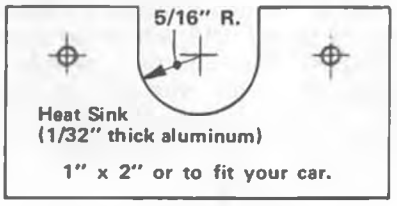
R/C AUTO NEWS

Guest Editor GEORGE SIPOSS

While Chuck Hallum is at the National R/C Auto races, our guest editor steps in to give you some hints and how-to's on getting longer mileage, better braking and road holding, and more fun out of your Jerobee car.

Man is never satisfied. Give him a Ferrari, a Boeing 747 or Steinway piano and he will constantly try to improve it. Year after year he will bring out a newer more improved model.

Hobbyists are no exception. The typical hobbyist buys a kit or ready-made model and then proceeds to "go one better" than the designer did.



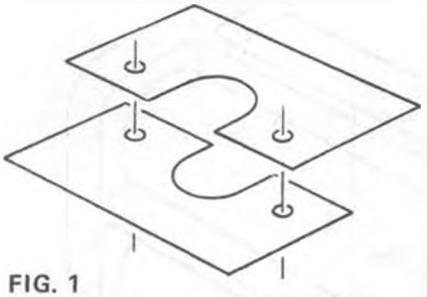
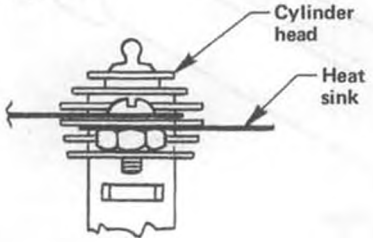


FIG. 1



The 1:12 scale Jerobee Commando is a great little car, but, after you have run one you will be wishing for more mileage on a tank of fuel, better brakes, better roadholding, easier steering, more reliability, easier serviceability, and even more fun. In our quest for all of this we have done extensive experiments with our car and succeeded in improving its performance considerably over the stock kit. Here, then, is a list of things that you can do to improve your car. They are not listed in any order of importance, and you can pick one or any of the items, depending on how ambitious you are.

FUEL TANK

The average Jerobee car race sees about five cars being called to the starting line. However, by the time the fifth car is started and put on the line the first one is almost out of fuel. We would suggest therefore, that you install a larger fuel tank. A #6 "Perfect" tank has about 3/4 ounce capacity and thus greatly improves the gas mileage. You can install this tank behind the radio compartment just in front of the stud which supports the body. If you want to have a larger tank, the Class "B"-Modified rules allow a tank of up to 2 ounces capacity. On our car we have a 4-ounce capacity. Do not forget to use a fuel filter, because the needle valve and fuel passages are so small that any small speck of dirt can cause endless headaches. You can extend the filler line and cut a hole in the body so that refueling can be performed without the body having to be removed.

ENGINE

In order to make it practical to run the engine for extended periods, you should make some kind of heat sink. A heat sink can be fashioned from thin aluminum plates that fit between the cylinder fins. See Fig. 1. Make two plates with a U-shaped cutout at the edge of each and overlap them after they have been inserted between the fins. Hold them in place with two small screws. The fins can be shaped so that

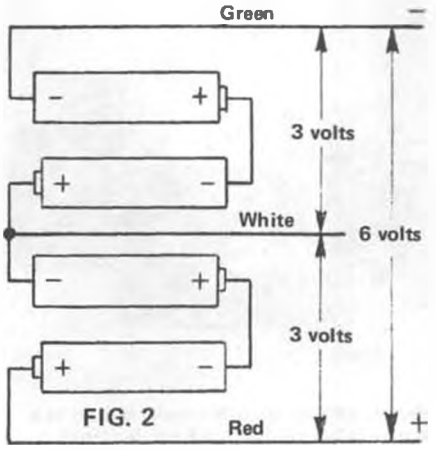
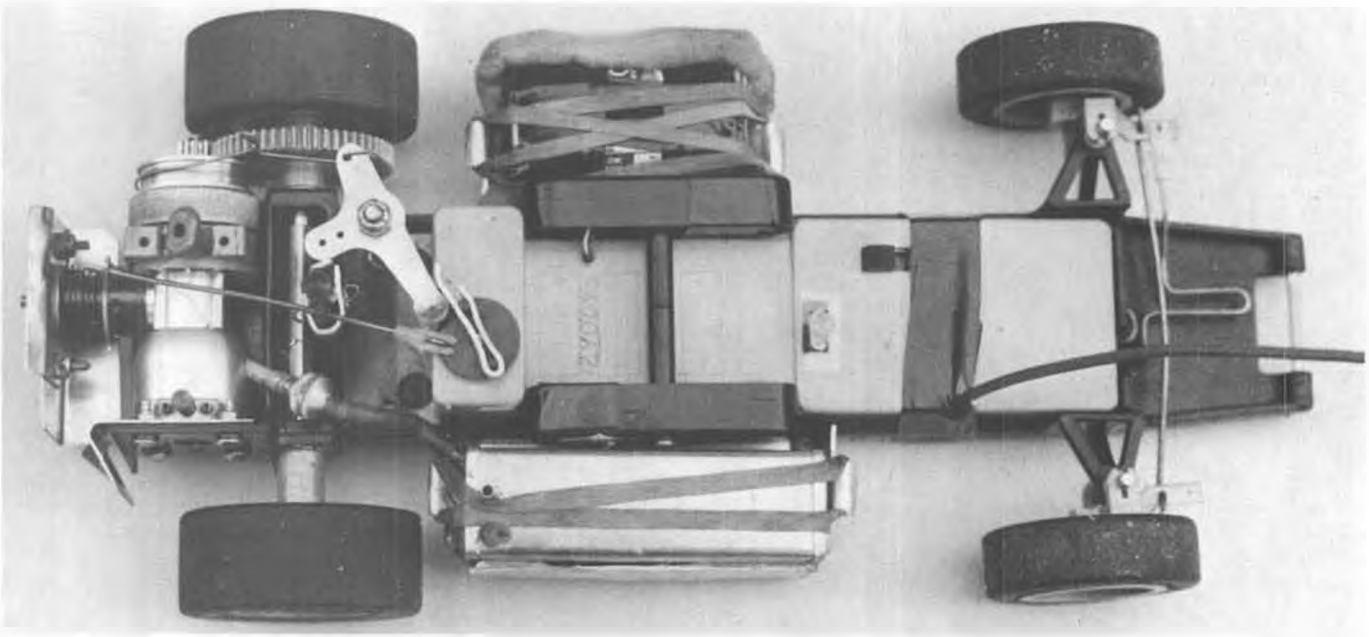


FIG. 2

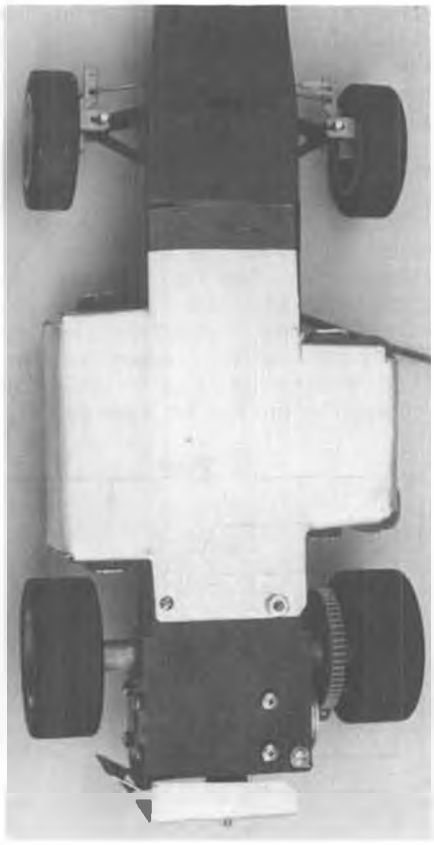


This view of the car with body removed reveals most of the modifications mentioned in the text. Fuel tank and batteries have been moved out to the sides, a wire brake has been added that acts on the clutch bell, a heat sink has been attached to the engine cylinder head, and an in-line fuel filter is installed between the tank and the engine.

they protrude into the onrushing air current to "catch more wind".

BATTERIES

Needless to say that you should use the very best penlight batteries that you can afford. Now, in order to lower the center of gravity, you may want to make a simple bracket out of aluminum and carry the batteries beside the chassis instead of on top of it. Carefully remove the bottom plates from the present battery holder and note the wiring arrangement. You will find that it is arranged as shown in Fig. 2. There is a center tap to provide 3 volts, while the end taps provide a total of 6 volts. Carefully note the color coding also.



Aluminum pan mounted under chassis as a platform for the fuel tank and batteries.

Now, purchase a four-pencell square battery holder and solder wires from it to the colored wires as shown in Fig. 3. Thus, the new holder is wired in parallel with the factory made holder. In fact, in a long race, you may want to insert batteries in the stock holder to increase your reliability. Note that some square battery holders (such as Lafayette 99-C-6331) have a snap on clip and thus a new pack can be connected very easily.

The side mounted battery holder should be supported by foam rubber pads to eliminate vibration damage. In order to counterbalance the weight of the batteries, you will want to install a side mounted fuel tank as well.

BRAKES

Brakes actually improve your lap times because they allow you to go into corners much deeper and you can thus sustain top speed much longer. Remember that even a slight amount of drag on the clutch bell is sufficient, because its braking efficiency is multiplied by the gear ratio. In no case should the brake lock up the rear wheels, because in this case they will cause the car to spin instead of coming to a gradual and smooth halt. The linkage should be adjusted so that the brake comes on just before your throttle servo reaches the end of its travel in the idle position.

A simple brake arrangement is shown in one of the photographs. A piece of suitably curved .040 wire serves as the brake band. When throttle is applied, the springiness of the wire pulls it away from the clutch bell. When brake is applied the piece of bent aluminum

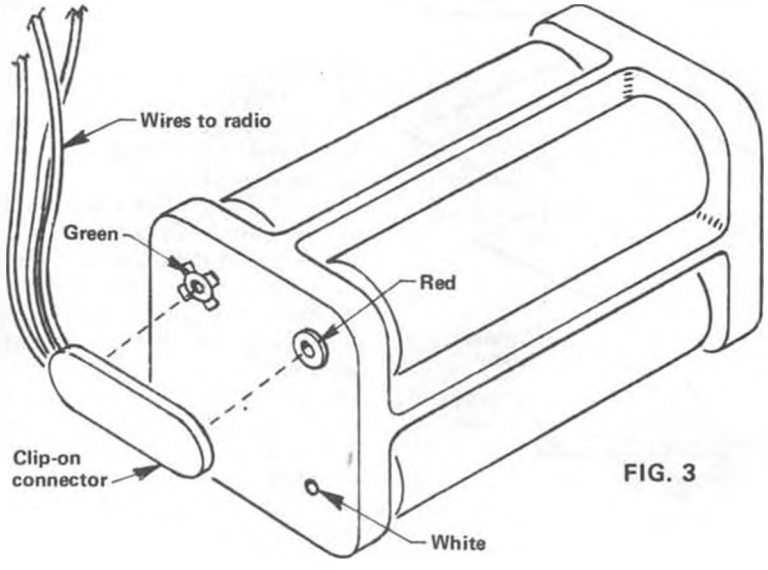


FIG. 3

(which is squeezed to the two pins on top of the throttle servo) exerts pressure against the bellcrank (in our case a #222 "Perfect") whose other end pulls the brake on. A small piece of aluminum bent and squeezed around the body mounting stud, serves as a stop to prevent the bellcrank from swinging out too far when throttle is applied.

Another popular brake arrangement (Fig. 4) consists of a short arm, actuated by one of the pins on the throttle servo, which is connected to a long "U" shaped piece of wire running transversely across the chassis. The upper far end of this "U" wire is connected to another arm which is fastened to the end of a 1/16 inch wide band around the clutch bell. Again, when the servo returns to idle, the brake band is pulled against the clutch bell. You can make up your own variation from bits and pieces found in any respectable scrap box.

If you would rather install a ready-made brake, you can get one from Bo-Link Industries, Box 80653, Atlanta, Ga. 30341.

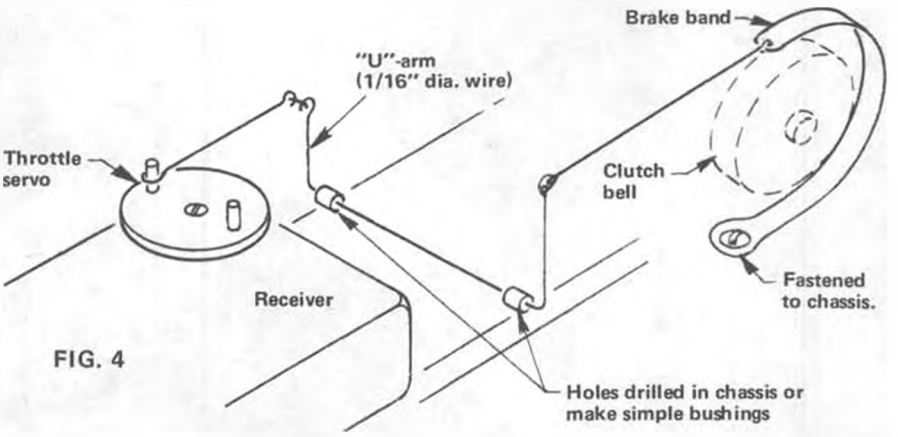


FIG. 4

SUSPENSION

The front suspension in the car is spring loaded and this sometimes results in too much adhesion in the front end, thus allowing the rear end to spin out occasionally. To remedy this, simply slip a 1/8 inch long plastic spacer or washer (the 1/8 dia. type that slot car rear axles used as a spacer) between the top suspension arm and the steering block. This is clearly shown in one of the photos. You will have to compress the spring during assembly but if you proceed carefully you will have no problems. The front spring force gives more understeer and you will find that now the front end of the car sits lower, which results in more aerodynamic down-pressure.

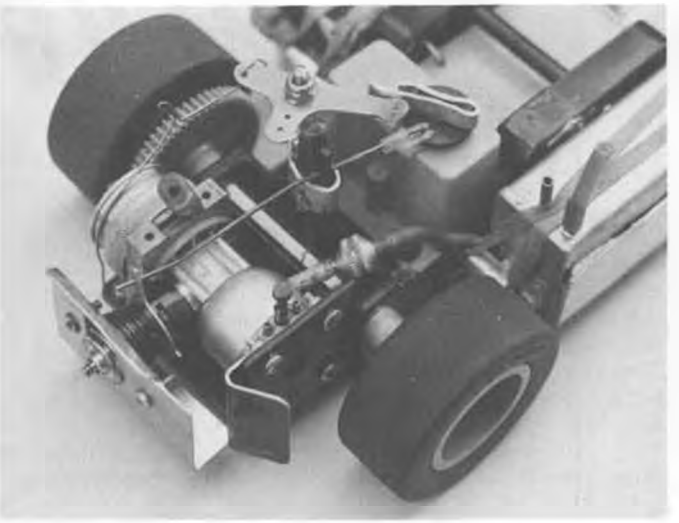
WINGS

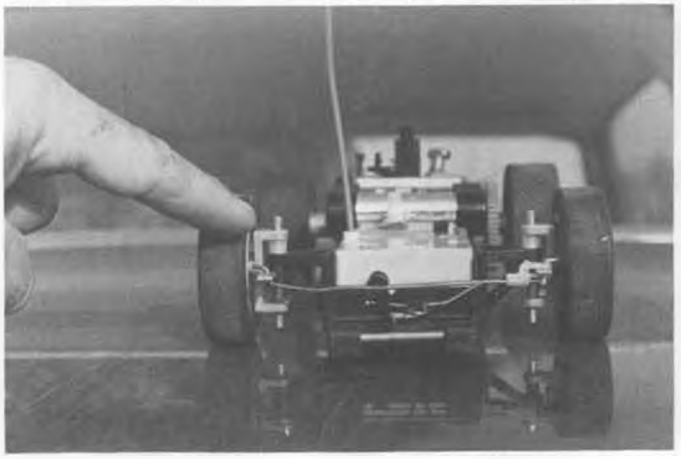
The Jerobee car is so light that even a small amount of downwardly directed pressure generated by the air on the moving car's body will add a significant amount of downward force on the tires. This results in better road holding.

Wings, dams and spoilers can be fashioned from 1/32 thick aluminum

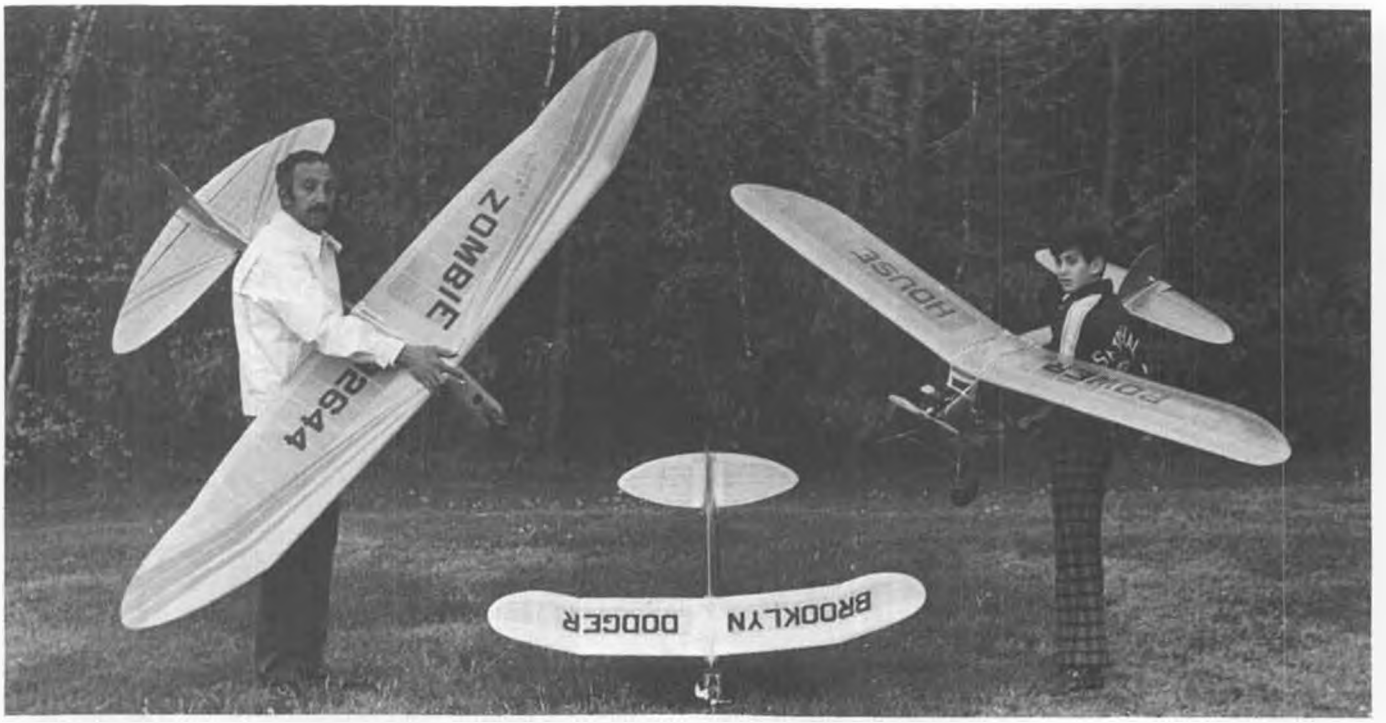
Continued on page 66

Allowing the fuel fill line to protrude through the car body permits you to make fast pit stops.


That fuel filter is invaluable with a reed valve engine. Note aluminum strap clamped on servo output wheel.


Spacer added between upper suspension bracket and "A" frame lowers front end of chassis.


Another heat sink arrangement. Note also the fuel tank and brake band.



Joe Rizkalla, Cranford, N. J., has been building old timers since 1946. He's holding a beautiful 9 ft. Zombie, while son, Paul, displays a Taibi Powerhouse. Both powered by McCoy 60's with Kavan carbs. Brooklyn Dodger in center.

PLUG SPARKS

By JOHN POND

● Well, the Boss Man done said we ain't got time to get the writeup on the S.A.M. Championships in this issue as the magazine goes to press on the 15th. *(Sure glad your English has improved, John! wcn)* The writer will take five days to get home from Lakehurst NAS, arriving on the 9th of July. With films to be developed and a good writeup to be made, the schedule got too crowded. Next issue, we'll have a terrific column to cover all the activities, including the MECA Collectogether, S.A.M. Bean Feed, the Award Banquet, and the general high jinks that went on each day . . . especially the nights! Beware! "Daddy Warbucks" is listening!

Got a final wrap up letter from Jack Bolton, Commander, USN, who has done an outstanding liaison job. Originally starting with the SAM Champtionships, Jack has also made arrangements for staging the Flying Scale World Championships, the Indoor World Champs, and the International R/C Soaring Championships, Whew!

Unfortunately, his offer of accommodations for the out of town old timer modelers in the hanger (which he refers to as the "Hindenberg Hilton") arrived too late to carry in the column. The news of the low cost housing and meals (at the general mess), with a daily cost of $4.00, was circulated throughout the SCIF and SCAMP clubs. Jack Bolton has offered this service to those modelers who simply couldn't afford or refused to pay the motel costs.

On top of offering accommodations in the large loft of the Old Dock #1 (the original rigid airship hangar), Jack has come up with a SAM Nats patch to commemorate the occasion. The patch will be available in decal and cloth styles, selling for $1.50 and $2.00; proceeds to go to the Naval Aviation Museum Building at Pensacola. Hope he sells a million! No self-respecting old timer contestant should be without one.

Larry Clark holds a seldom seen, but sharp little model, a "Colibri," designed by Lou Garami.

Bob Oslan, manufacturer of the Cal Aero line of .020 Replicas, and his beautiful Goldberg/Comet Mercury on floats.

Jim Kloth, St. Petersburg, Fla., puts both feet into launching his twin pusher. Gives the contemporary modelers a run for the money.

Mike Keville cranks the turns into his "floaterized" 1931 Feinberg Record Model (MB, Aug. '73) Long, spindly landing gear was a riot during takeoffs.

RULE CHANGE?

Latest letter from Joe Beshar indicates that the Old Time Eagles are still the lead club when it comes to promoting old timer activities on the East Coast. With future growth of SAM and the old timer movement an assured certainty (Old Timers are the only fun game in town), and with an eye towards keeping the competition loaded with a social factor of pleasure, the Eagles are proposing the following power classes of R/C Old Timer:

Class A .00 to .149 cu. in. displ.
Class B .15 to .23 cu. in. displ.
Class C .231 to .36 cu. in. displ.

In addition to the power limitations, a further possible rule would require at least 200 square inches of wing area for each .10 cu. in. displacement. Man! Is that S.A.M. Annual Business meeting going to be interesting! We'll have a report on that too!

TROUBLE IN PARADISE

Jim Moseley, of Leeds, England, writes to tell of his troubles as Contest Director of Old Timer Events in Merrie Olde England. He noted that O'Donnell was allowed to fly his model in the old timer events using turbulators. With the designer in attendance and a sworn statement ot the effect the original ship used turbulators, the model was accepted by the processing officials.

However, it was a horse of another color when the Leeds Club held their Annual Rally. In spite of the Nationals precedent, Jim turned down the model. He simply argued that if the designer used turbulators, why didn't he show them on the plans?

Actually, O'Donnell used another model that flew well. After losing it, he went back to the controversial model, tore off the turbulators and completed his flights. Flew just as well. We're proud of you Jim! Stick by your guns! A.M.A. 4

Received the nicest letter from John Haggart, of England, castigating me for a long absence in correspondence. Through the kind efforts of John Scott, (visiting Hawker-Siddley project engineer), the writer was able to furnish Haggart with a copy of the Model Builder which featured the Saddler Pacemaker and a picture of Haggart. In the article, Editor Northrop noted Haggart's model has AMA 4 on it, the same number as Irwin Ohlsson's Academy of Model Aeronautics license number.

John writes to say that the AMA 4 number on his low wing Pacemaker is strictly a coincidence. It seems that several years ago, a bunch of old timer flyers got together and called their organization The Antique Model Association (AMA), and it just so happened Haggart was registered as number four, hence AMA 4. Haggart further states he had no idea that Irwin Ohlsson had the same license number on his planes in the U.S.A. Small world!

HYDRO EXTRAVAGANZA

Just returned from Lake Elsinore after a long flying session on Sunday, June 16. This hydro get-together was probably the largest gathering of seaplane models on any one particular day. The tremendous array of models was

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Jim Moseley, Leeds, England, with his Eta .29 powered Sandy Hogan. Close-off date for old timers in England is 1950-1952.

Baby Playboy by Jim Crocket features some of his manufactured aluminum fittings. See text and ad on page 61.

OLD TIMER Model of the Month

Designed by: Sal Taibi

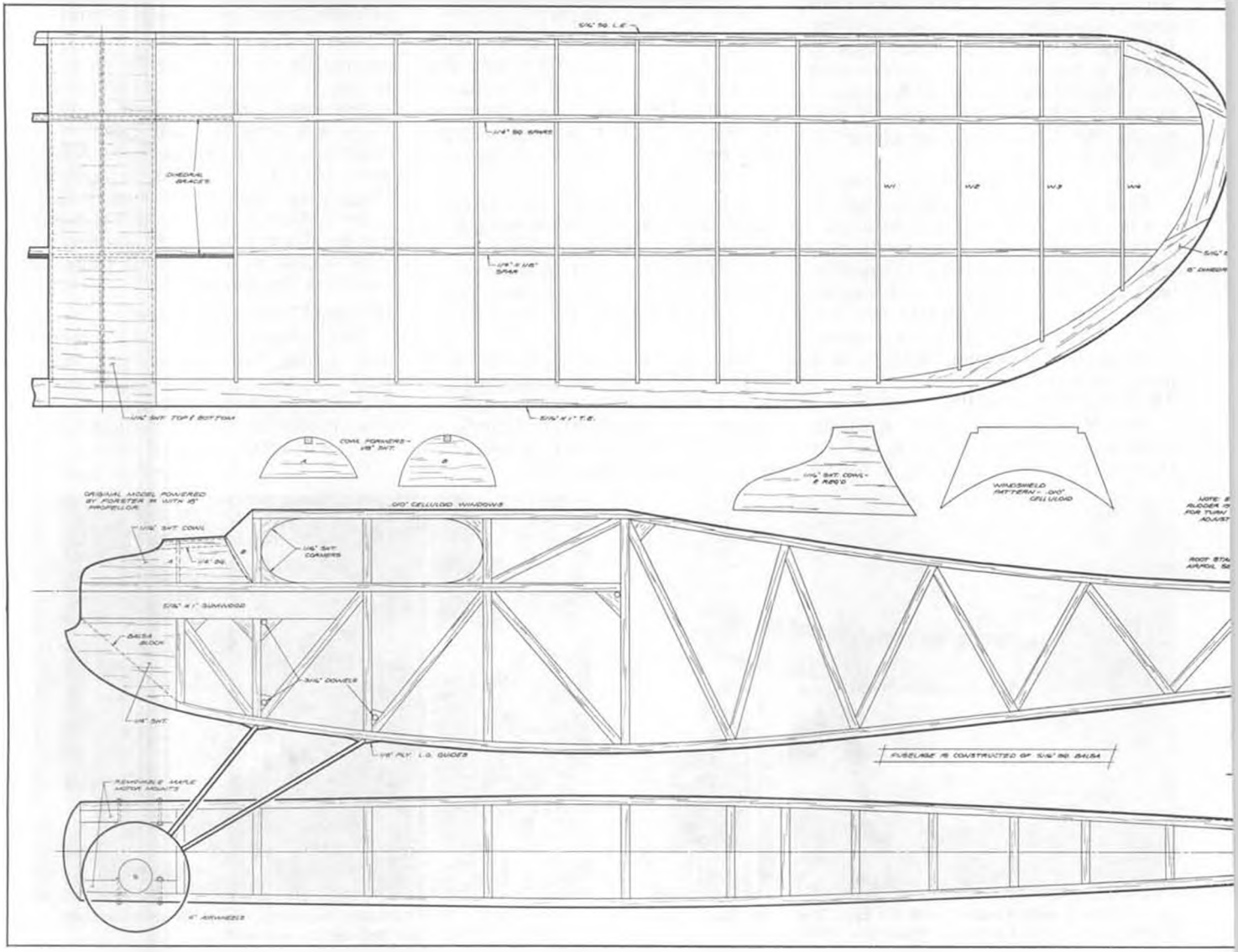
Redrawn by: Phil Bernhardt

● We have published so much in recent issues about Sal Taibi's Powerhouse that it's almost anti-climactic to feature it as the Old Timer Model of the Month. However, as a result of the publicity, we've had requests for the plans . . . so here they are. In addition, since the Stick 'em Patterns are so popular with old timer builders, we're also making these available.

Sal's famous Powerhouse, designed around the big, powerful Forster 99 (Please, not "Forester!"), has spant a great deal of its time on floats, and the ones shown on our model, also designed by Sal, but modified slightly for R/C operation, will be presented as a construction article in a future issue. They'll also do great on most any of the larger old timer models. Easy to build, too.

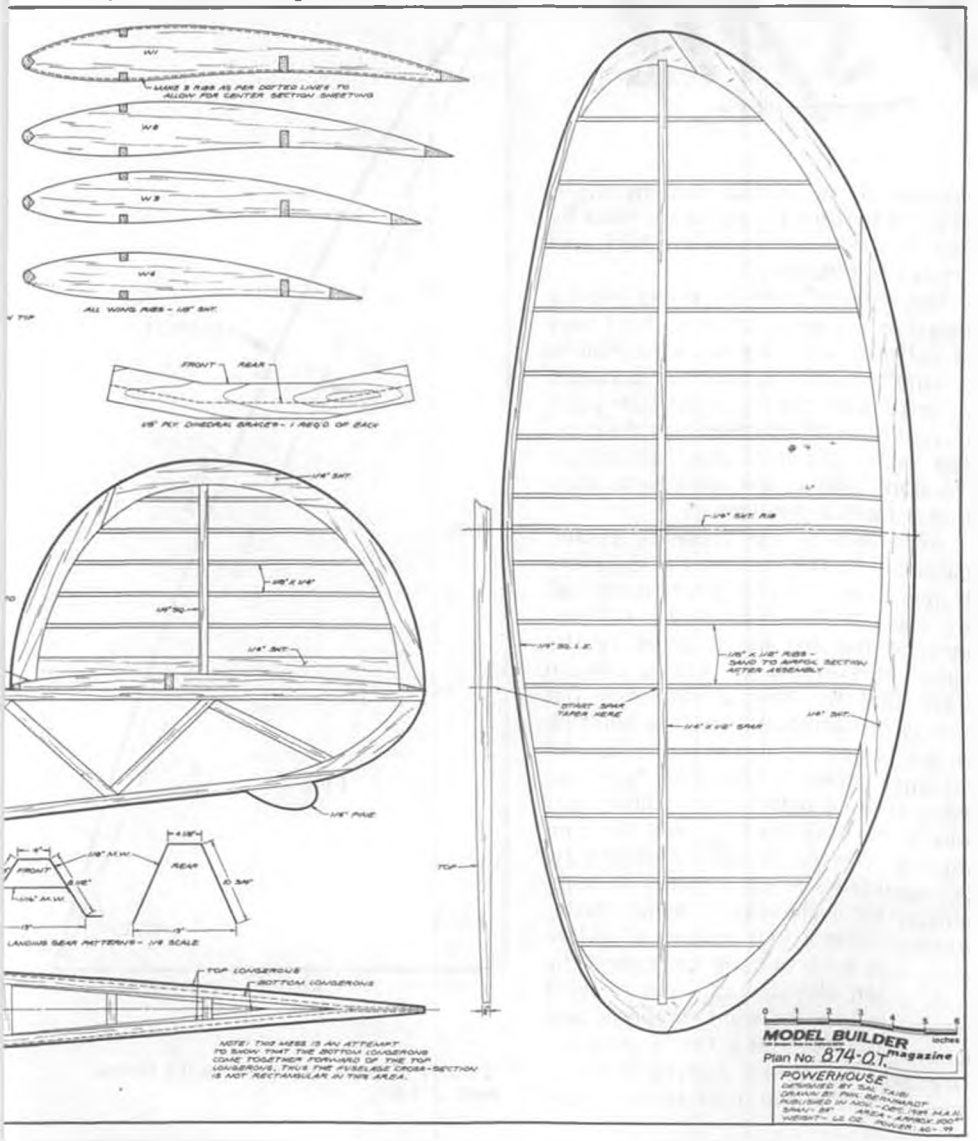
Construction of the model is extremely conventional, though plenty of room is needed, especially for building the

Dave Jesse retards the throttle on the editor's float equipped Powerhouse. Floats also designed by Taibi, will be published soon.



Art Hemmler built this half size Powerhouse, and equipped it with Edo type floats. Flies just like its big brother.

fuselage sides. If 5/16 square balsa is hard to come by, the fuselage could be made from 1/4 spruce. You'll probably have to make splices, so put them where a cross member hits. In any case, try to keep the tail area light . . . there's no worse sin in modeling than to carry dead ballast for balancing purposes. The free flight version should weigh around 4-1/2 pounds, including necessary beef-ups. See the March 1974 issue of MB for additional building hints. ●



Continued from page 45

due to the SCIF-SCAMP Old Timer Hydro Contest, the Flightmasters Flying Scale R.O.W. Annual, the San Valeers Record Trials for hydros, plus the regular attendees of the lake flying activities.

Hydro models spotted along the edge of the lake included old timers, old timer radio, old timer rubber powered, flying scale gas, flying scale rubber, flying scale control line, flying scale radio controlled, and the modern free flight hydro designs. To say the least, seaplane enthusiasts had their fill that day.

Best flying old timer model noted from the shore by the writer was Bob Oslan's Comet Mercury on floats. Flew like a bird! Model has excellent performance, with realistic takeoffs . . . completely unassisted! Most humorous takeoff was Mike Keville's Feinberg commercial (Aug. 1973 MB) featuring cantilever wire landing gear struts. Naturally, when placed in water, the struts would bend back until the spring torsion effect would overcome the water tension effect on the floats. Sometimes the model would be literally catapulted into the air, while other times the model would receive a thorough dunking. The writer has seen all methods, but no doubt about it, this style was different.

To augment the fun, Hal Cover dragged out his Lanzo Puss Moth to show the regular rubber boys how to do it. Darn near did it too! Lost out by only 13 seconds! Ya gotta be careful and look out for those flying scale models. They'll fool ya every time!

The writer darn near got killed by Phil Bernhardt when Phil was complaining about the lack of power in his Alert. The columnist only suggested he employ one of Bruce Chandler's converted glow engines, namely a Black Knight. (Phil's dad, Otto, does excellent engine conversions also!). Phil finally got the thing going well enough to cop first place.

Prettiest picture of the day occurred when three Taibi Powerhouses were placed in the water side by side. With Bernhardt, Taibi, and Northrop holding their models, shutterbugs had at them. When the models were left untethered, they all behaved exactly alike, weathercocking without changing spacing! A real tribute to the faithful reproduction by each builder. To wrap up the picture, Taibi then started up his Forster 99 with Northrop holding. When Northrop released the Powerhouse, the model made several skips across the water and zoomed into the air just like 35 years ago! A real thrill to watch!

Contest Director R.G. Brickner came in for considerable roasting when putting his engines on display. Upon reviewing some of the prices asked, a few wags suggested that the "R" in Brickner's

Continued on page 59

A well trimmed EC/12, No. 37 was the winner of the 1971 ACCR for that class. The sails look as if they are working together, the slot is open, and there is little twist allowed on this light air beat, in order that the boat points high and yet stays moving. Though one of the earliest boats in the class, this hull continues to be a potent threat on regatta day!!

STRICTLY SAIL

By ROD CARR

● In the development classes in AMYA there has been a trend to smaller mainsails over the last few years. As a result, a heavy emphasis has been placed on care and feeding of jibs, as evidenced by the two earlier parts of this column (MODEL BUILDER May 1974, June 1974). Nevertheless, we do still carry mains'ls, and especially in the one-design classes, they can make up a major percentage of the total sail area. As a result, the proper handling of mainsail area can make large contributions to boat performance.

In any discussion of mains we should really start with the configuration of the mast upon which this sail is supported. However, for purposes of getting immediate improvement in your boat speed, let us contrive to stay the mast so that it is absolutely straight. It needs to be straight in the fore and aft direction, and also side to side (athwartships). An easy way to check on this is to mount a mirror on a little block of wood and place it on the deck at the foot of the mast. You can then sight up the mast while making adjustments to the turnbuckles and observe the changes you make to mast shape. Most model yachts carry 1 to 2 inches of aft mast rake, and you can check this by using a plumb bob hung from the backside of the mast. The distance aft of the mast heel the bob comes on the deck, is the distance aft of vertical that the top is raked. Adjustments to rake are made by slacking off or tightening the backstay/jibstay combination.

The nomenclature for the mainsail is shown in Figure 1. Learn it, for I have no patience with skippers who think it is "cute" to refer to port and starboard as "left" and "right", or the after point of a sail as anything other than the clew. You make communication difficult if you don't take a few minutes to learn proper nautical terminology.

As shown in the previous articles, mains can be cut in much the same way as jibs; from a simple "single panel" all the way to "multi-paneled". Our experience has led us to generally use mains of standard or Tampa cut, in order that we have a somewhat flat section in conjunction with a fuller jib of the Tampa cut or California cut. An extreme amount of weather helm can result from a mainsail with flow built into it by broadseaming, and the consequent forward movement of the rig can sometimes reach 3 inches to compensate for such weather helm. (Note: Weather helm is that amount of rudder which you have to carry to prevent the boat, when closehauled, from carrying herself up into the wind by the natural action of the sails.) On a properly balanced boat, 3 to 5 degrees of rudder cranked in by the trim lever on the

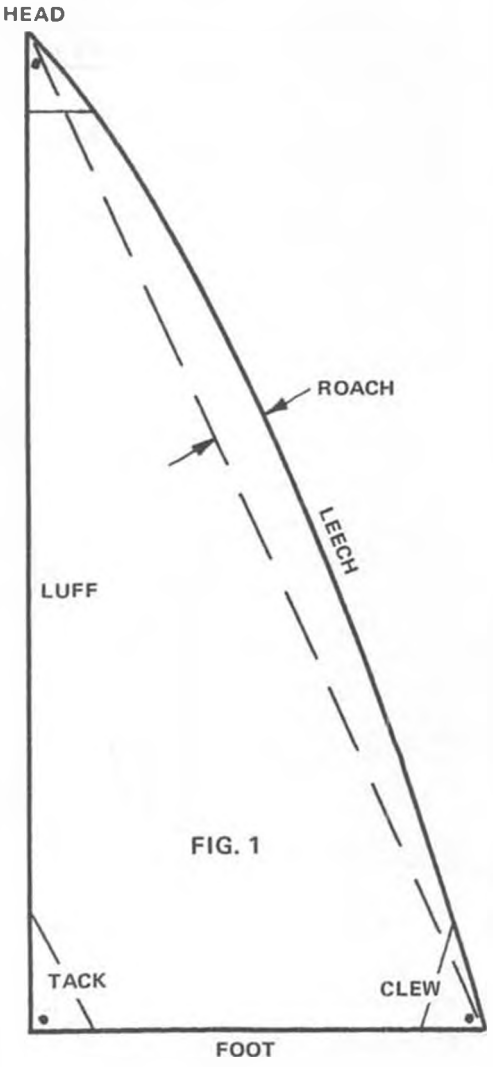


FIG. 1

Glossary of terms for describing the various parts of a sail.

Here is an East Coast 12 trying to go to windward. Her booms appear to be set properly, but in each case, more downward tension is required of the main sheets to take the twist out of the sail. Top of the main has twisted out so far that she is already luffing, and it's sure that the boat could point 20° closer to the wind with increased sheet tensions. Also, jib club swivel needs to be moved aft on the club to help tighten the jib leach.

transmitter ought to suffice. The desire is to have the boat show a slight tendency to pull herself to weather, more in the gusts and less in the lulls. If the boat shows too violent a tendency to head up, simply move the entire sail rig forward. If you move it too far, you will then notice that the boat will turn away from the wind, when beating, in a gust, and is said to be exhibiting "lee helm".

RULE OF THUMB NO. 1: When sailing closehauled, the bottom batten of the mainsail should be parallel to the centerline of the boat. This will allow the air that is exhausting from the main leach to exit parallel to the boat's centerline (see Fig. 1). If the sail is overtrimmed, the exhaust will be at an angle and produce the aforementioned weather helm, as well as exhibiting a severely reduced drive from the main. Remember, each little section of sail produces a force, perpendicular to the sail. All these little forces can be added up to be represented by one big force. This force can then be resolved into two components; drive and heel. We want to maximize the former and minimize the latter. The sketch shows this statement in graphic form, and compares a good main with one that is over trimmed. Another benefit of adhering to Rule No. 1 is, that by using the centerline sheeting system common on our boats (we'll cover travelers later) to position the bottom batten properly, you will have slacked the sheet slightly. This will allow a *small* amount of twist to develop in the sail, freeing the leech and keeping a hard flat leech from developing. The

This Flying Eagle 50/800 shows good form going to weather. The twist induced in the main was done on purpose to allow some air to spill from the main head and reduce the heel on this tender hull. Note that the lower batten is parallel to the boat centerline. Also, curve of both leeches seem to follow one another, and not close the slot excessively. Only suggestion would be to slacken off the foot outhaul to let a little more camber develop in the foot of the jib.

sail should have a fair continuous curve from fore to aft without any "hard" spots cropping up in the area of the leech.

To experiment, place your boat on its side, allowing the mast to end up as nearly horizontal as is reasonable. The sails will be pulled into shape by gravity much the same as if they were full of

Continued on page 66

FIG. 2

Section through mainsail at the bottom batten.

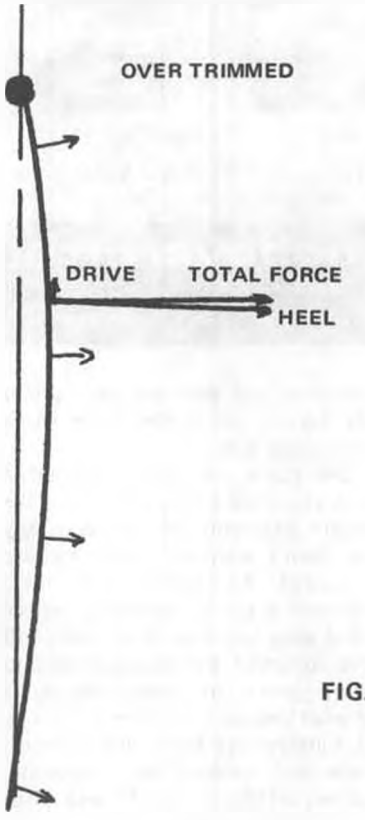
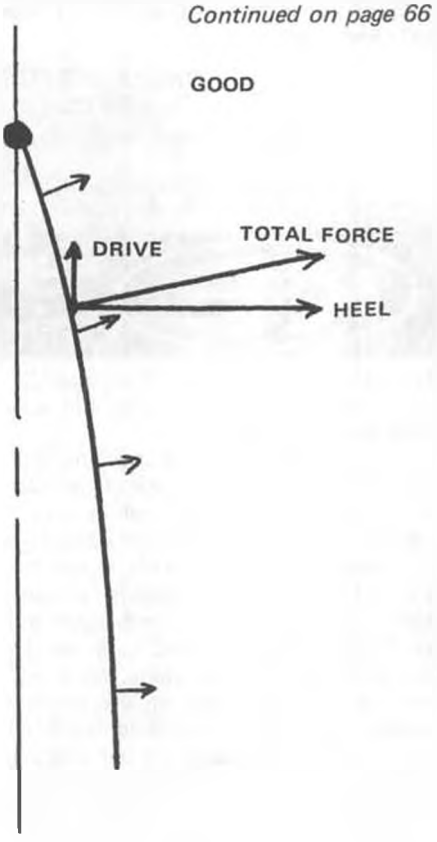


FIG. 3



Yankee . . . *Continued from page 28*

builder should find it just plain fun with satisfaction as a reward.

We have incorporated into the new plans an improved nose gear. Originally the nose gear was mounted in such a manner that it could pull out easily in a hot, nose-low landing. This is not the type of landing you should execute with any "trike", but it can happen and we think we have beefed it up so the gear will stay with the plane. We wiped out many a nose gear on the original models (and the boys would finish an event with a tail-dragger by bending the main gear forward). The new gear mount may bend and have to be helped back into shape after a hard landing, but we don't think it will pull out unless you seriously try to re-kit the plane when when you bring it in.

On the plans, we have written a suggested sequence of construction. We recommend that you follow these suggestions. Don't wait until nothing else works . . . read the instructions first! There is one stage of assembly where everything goes together all at once, and if you've followed the instructions and suggestions you'll be ready for it. If not, we wish you luck on your next one.

Real Yankees are built with rivetless aluminum skin (would be a separate, informative article in itself) and your model can have a sleek, mirror finish and still be scale. Revolution Red, Pioneer Buff, Pilgrim White, Heritage Yellow, Minuteman Green, Patriot Blue, Frontier Rust and Enterprise Orange were stock colors on the real Yankee, but no one would complain if you were to finish yours in Buffalo Brown or Williamsburg Pink, or whatever.

Most experienced modelers and control line flyers will admit . . . for several reasons . . . Half-A control line models are more difficult to fly than their larger cousins (A's, B's and C's). Though this model is one of the best handling Half-A's we have flown, it is still a small airplane with a small powerplant on the ends of two long lines. Joints must be kept neat and strong to help make the ship durable enough to withstand an unusual or "fall-out" type landing if the engine quits on the upwind side of the circle. Stress trim, balance and control freedom after you have employed your "eagle-eye" in proper alignments. Minimize weight and drag by your choice of materials, technique and finish.

On your first flight pick a site where you can turn a lap or two on the ground safely, though we doubt if you will be able to keep it on the ground with neutral elevator. We're confident that you'll find that the model will groove well just where you put it and that it will be very responsive to control. Try the stiff-elbow, arm-extended flying position and then only raise and lower your whole arm for up and down control. Go real easy on the controls! As with most control line models, the Yankee will take the "great circle route" overhead if over-controlled . . . once you've lost line tension you will have only a few moments to say good-bye to your ship before it augers in. These ships are durable, but they are not indestructable. We recommend the 42 foot lines to minimize a rather impressive speed . . . 35's will magnify the speed, disturb your equilibrium, and screw you into the ground.

Incidentally, if you're concerned about the main gear holding, don't worry. All of our Yankees have been built with the gear mounted in the wing that way . . . no reinforcing tape or cloth . . . and we have yet to crack the paint around the spar or gear even though the original models have flown 'till they're tired and one was demolished in a crash due to a broken control line. The name of the game is fun, and we're sure you'll be pleased to have something different to fly . . . something smart and contemporary. You'll be proud of your "American Yankee." ●

C/L . . . . . . *Continued from page 25*

soon, production copies of his fuel switch which will be very valuable to go fast types in racing and speed. It will be produced in two sizes and is a centri-

SAILFISH

One of the prettiest Sailboats you ever saw either Free Sailing, or R/C. Construction is simplicity itself. Die Cut Frame, features Plywood for strength and long life. Printed-planked Deck is Die Cut and ready to slip into rub rail, molded into Sleek Plastic Hull. Kit is unusually complete with Die Cut Mahogany Cabin, Brass Chain, Many Cast Metal Fittings, CLOTH SAILS, Rigging cordage, Mast & Boom Material stamped Rudder and Keel with INTEGRAL LEAD BALLAST, Step by Step Plans show simple assembly. Base shown not included.

HEIGHT 32½"
LENGTH 24"
BEAM 5"

Sterling MODELS INC.
PHILA., PA. 19144, USA

Kit B23

$12.95

STERLING MODELS • BELFIELD AVE. and WISTER ST. • PHILA., PA. 19144
If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. (60c minimum in U.S., $1.25 minimum outside U.S.)

☐ Catalog of entire line of airplane control line model kits, R/C scale and Trainer kits, boat model kits, accessories, etc. 25c enclosed

☐ "Secrets of Model Airplane Building" Including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25c enclosed.

☐ "Secrets of Control Line and Carrier Flying" Including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25c enclosed

No checks. Only U.S. money orders or currency accepted.

Name _____

Address _____ City _____ State _____ Zip _____

fugal type. Don't know the price yet, but write him and say you read about it in MODEL BUILDER. I am also trying to get his rat racer "Revolution II" for a future construction article. Cross your fingers.

* * *

While at San Jose, Ira Keeler of Keeler Scale Props, showed me his wares. He hand carves, to order, exact scale props from basswood, for any aircraft. He also does production runs on 2 inch scale sizes for R/C types to fit popular kit models. Such as the Mustang and SE5. Prices are about $15 to $20, which isn't much compared to the total value of the models they will be enhancing. Ira also represents M.A.C.A., the Miniature Aircraft Combat Association. He has helped develop an excellent slow combat design called "Bee-Ware" which will also "bee" a future MODEL BUILDER feature.

DIESEL FUELS.

My brief expose' on diesel formulations appears to have been my most popular writing so far, with seemingly more interest than previously surmised. So I will continue with more on the special techniques for compression ignition in the future.

But today, I must answer a letter sent by Robert Sargent of Rocky River, Ohio. First Mr. Sargents comments:

"Last issue's CL column (was) virtually a criminal offense, or should be, with the heralded mention of the nitrates and the benzenes as additives suggested for fuel, both highly toxic and lethal."

Yes, he is right. But before passing judgement, first pick up a can of Cox Glow Fuel, such as sold to thousands of innocent youngsters. Read the side label . . . "Danger — flammable, cannot be made non toxic." All of our model fuels are explosive and toxic. If they were not, none of our motors would run. Fortunately, most modelers, Juniors included, treat fuels with proper respect and do avoid serious accidents. The more

toxic chemicals are used in relatively small percentages, which does help make them safer to handle. But the total elimination of amyl nitrate from diesel fuel would have exactly the same effect on performance as the elimination of nitro methane in rat and combat fuel.

Luckily, most people will be protected from themselves, because the 'exotic' additives are so difficult to obtain and/or so expensive that only the very serious or professional flyers will be using them. And if they do have an accident . . . I hate to say this . . . it's their own damn fault!

I'm not making excuses though, Mr. Sargent is still right. Please, everybody, be careful with all chemicals, even the grain alcohol type.

* * *

Phil Carter of the Minneapolis Piston Poppers sent me a nice letter and talked about many things. He explained the method they use for combat eliminations. It is very simple and fair to all. In fact, it is exactly the seme method I have been using for several years with my Junior High School flying club, but if Phil hadn't brought up the subject, I probably would have overlooked it . . . something about being too close to the trees. Here it is in his words.

"We used an initial qualifying round to determine who went in the elimination bracket. The losers in the first round were then matched against each other and flew a second round. The winners of this 'loser' round were then placed in the elimination brackets. This way, everyone got to fly at least twice and everyone in the eliminations had to win a match. Any byes from the first qualifying round were put into the loser round."

* * *

Still on combat. Did you know that the Western Associated Modelers (WAM) allow only one combat model to be processed for a contest? The contestants therefore have to learn to fly more

precisely than the AMA butchers with arm loads of models. I saw better attack and evade flying at San Jose, with fewer mid-airs, than I have seen at any AMA event. The guy who does crash will always gripe about something, but I like the idea of their rule . . . it's also cheaper!

* * *

With the fine summer weather at hand, I have been attending as many contests as possible. I've been to four in the last six weeks. They were all different and all good.

The first one was the Flightmasters Scale R.O.W. contest, held at Lake Elsinore, California. The Flightmasters club is basically free flight but they showed they are not biased any more by providing a trophy for a control-line event. This is the first time in many years they have allowed C/L in their contests. There were seven float-equipped scale Schneider Cup "Yo-Yo's" there (thats what they call them) I think Tony Naccarato won, with a Cox TD .049 powered Supermarine.

The Flightmasters are planning another ROW scale meet in September. If you can make it to Lake Elsinore then put something together and get your feet wet. Dale Kirn and myself plan on doing just that.

* * *

Royal Midwestern Championships. Tom Zon represented us in Kansas City and brought home some photos and some gold, winning Fast Combat. Tom said it was a fun contest with good flying and good people the whole time. Bill Wright was the CD and that explains why it was a good contest. Bill is one of the best CD's around.

* * *

The Van Nuys "Circleburners" held a good two day contest at Sepulveda Basin, which was noteworthy for the big turnout in AMA Carrier. Some really fine new ships were out for the event as you can see in this month's photos. One off note of the weekend was created by a group of flyers from San Diego who didn't like the way the Circleburners scheduled their own contest, so they made a big to-do about boycotting the contest. They did, and the contest was still a success, so what was accomplished?

* * *

The most relaxing contest of the month was held in Redlands by the "Thunderbirds". It was a fun, family day, with Balloon Bust, skat rat, and combat . . . if you must. No one was concerned about much at all. The automatic sprinklers kept coming on, which kept us all cool. The most activity was under the shade trees around the ice chests. I think the models were just an excuse for the picnic.

* * *

The biggie was the 19th Annual Fourth of July contest put on by the Aeromodelers of San Jose. Warily I climbed the mountains and journeyed down into the valley of the shadow of . . . I wanted to observe what the so-called "outlaws" from AMA have been doing for the last 20 years. What I found was a large group of flyers who were better organized than the great white gods in D.C. . . . and better tuned to the times.

Family involvement was the order of the day. All the events are flown on skill levels as well as age levels, which is much more fair and really encourages competition. There were nearly 400 separate entries out of 180 contestants. All flying was finished by four o'clock. That is hard to imagine when you realize that, in stunt alone, 150 separate flights were made.

Don't think that all is sweet in W.A.M. country, because they have their rule squabbles also, and they fly some events that seem unusual to me. Safety and the public image get first priority, though. I saw more pull testing and model inspections than in 10 AMA contests.

WAM has had a muffler rule for a number of years that requires "A noise limiting device on all motors." Everything . . . fast rat, combat, stunt . . . had a muffler. Most mufflers were home

made and didn't hurt performance in any way. I wish the AMA would quit studying the situation and act on silencers before it is too late.

Perhaps the silliest event was W.A.M. Carrier. They fly two speeds . . . slow and stop! Most models have no throttle; just a third line to the tail, which when pulled hard points the model straight out of the circle into a sabre dance. That event should be modified into something like drop-the-hankie, where the pilot tries to pick up a streamer with his hovering tail dancer. All is not lost, for there is a growing interest in AMA style carrier and those boys are designing some really sharp carrier models. One by Dick Lietric is a stretched Guardian for profile, which is really neat. Dick promised me a set of plans for the mag, which I am sure you will like. ●

Woody . . . . . *Continued from page 9*

FLYING

With everything installed and hooked up, the model should balance at the spar. Mine came out dead on and no lead had to be added.

The flight characteristics of the Woody really have to be seen to be believed. It's not exactly a primary trainer, but anyone who has passed those critical early stages will have no problems. Because of the unorthodox thrust/drag set up, I should give a few pointers on flying technique.

With everything set up neutral and the engine running, point the model into the wind. Now hit the throttle! You will notice that the model moves about three feet before attempting to bury its nose in the turf. Also notice that despite the nosed over condition it is in, the engine is still running! Well . . . throttle back, and let's try again.

Apply full up elevator this time, then hit the throttle. As the speed increases, the tendency to nose over will constantly decrease, so you can gradually let off on the amount of up elevator until almost neutral elevator is reached. Remember though, that this is still a tail-dragger, so rudder corrections during the take off run should be gentle. Once flying speed is reached, lift-off is accomplished with only slight up elevator. Takeoffs have been made from snow, tarmac and grass. Snow of course is the best, but the Woody seems more at home on grass than tarmac.

Once in the air, the Woody does loops, Split-S's, Stall turns, slow barrel-lish rolls and even flies inverted. For some unknown reason, it performs better rolls with skis than wheels. Ailerons, of course, would improve the roll rate but if that is what you're after, there are better aerobatic airplanes around, and I really don't think they would be worth the trouble.

One thing you will have to get used to when flying the Woody, is that sudden application of throttle should always be accompanied by up elevator. After a few flights this will come naturally.

I hope I haven't scared anybody away with the flying techniques, since the Woody really IS a fun plane to fly. I've flown the prototype smoothly in 20 to 25 mph winds, much to the amazement of onlookers. I have yet to see a .15 powered airplane handle the wind as well (except some Q.M.'s) as the Woody. On the other hand, in calm air you can tool around at 1/4 throttle and relax. Like most good things in life, the Woody may take a bit to get used to, but it's funny, it really grows on you!

Happy flying and good luck! ●

Choppers . . . . *Continued from page 15*

THE GROWING LIST

Model helicopter builders with special skills are still sending in letters with offers to help the newcomers, and we will continue to print their names in this column for your guidance. The latest group is as follows:

Dale R. Lihl, 760 Ravenhill Place, Ridgefield, New Jersey 07657 (201) 943-6522 (Bell Jet Ranger) installation and adjustments.

Arthur L. Kuhn, 51152 Pheasant Run

Drive, Saginaw, Michigan 48603 (517) 793-8359 (DuBro 505, Hegi Cobra) general help.

Lloyd A. Wheeler, 702 Illinois Avenue, Elgin, Illinois 60120 (312) 695-1658 (Cobra, Jet Ranger, Graupner 212, DuBro 300) building and flying.

Thomas L. Roesel, 18267 Greenbay Avenue, Lansing, Illinois 60438 (319) GR 4-4707 (DuBro 500, Bell 212, Jet Ranger) toolmaking, mechanical engineer.

Chris Lessel, 6544 Holt Avenue, Los Angeles, California 90056 (213) 645-2598 (Kavan Jet Ranger) modifications rotorhead and gyros.

NOTES FOR KIT-BUYERS

As the model helicopter industry gains strength and popularity, a familiar pattern is beginning to appear. No longer are manufacturers hand-packing (with utmost care) parts, etc., in your helicopter kit, and the quality controls are overtaxed with the huge demand for parts and accessories! More often than not, kits are being placed into the model builder's hands with cracked fiberglass fuselages, split or warped rotor blades and missing parts such as nuts, bolts, bearings etc. If I remember correctly, one of my earlier columns mentioned that my Kalt Cobra transmission was so tight that I purchased a Schluter transmission case and rebuilt the unit before I could get off the ground (A tight transmission can rob the engine of 30 to 40% of its power output, and *all* helicopters need *all* the power they can get!)

Just this afternoon I "discovered" a new kit transmission that was so tight, it almost took a pair of pliers to turn it!! And bearings . . . some new kits are on the market with Koyo 626RV and NSK 626V bearings installed in the gear box. Now that won't make too much of an impression on the new kit buyer . . . until he completes the chopper and suddenly discovers the gear box leaks more oil than the engine exhaust stack! The bearings should have been NSK 626D, which have oil seals to prevent such leakage. The other bearings had none!

Just about every part in a kit is difficult to duplicate or purchase locally, so it behooves the beginner to take along a friend (an experienced friend) to look over the contents thoroughly to make sure everything is in order.

To my way of thinking, the manufacturers should re-examine their distribution vehicles; most hobby shops cannot order parts directly from the factory and must go through a distributor. The distributors cannot and do not stock parts in sufficient variety because of the minimum order requirements from the manufacturer. This means the modeller has to "know someone" and/or scrounge for weeks for a special part! Faster and better parts service is a *must* in order for the hobby to grow.

And, while we're on kit-buying, I feel strongly about another area which may influence newcomers to this hobby. That area is "collective pitch" . . . and what has it to do with buying a kit? Two things to remember; first, we are positively heading in the direction where collective pitch will be a basic requirement for the modern R/C chopper! There are lots of advantages, such as exact control of altitude, autorotation capability, minimizing ring-vortex, maneuverability in descent, quick-stops, etc., the list is endless. Second, collective pitch is *complicated!* There are many more parts to install, there are more parts to fail, the kits cost more and lastly, they require a degree of adjustment and constant tinkering that the average modeller can do without . . . not to mention the flying expertise required!

Now, we're going to hear a lot of static from modellers who swear that it is the only way to go . . . and that they are very happy with their collective! I'm probably one of them, because I feel the maneuverability is great, and sometimes that chopper really "flows" around the sky as I "think" it into a maneuver! On the other hand, I can remember endless hours of adjusting and trimming to get it just right. And I still have to spend lots of time to keep it that way. I'm not too sure that the cost and crash-worthiness can justify the effort to an old "sport" flyer like myself.

My best recommendation is to give it very careful consideration before deciding that collective pitch is what you want . . . and even then, make sure you are already a pro on the more conventional and simpler systems before you tackle collective! And, if you do decide to go "full house", make it an absolute rule that you will spend as much time (or more) in checking, preflighting, post flighting and re-checking, as you do actual flying! If you don't keep on top of it, I'll guarantee you'll fall out of the sky twice as often and spend much money and time in rebuilding. I'm not talking about a simple walk-around inspection, I mean disassembly of all components on a periodic basis, and a really thorough examination between flights. 'Nuff said!

NEW PRODUCTS

I had the opportunity to spend some time with Dale Willoughby of Model Helicopters this week, and discussed at length his Scorpion Too chopper which is almost completed. As you can see from the pictures, about all that needs to be done is to tie-in the radio system and rig the Bowden cable (collective pitch system). The workmanship on the Scorpion is superb, and mechanically it's the finest piece of

engineering and design I've seen in a long time. Obviously, before it is produced for the market, flight testing must be done to work out any bugs. Then a decision has to be made with respect to how it is to be released . . . (1) Plans and limited parts only, (2) Semi-machined castings, etc. or, (3) Complete kit, including assembled components. It's going slowly now, but should shape-up within the next few months.

Dale also provided me with a set of the new Dieter Schluter training gears designed for the Cobra and Enstrom F-28A. Available from Model Helicopters at $19.95, the complete kit consists of two 5/8 inch formed aluminum skids and two hard aluminum cross-struts which give a total spread of 25 inches from skid to skid. Mounting brackets and hardware is included in the package. The total weight is a healthy 24 ounces, however, the gear provides exceptional ground stability and is a must for the tyro chopper pilot.

Dale also advises he has a large stock of Graupner cube-shaped fuel tanks, designed for the larger choppers, at under $5.00 each. Tank capacity is 500 ccm (approximately 15-16 ounces). Great for the Hegi Cobra, Enstrom and Jet Rangers! Many other Graupner Bell 212 parts (gears, rotor blades, blade holders, etc) are in stock for immediate shipment!

TOUCHDOWN

Next month, we'll have a Jim-dandy issue, listing all known helicopter kits, accessories, modification data, etc., for your analysis and comparisons. Model Helicopters also provided a new German helicopter kit, the Bolkow BO-105 (imported by Midwest Model Supply) for a magazine review, so I anticipate the inclusion of a fine report on this latest model in the next issue. At first glance, it looks real fine!

Last but not least, I'll have pictures and details on Charlie Gilbert's latest light-weight, easy to "scratch-build" chopper. The next issue will be worth waiting for . . . BCNU next month. ●

R/C Pylon . . . *Continued from page 17*

was run quite well. The CPC pit crew has to be one of the finest organizations in the country as far as running a contest. It has been reported that there weren't any complaints, or missed laps and no poor flagging. They are to be congratulated.

Locally, I am sure everyone is now aware of the movement to slow down Formula I and I have received many letters concerning this. I felt that most of the communication that has been published thus far, on a national level, has been one sided, therefore, I feel that the other side of the coin should be aired, and from time to time I would liek to do this. Following are letters that I received from two flyers in southern California, and I solicit any from the readers who would like to comment. Just send them to MODEL BUILDER, to my attention.

The first letter was sent to me, as I am the District VP. The second was sent to Glen Spickler, the NMPRA President, with carbon copies to me. Fellow modelers, read them with an open mind and evaluate them on that basis.

"Dear Jerry,

"I would like to offer some thoughts in rebuttal to Cliff Weirick's article in the June issue of Model Airplane News.

"Cliff points out that we, in southern California and Florida, have our heads in the sand in regard to the future of Formula I. He further states that because of the speed some of the guys are flying in Formula I, we have, in effect, discouraged a host of potential competitors. Oh, come *on*, Cliff!

"You charge that this event is dying because of (1) speed/safety, (2) flying sites, (3) noise, and (4) expense. May I point out to you that in most of the country there never has been a *lot* of interest in Formula I. I lived in Washington, D.C. when the event first started, and there was an initial flurry of activity to build a Goldberg Shoestring, or a Sterling Denight Special, but even during those years, when an idle was required,

Formula I never really caught on. The people there, for the most part, just aren't interested in racing of any sort, and haven't been for years.

"This feeling is reflected in many other parts of the country, in spite of the fact that flying sites *are* available.

"You say "Slow 'em down", because of safety reasons. I recall seeing an article you wrote about a year ago that said just about the same thing. A couple of months later you admitted that you were going to have to "eat crow", and take it all back. At that time, you also stated that you were impressed with the new safety standards that were initiated at the start of last years racing season.

"Now, flying sites. Any flying site that will accomodate a two minute race using the safety standards recommended by NMPRA, can be used at the speeds currently being flown. You must remember that the flying site problem will *not* be solved by slowing them down, as the same safety standards should be employed regardless of speed. And, as you know, flying site problems are not limited to Formula I.

"Your next point was noise, but I see little reason to dwell on this. Engines of all sizes make a lot of noise, unless you muffle them like FAI, but then look at what's happened to FAI...

"Expense, was your last point. I agree. Formula I *is* expensive, but so is pattern, or any other competitive event. Golf, blowing ... it's all a matter of what you like to participate in. And, may I point out, slowing down Formula I will *not* reduce the price of engines or airplanes. As far as your idle proposal is concerned, I think more landing damage will result from this. Most Formula I airplanes are just too clean to slow down with an idling engine.

"In conclusion, I would like to say that the people who *are* going fast are willing to devote the time and effort necessary to achieve this end. If folks don't want to be that deeply involved in one event, the choice is theirs. For the people who want to race, but don't want to spend a lot, there's always 1/2A and Quarter Midget, which is a lot of fun and fairly inexpensive. But for the biggest thrill of all, Formula I is KING, and the KING is still very much alive."

Ron Clem

"Dear Glen:

"Well, I am not very good at writing letters, however I feel that the issue of slowing down Formula I, or making them idle, is enough incentive to make me jot down a few of my feelings.

"First of all, our newsletter editor has seen fit to ask for a vote of the general membership of the NMPRA without publishing opinions on both sides of the issue. She indicated in her column that if an opinion isn't voiced now that a rule will be implemented to slow airplanes down. I do not think this is right, and I feel that any opinion rule should be made after both sides of the issue are made very clear, in the newsletter.

"We are all aware, if we have read any issues of Model Airplane News, of Cliff Weirick's desire to slow down Formula I. To say in a newsletter that the sub heading should read 'Formula I champ says the event is dying', I don't believe is true. The current National Formula I champ, Bob Smith, to my knowledge, is not wanting to slow the event down, nor does Bob Violet, the current NMPRA champion.

"Let's get down to the important issue. I don't believe that the speed of the plane is going to cause accidents. I was around racing when everybody was going two minutes, and watched the event grow, and the times get faster and faster. I can recall at the time, there were at least as many accidents then as now at any Formula I race.

"We were very lucky at that time, when everybody was going two minutes, that nobody was hurt. I think we have a safer event today than we had four or five years ago. I can recall one of the worst accidents vividly, where Cliff Weirick was racing Bob Upton, in which a mid-air occurred between the two planes. I don't remember exactly what the speeds were then, however I believe around 1:45 was considered a very fast plane. We were fortunate at that time that nobody was hurt, as the plane crashed very close to the pits. So to say that the event is unsafe because the planes are going so fast, is unfounded.

"Another point that Cliff makes is that if the planes were slowed down the planes could be used for a dual purpose, racing and sport flying. There is nothing to say that a flyer can't change engines and sport fly the plane anytime he desires. The reason most of us do not do that is quite obvious. We do not care to take the risk of crashing the plane, or to damage it to an extent that it wouldn't draw good scale points.

"We have here in Southern California, what I believe is the safest event around, with the current safety requirements that have been implemented and enforced ... even safer than many pattern events.

"Formula I may be dying in some parts of the country, however this I feel is not due to the speeds, but rather because of the weather and also because of the great distances they have to travel to get to a contest.

"I would like to sum up by saying that I feel that Formula I racing is the epitomy of R/C flying. It is a very exacting sport in that there is no room for error, either in preparation or flying,

and I feel that is the way it should be. There are many other events in R/C flying, such as Quarter Midget, Quickie 500, and 1/2A racing, for people who don't want to go fast. To change an event or to force airplanes to slow down is going a long way to destroy an event that is now one of the safest we have.

"Glen, I do feel that Formula I is as close to me as it is to Cliff, however I do not want to see any more burdens placed on it than are already there. I strongly suggest that we leave everything the way it is and reject any plans to slow down or establish an idle rule."

Lee Frey" ●

Plug Sparks . . *Continued from page 47*

name stood for things like "rip-off", "robber", etc. Regardless, fellows, if you need engines in top shape, check in with "Brick". All engines are guaranteed for quality. Brick can be reached at 4239 Centinela Ave. Los Angeles, Ca. 90066.

In the future, because of repeated requests, we will include the type of plane and motor used by the winners. The O.T. Hydro Results:

Class A-B-C Gas Hydro

1. Phil Bernhardt (Alert/Webra)	6:34
2. Bob Oslan (Mercury/Cox 09)	5:44
3. Bob Ferguson (Wasp/Fox 29)	4:47

.020 Replica Hydro

1. Mike Keville (Strato Streak)	7:03
2. Jerry Vernon (Interceptor)	1:16

Rubber Hydro

1. Tom Sanders (Victory)	3:02
2. Hal Cover (Puss Moth)	2:49
3. Mike Keville (Feinberg)	1:43

The writer could probably talk all day about his impressions of the flying scale contest under the able directorship of C.D. Carl Hatrak, however, this is Fernando Ramos' bailiwick. We'll let him cover it in his column.

One of the outstanding rubber powered flying scale flights was made by Walt Mooney. The writer not only viewed it once but twice. The "Old Professor" demonstrated how a seaplane should really fly. Starting with an unassisted takeoff, his Macchi (featured in this issue) realistically taxied off the water to a perfect circular flight and a near perfect landing. The spectators could not help but be impressed by the scale-like flight. Walt makes it look easy!

Same story for Granger Williams, who completely rebuilt his Mercury Schneider Racer after its unfortunate crash at the "Ohlsson Affair". The writer looked closely, but was unable to detect the difference between the new and original construction. Nice job of refinishing!

On the other end of the spectrum, Bob and Bill Hunter, along with a group of the San Valeers, were trying to set some hydro records. Handling those huge Satellites on water was extremely touchy. Bob was equal to the occasion, employing what the writer describes as the "Bounce Principle". Correctly used, this system allows a very powerful motor to literally snatch the model into the air. Early flights by Bob showed excellent promise, but it was not until the afternoon that any "max" flights were registered by Hunter. In spite of comments to the contrary, the writer could see no difference in the glide once a Satellite hits lift. Just a fantastic glide! Some records were a cinch to be set!

To summarize, the weather was darn near perfect, with a million models (so it seemed) and a facet of outdoor hydro flying to suit the requirement of the most discriminating modeller. No wonder modelers came from as far away as the San Francisco bay area and Las Vegas. Put a mark on your 1975 calendar in the month of June to remind yourself there'll be another clambake like this!!

FLORIDA SUNSHINE

Jim Kloth, of St. Petersburg, sent in an interesting shot of himself, launching his 1928 Don Burnham twin pusher. Jim really puts his heart into the launch, as both of his feet are off the ground. This is no fluke shot, as many of his fellow modelers have noticed this trait in launching. Jim also sez, besides winning second in the King Orange Internats, he also flies against the modern stuff and has won more than twice to prove it is no fluke. More darn fun!

In the follow-up letter (after much prodding by the columnist), Jim gave a thumbnail report on the Pensacola Old Timer Event and a description of the troubles encountered by himself and his six little models. This heart-rending tale should strike home with more than one modeler!

Old Timer Events were divided into Class I and II, with .29 cu. in. engine displacement as the dividing line (shades of the old "Pond" rules!). With naval activity on the increase at the usual 8 Able site, the contest was actually held at Spencer Field. Only problem the field had was a Radio Mast and Radome in the center! Surprisingly, in spite of wind and strange turbulances, no model even came close to the obstacles. Jim sez he never saw such a carnage of models at any particular meet unless it was FAI day at the '71 Nats.

Not too many brave souls ventured out with their O.T. models. However, Jim figured something had to go right after his Class B model literally exploded in a mid-air gust, so flew his .020 Playboy Sr. Perserverance pays off! Kloth ended up first, with Steve Troesch

coming in second flying a Strato Streak. There were other .020 replicas used in Class I, but Jim failed to remember who and what they were. As a sidelight to the win, Jim managed to bash in his Ranger replica.

Bryton Barron flew his Anderson powered Playboy Senior on both days as if there wasn't a breeze stirring. Needless to say, this 70 year old youngster showed the way by winning Class II. Jim further states the old geezer puts the rest to shame, flying the most events, scoring well, and generally outlasting everybody in the summer heat and humidity. True to form, Kloth managed to power his big Playboy Senior quite effectively with a "figure nine" maneuver (free flight, of course!).

Not satisfied with this, our hero immediately harpooned his 1/2A model on the open awning window of a mobile home. Still, hope springs eternal, as Jim dragged out his .020 Playboy (after powdering the big Ranger) for high point. He decided to use the new Sears Mini-Trail Bike. Coming back on a retreival with the front wheel off the ground most of the time, he managed to get it down at the same time a wheel-sized hole in the ground appeared. In full view of the crowd, Jim described a spectacular half gainor, at the same time banging up his knee on the handlebars!

In bed with an icebag, Jim fell asleep and woke up completely soaked! Ice melts pretty fast in 90 degrees. To complete the fiasco, the next morning, while "minding his own business", the canvas stool suddenly dethermalized. As if this wasn't adding enough insult to injury, Jim then made an outstanding five second FAI flight. Great post hole digger! Jim finally retired to Murray Gardiner's tent and only ventured out when it was necessary to get another "cold one". Haw! Jim finally got the message. He refused to fly his sixth sixth model, stating he had to have something for the Lake Charles Old Timer Events. We'll be looking for you, Jim!

PITTSBURGH FUN-FLI

Fred Collins reports the Keystone Clippers O.T. Fun Fli at Ogg Field came off in great style. The occasion was graced by some real old timers such as Harry Geyer and life member Clarence Andre. Most old radio enthusiasts will recognize Geyer as Beacon Electronics, manufacturer of Walt Good's first radio control transmitters and servos.

Held on the Picnic Pavilion, formerly owned by Cliff Ogg (now deceased) and purchased by the R/C club, weather was wonderful, with a bit of a breeze. Probably the biggest breeze was the one the "remember-when" boys were batting. Fred noted that the original idea of the fun-fly was to create interest in old timers. Turned out, there was no real problem!

In 1936, the original club was started by Mike Thomas (deceased) and Phil Weatherwax. When Thomas died, the club gradually disintergrated. Fred's idea is now to revive the Model Wings F/F Club and become a part of the Keystone Clippers, somewhat similar to the Old Time Eagles group. Collins has even uncovered a cache of emblems of the Model Wings Club. That should give the group a little individuality.

All old timers in the Pittsburgh area are invited to write Fred Collins at 29 Stewart Avenue, Pittsburgh, Pa. 15227. Get in on the ground floor!

DETHERMALIZER KITS

For the longest time, most free flighters have been content to make their own home-brew variety of pop-up tail dethermalizers. Jim Crockett Replicas is now offering a kit which includes a dethermalizer plate, D.T. hook stop, D.T. tail cable guide and a D.T. hook, together with complete instructions for a darn near fool proof system. We say darn near, as you still have to light the fuse! Interested modelers should write Jim Crockett Replicas, 1442 N. Fruit Avenue, Fresno, Ca. 93728 for his catalog. This is a little gem of information.

PARTING SHOTS

Jim Dean relates a humorous anecdote in his "Hot Leads", the SCAMP Newsletter. Seems as though at one of the Nationals, while Sal Taibi was working on his model, a friend of Carl Goldberg stepped on the tail section of Sal's model. Profuse apologies followed by extensive repairs. Sal had no sooner repaired the tail then this same fellow repeated the trick! What would you say in a case like that? Despite all denials to the contrary by Sal, we think this is how the controversial inverted lifting tail got started. Haw!

Don't forget the original old timer meet, the 14th Annual Stockton Old Timer Meet to be held in conjunction

with the Fresno Annual on 28 and 29 September. See ya there. ●

Macchi . . . . . *Continued from page 35*

of the fore and aft sticks after removal from the plans. These are then sanded to a streamlined airfoil section. *(This is oft-times referred to as the "Stahl System". wcn)*

The wings utilize sliced ribs . . . on the 26 inch span airplane they are 1/16 thick and are sliced to a depth of 1/8 so 1/32 X 1/16 is just right for the Peanut. The wing is built over the plan with an 1/8 dia. dowel leading edge, the bottom of the ribs (1/16 X 1/8) and a 1/8 X 1/4 trailing edge. Obviously, the Peanut uses half size of everything. The wings are removed from the plan and the wing spar cemented in place. Then the upper parts of the ribs are trimmed and added.

The landing gear wires are installed in the fuselage structure sandwich style . . . between two sheets of wood.

The one (two actually) thing that is different in construction is the float or pontoon. This is virtually a full monocoque structure. That is, the skin takes all the loads, without any keel or longerons to help take loads. The floats were wrapped sheet balsa skins . . . one for the entire top of the float and four for the bottom; one on each side of the centerline forward of the step, and one on each side of the centerline aft of the step. Inside, there are formers made of 3/32 sheet, a 3/32 X 1/4 centerline member along the top of the float inside the skin, and a carved nose block. "A" grain balsa was used for the skins because it can be curved easily.

Cut out all of the formers and cement them in the proper position onto the centerline member. When this assembly is dry, cement the centerline member right in the center of a 3 inch wide piece of 1/32 sheet balsa. Now wrap the sheet balsa around the formers and cement it to them. If you picked your balsa grain right, it should be easy to wrap around the formers and present no problem except at the extreme aft end, where it will ordinarily split because it's just about folded double. Mine were bent completely dry, and I'll now give away my trade secret. . . .

When anything is bent in a curve, the outside of the curve is under tension (being pulled apart), and the inside of the curve is under compression (being pushed together). When wrapped balsa sheets split, it's because the tension force is more than the balsa can take. The compression force tends to crush the balsa, but of course doesn't result in a split until it refuses to compress and therefore forces the tension side to fail. The way around ('scuse the pun) this problem is to temporarily (while the cement drys) make the balsa so so strong in tension that it can't stretch (or split) and will force the inside to crush as much as is needed. How? Easy! Use masking tape to cover the outside of the sheet balsa being wrapped wherever you expect a cracking problem. On these floats, that is over the aft 4 inches or so of the float. Just cover it with masking tape, proceed to fold it just like it was thick paper, and cement it where required. *(Good grief! The man's a genious! wcn)*

Trim this top cover sheet, after the cement is dry, to the proper shape as shown in the side view of the float. Now cover one side of the bottom. The piece of sheet balsa should be larger than necessary. Trim it so that the keel line along the center of the float bottom is straight in the bottom view. Then add the other side of the bottom, cutting the piece to fit on assembly.

The nose block for the floats is added last and carved and sanded to shape.

Covering is with Japanese tissue. All parts are carefully covered and doped. I put 3 coats on the wing and tail, 4 on the fuselage . . . including the *inside* of the wood parts at the nose . . . and about six coats on the floats. These last must be absolutely waterproof . . . it would be nice if the rest of the model were really watertight but thats tough to do. If the model dunks and tips over, get to it as quickly as possible, pick it up carefully and drain it as quickly as possible. Generally, if it wasn't in the water more than ten seconds, and if the nose block stayed in place, the model interior will remain dry.

This model flew right off the board *(Must have been a wet board! wcn)* except for about ten takeoff attempts on less than 90% of full winds. The problem is, the water drag on a seaplane calls for about twice as much power to R.O.W. as it would take if the model were a land plane and rising off ground. With 8 strands (4 loops) of 1/8 flat rubber 18 inches long, the model

will do 35 seconds after a water takeoff, if about 750 to 800 turns have been put in the motor. On 600 turns it will get off the water on most attempts. On fewer turns, it usually will just get on the step and run along to a stop. Sometimes it will lift out one float and then tip up and over, finally making like a Mississippi sidewheel steamer.

Most model instructions say to start flight tests with minimum winds and work up. This is okay if you hand launch for these early test flights. For R.O.W. takeoffs, however, use almost maximum winds . . . Less than this will almost surely result in a dunking.

Aerodynamic adjustments are about 1/8 inch of washout at each wing tip, horizontal tail set as shown on the plans and essentially a straight vertical tail with no rudder offset. A slight amount of right water rudder was used to make the takeoff run straight. The model climbs in wide left circles, and glides in wide right circles. Landings on the water and on the beach were smooth and gentle.

The color scheme I used was all red with white letters, trim, and bottom of the floats.

Have fun with your Macchi MB 308 IDRO. ●

R/C Report . . *Continued from page 13*

tops in the field to get help. I've been collecting material for some time on a particular airplane that I want to do as a scale project, and I found that after assembling all my data I wasn't a good enough draftsman to put down some working plans that I could build from. Desperation dictated that I call Dave Platt, who as far as I am concerned, is the best scale man to be found. Dave was more than helpful; he gave me the advice I needed to get the project going and offered advisory help along the way. How can you say thank you to someone who will talk in detail to you for over half an hour and then tell you, ever so gently, that his dinner is getting cold! Was I embarrassed!

Dave's Spitfire kit and his T-28 are two examples of his fine scale efforts. Dave told me that he and his partner Joe Hancock, are really devoted to first class stand-off scale kits, even though for himself, he still builds AMA Scale. *(We also happen to know that Joe is building a super-scale ship for the Nats. wcn)* His stand-off scale Spitfire, for example, is so good that from ten feet you would have to be an expert to be able to find a scale flaw.

Local flying is booming in these parts. Since our new house has been finished and we moved in, it is my distinct pleasure to be able to drive right by the flying field, both going to and coming from work. There always seems to be someone there. Mostly I have to limit my flying to Sunday afternoons, but lately I've been running home, loading up and heading for the field (I only live three and a half miles from it!) and getting in a couple of hour's flying before dark . . . that's living!

A while back I mentioned that I was building a "Quick One" . . . progress has been slow (?) but I'm coming down the home stretch on it and next month hope I can tell you how well (or fast!) it flew. Also finishing up the DuBro Hughes 300 . . . a rather long and detailed job as far as I'm concerned . . . Many many parts to be bolted together . . . and my only beef so far is that they didn't even include a set of socket-head wrenches in the kit! From all I've heard, the chopper flies well, and it is a big seller . . . but may prove too much for the beginner. The closer to finished I get on it the more excited I become . . . I still wonder if I'll be able to fly it. Their flying instructions are quite complete . . . if I can just remember what to do, and when!!

Some two or three years ago I predicted that .40 size planes would be the coming thing. Apparently I was right, as the Super Kaos .40, plus many, many others are becoming more and more popular. My reasons for saying this, at that time, however, were much different than they are now. As it turns out, model engine fuel has doubled in price,

and the economy of a .40 over a .60 for sport flying immediately comes to the fore. Planes such as Bridi's .40 size trainer, or his Super Kaos .40 are just right for most .40's, yet you still have a pretty good sized plane.

Incidentally, a suggestion: If you are building a Super Kaos, either the .60 or .40, you might want to move the stab back so that the hinge line is even with the rudder hinge line. On the Super Kaos, many flyers have found that the elevator was a bit too far forward for their taste, and this was evidenced by the fact that elevator control was touchy . . . Moving the stab back, as on the standard Kaos, solved the problem. *(Any comments, Joe? wcn)*

Well, ye R/C editor was left at the post . . . a couple of months back, in the June issue, the great and venerable Guillow's Trixter Beam was shown . . . plus plans . . . plus "Stick 'em" patterns for all parts. Would you believe that I found one of the original kits a couple of years ago? Then I cut patterns from the parts (so I'd still have the original kit). The fuselage is framed up, the wings and stab are already covered with silk-spun Coverite, and it has been in *that* part of the shop called "projects to be completed" for the past 18 months . . . I had intended to finish it and take pictures and show it to one and all so they could see what the "good old planes" looked like. Have a Max .19 and my Hobby Lobby 3 all ready for it . . . Oh, well . . . I'll get it done one of these days . . . *(Need another "TUIT" button, Frank? wcn)*

Well, that's it for this time . . . write . . . would you believe that I do answer my mail? Frank Schwartz, R/C Editor, 2400 West End Ave., Nashville, Tenn. 37203. ●

F/F Scale . . . *Continued from page 32*

time as "personal" clamps will be needed (fingers) to hold the two sides in place. At the same time, make certain the top edge of the side fits snuggly against the flat surface as well as the side of the float. On some floats, a second application of glue is needed if the nose of the float requires much distortion of the side piece. This seldom happens . . . but sometimes does . . . so be prepared.

After both floats are covered on both sides and are good and dry, use a long sanding block and carefully sand bottom edge to assure a proper alignment and fit at the chine formers. Now, using vellum or other type tracing paper, make a rough cut (oversized) of the right or left bottom (remember it's a "V" so there will be two sides for the front portion ahead of the step and two for the part behind the step), lay the vellum on the float and with a soft pencil rub it along the centerline, edge, front and rear. Cut around lines that appear as a result of the procedure described, slightly on the outer edge of the line. Cut out template you've just made and lay on float in appropriate position, cut and trim until you have a perfect fit. Use templates to cut out 1/32 sheet, put seam of glue around edges of area and on formers affected. Place lofted sheet in position, holding with "personal" clamps again, or in some cases, with small rubber bands, until dry.

Next, cut some 1/32 x 1/32 strips for the chine edge and outer keel, and in some cases longitudinal "steps" or runners (used to simulate "fluted" bottom found on some floats). Put beads of glue where you want to attach these pieces and just as it sets up, attach chine and keel pieces, aligning as they dry by running fingers back and forth over strips, forming and bending them as required to fit properly.

4. Finishing can be accomplished in many ways, however, I simply apply a coat of dope, followed by several coats of balsa filler, a final coat of clear, then the colored dope. Use only enough to give proper color, too much will weight the floats down. Lastly, but importantly, wax the float bottom with several thin coats of clear paste wax, polishing lightly between coats. Most any good wax will do, however, I've used a brand called "Minwax" successfully.●

Hannan . . . . *Continued from page 34*

pay off for you in caring for your paint brushes. First, spend a little more and buy better brushes! Second, take care of your brushes. A little special care will pay off for you in easier and better work. No matter what sort of paint you have been using, when you are through painting, wash your brush in the appropriate thinner and then be sure to wash it in soap and water. After rinsing well, and while still wet, reshape the bristles to their original contour and let dry. However you let them dry is the shape they will be in when you go to paint again. The reason for washing brushes in soap and water is to remove the residue and paint particles that remain after washing in the regular thinner; there is always some whether you can see it or not. By this special treatment I have some red sable brushes that I have used for 30 years."

TOPICAL TWISTS

One of our favorite (or perhaps we should spell it "favourite") columns devoted to this hobby/sport appears in AEROMODELLER magazine, and is devoted to commentary, usually humorous, relating to current trends. The June issue contains some references to tiny flying models, which we just couldn't resist borrowing:

"Looking again at the scene, things seem to have gone from the 'for blimey' to the ridiculous, for the new Scale cult appears to be for very tiny models, mostly rubber-powered. It is a known and observable fact that Scale models do not fly particularly well, which is why the model flyer, who puts flyability before appearance, doesn't copy the full-size stuff. It is equally well known, and observable, that small models are not particularly good flyers, leaving one in doubt as to the capabilities of models that are not only Scale, but small. Suffice to say, perhaps, at one event, the only model to put in a semblance of a flight was criticised for looking too much like a model plane. Must be a moral there somewhere."

O.K. Peanuters, to us those sound like fighting words! Anyone for sending some hot Peanuts to the U.K. to be proxy-flown?

SAFETY FIRST

Safety is one of those topics like polution, taxes, and politicians, which everybody talks about but seldom acts upon. But, the time *is* upon us when we MUST pay greater attention to safe model flying, if we are to retain the use of our ever-diminishing flying sites. Probably the majority of model flying accidents are exactly that . . . accidents. Structural failures, wind shifts, radio malfunctions, and the like are bound to occur occasionally, and one can only try to improve maintenance, pre-flight procedures and exercise good judgement in an effort to prevent this sort of happening.

Unfortunately, there is a more vexing sort, in the form of a small minority of flyers who deliberately fly their models in a dangerous manner. Safety rules just don't seem to get through to these inconsiderate few. Tactful suggestions are to no avail, and one is left wondering if a workable solution, short of ground-to-air missiles, exists to deal with the problem.

"Pylonius", author of the previously mentioned "Topical Twists", has advanced a truly practical answer. Since the problem is basically a psychological one, the solution tackles the very root of the cause, the flyer's ego: "My idea of dealing with the danger man is by a booing campaign. Whenever anyone flies to the public's (or other model flyers') danger, particularly the show-off, he should be subjected to catcalls and booing by all other model flyers present. One good boo is worth a hundred pounds-worth of insurance coverage."

To this we can only add, AMEN. Club newsletter editors PLEASE COPY!

REFRESHMENTS, ANYONE?

During the recent United States Free Flight Championships, conducted near Taft, California, we ran some non-scientific but interesting tests dealing with the relative thirst-quenching properties of various beverages. Discounting the alcoholic varieties, which were outside the scope of our investigation, we reached the conclusion that there is a vast difference in effectiveness, bearing very little relationship to advertising.

Although we didn't have any of the animal-handled beverages such as Gator-Aid or Panther-Pick-up on hand, we did have a variety of offerings from which to chose, thanks to Bill Warner's large capacity ice chest. After two days under the broiling sun, we ranked the drinks in the following order:

1. Orange Juice: Far and away the best, with no unpleasant after-effects.

2. Water: Probably as effective as

O.J., but not much taste appeal.

3. Root Beer: This one needs to be qualified, as the brand involved made a clear-cut difference. Some brands seem to contain an artificial flavor resembling pepper! A pox on those manufacturers, and three cheers for the good guys.

4. Milk: Cow juice felt great going down, but produced an unpleasant, drying after-effect. The recent price increases had a similar effect on our wallets.

5. Best-known (or most advertised) soft drinks: These proved the least effective of all, after real thirst had set in, actually seeming to cause irritation to the throat lining. In fairness, it must be pointed out that one of our volunteer testers had a strong brand loyalty, and disagreed with our conclusions, although he was seen imbibing other liquids when he thought no one was looking!

Of course, as supplies became depleted, everyone became less and less picky, and we were finally reduced to drinking the water from the melted ice in the bottom of the ice chest. Just thought you might like to be prepared for YOUR next trip to Taft. ●

Heathkit . . . . *Continued from page 21*

"The cavitation bubbles are provided by nuclei which are in the contaminants and form under and around the contaminants. This is why ultrasonic cleaning is so effective. The cleaning action happens where it is needed the most. A dirty solution is ineffective since the cavitation takes place throughout the solution rather than concentrating on the item being cleaned.

"There are many factors pertaining to the solution that can affect cavitation. Some of these are: the temperature, surface tension, viscosity, and depth of solution. Also the amount of dissolved gases in the solution can affect cleaning action."

The key to successful use of an Ultrasonic Cleaner is in the choice of cleaner solution. Use pretty much the same stuff you'd use if you were going to do it the hard way, by scrubbing. Many items can be cleaned in a soapy water solution, with wetting agent (fabric softener) added. Solvents are used for grease and oil contaminents. Carburetor cleaner works well on ignition engines, but for glow engines, straight methanol is best (if you can find it) since castor oil and gasoline are not all that compatible. Actually, toxic or flammable solvents should not be used. If you use such items, keep the work out-of-doors for best ventilation. Acid baths must be in separate glass containers, which are, in turn, placed in the cleaner tank which has been filled to a depth of 1/2 inch with water and a wetting agent.

The GE-1150 Ultrasonic Cleaner, as with all Heathkits, is easy to put together by following the step-by-step instructions. No knowledge of the electronics involved is necessary. Not counting the over-night wait for the epoxy seal to cure, the unit takes only a couple of hours to assemble.

The test to check out the operation of the ultrasonic cleaner is simple, but very graphic and impressive. You put an inch of water in the stainless steel bath tank, set the electronic timer for one minute and turn on, and then hold a one inch wide strip of regular flat (not quilted) aluminum foil vertically in the water in the center of the tank for thirty seconds. When you remove the foil, you'll find a dozen or more pin-sized holes in the foil . . . some overlapping others to form larger holes.

When those bubbles start moving, they don't mess around! ●

Counter . . . . *Continued from page 7*

plated metal fittings, pre-finished ABS vacuum formed hull, plastic deck and cabin, windshield, decals, battery case, and detailed instructions.

The second boat is a Newport R/C Sailing Yacht with L.O.A. of 32 inches, beam 8-3/4 inches, and mast height of 47 inches. Sail area is 342 sq. in. Hull and superstructure are ABS vacuum formed plastic, requiring very little trimming. Kit includes pre-finished nylon sails, printed plywood deck, chrome plated precision brass metal fittings, decals, and step-by-step plans and instructions. Suggested retail is $94.95.

* * *

Johannes Graupner, the German firm which is known around the world for its line of excellent model kits, has several new offerings this year.

The BO 209 Monsum is a semi-scale model of this smart looking two-seater lightplane. For .40 size engines, the model spans 62-1/4 inches, is 45-1/4 inches long, and weighs 5-1/2 to 5-3/4 pounds ready for takeoff. The kit features a lot of prefabrication, including laminated fuselage sides, ready-formed wing and tail surfaces, plastic engine

cowl and crew seats, plus die-cut and printed balsa and plywood. Hardware includes combined engine/nose gear mounting hardware, wheels, etc. The wheel pants are not included, but are available as an accessory kit.

The "Maxi" is a high wing, cabin type trainer model for the advanced beginner who is ready to tackle ailerons, though it flys quite well without aileron control.

Designed for .40 engines, the Maxi has a 63 inch wing span, is 48-1/2 inches long, and weighs 5-1/4 to 5-3/4 pounds ready for takeoff. Like the Monsum, the kit features a great deal of prefabrication, with balsa planked foam core wing, laminated full length fuselage sides. Hardware and accessories are also similar to the Monsum.

A unique feature of the Maxi is the long (standard) or short semi-symmetral sectioned wing. Plans show how to make this simple modification which gives hotter performance and obviously eases the transportation problem.

Graupner is also offering a conversion kit for its Bell 212 Twin Jet Helicopter. The set includes all items required to move the rotor head assembly upward approximately 1-3/16 inches, thus improving clearance for the rotor blades. The company is also marketing a set of inflatable floats for the Bell or other choppers. These are for water or land operation, and are great training gear for new helicopter pilots.

The "Bugsier 3" is a 31-7/8 inch long R/C tugboat produced by Graupner. Molded plastic parts include the hull, bulwark, funnel, life-boat, and rudder shells. There many other molded plastic items which assist in making a realistic model of this powerful German tug out of Hamburg.

Prices on the above Graupner models were not known at this time. Check with your dealer or write to Graupner's importer, French Motor Company, Inc., 33 Berry St., San Francisco, Calif 94107, for information on the nearest source of these kits. ●

R/C Auto . . *Continued from page 43*

and fastened to the body with #4-40 screws as shown in the photos.

HANDLE

Throw away that plastic roll-bar on top of the car and replace it with a metal one. This can be made from a piece of 1/8 inch dia. steel, threaded at both ends so that it can be held to the body with nuts. If you want simplicity, you can bend a simple roll-bar from heavy coat-hanger wire and hook it under the body. You will find that the car can be carried easily by holding on to the handlebar (Fig. 5).

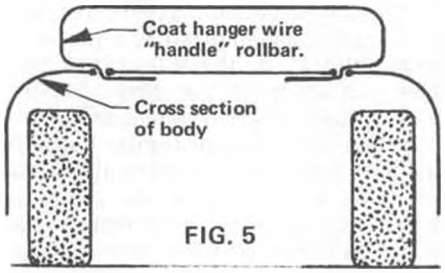


FIG. 5

So there you are . . . A few simple modifications that can help you get more fun out of your Jerobee car. You can go as sophisticated as you like as long as complexity does not become a burden rather than a help. ●

0-46A . . . . . *Continued from page 19*

at a fortunate time. In WW II, the air was won by radial engined, metal monocoque structure airplanes that did the bulk of training, transporting, bombing and fighting. It was airplanes like the 0-46A and the 0-47A that showed the way.

Most 0-46A's went to National Guard squadrons, though at least eleven were sent overseas. Some were assigned to the 9th Observation and Attack Squadron of the Philippine Army Air Corps, and at least one wound up in the 17th Pursuit Squadron. All were destroyed early in the war, most of them on the ground.

One 0-46A, s/n 35-179, was found two decades after a downwind landing accident in the weeds off the end of the runway at Brooks Field, Harlingen, Texas. The Antique Airplane Association hauled it to Ottumwa, Iowa, but the task of rebuilding it was too great and the wreckage was traded to the USAF Museum for a flyable C-47. Purdue University took on the task of restoring the 0-46A, and at last report, it was scheduled to go on display at the museum early this summer. ●

Sailing . . . . *Continued from page 49*

wind. Hook the sheets to the booms and notice the distance that you need to allow the main boom to be off the centerline to fit the lower-batten-parallel-to-the-centerline rule. Also notice what happens to the leech when you pull too much sheet in.

While you have the boat in this position, measure the point of maximum draft at a few places on the sail. It should be about 45-50 percent aft of the mast, and amount to about 10 percent of the chord. To move the draft forward, tighten the mainsil luff. For bolt-rope mains, this means that the sail must move easily in the slot for its whole length. Don't be satisfied with a sail which gets pinched in the slot, take it out and use some folded over sandpaper to clear the slot for free movement. To allow the draft to move aft, slack the luff. We find it convenient to mount a cleat on the mast somewhat below the main head, and run a halyard from the head grommet, up to the mast top and back to the cleat. This seems to work better and having a downhaul for

luff tension adjustment, maybe because you are more prone to fiddle with something if you can reach it while standing, or while the boat is still in the water.

There is a continual interplay between three adjustments made to the main sail. If you adjust one, you have made changes to the others simply because all three are made to the same chunk of Dacron. These adjustments are:

1) Luff tension . . . this controls position of maximum draft location.

2) Foot tension . . . this controls amount of draft in the lower 2/3rds of the sail.

3) Sheet tension . . . this controls the amount of twist, the shape of the leech, and the direction of the "drive" vector for the mainsail.

Put your boat on its side again, and watch the shape of the sail change as you tighten the luff. What happens to the leech? What happens at the foot? Now tighten the foot outhaul. What effect does this have on draft location? What does it do to the leech? Finally, experiment with sheet tension. You'll notice the twist come out of the sail as the tension increases. You'll also see the growth of a "hard leech" when you pull too hard. I think by now you'll agree that leaving the boat standing up on its cradle in a vertical position, and trying to adjust the sails is doomed to failure. Let her lie down and you'll learn what you're doing. An hour a week spent in such exploration will surely pay off in dividends.

A good trick to help you with developing an eye for the "shape of speed" is to take photos of your boat underway from all angles. Try especially to take shots from aft of the beam, which will show the leeches. Also try to get some shots which show the shadow cast by the mast onto the sails, this will give you a key to sail shape too. I use Tri-X film, and develop it in 1:3 Microdol per Kodak's instructions. After fixing and rinsing, we snip the dry negatives up and put them in 35mm slide mounts for projection with a slide projector. When used in conjunction with a log book that you are already keeping (you are, aren't you?) with wind conditions and how you set up the boat, negative slides can be extremely valuable. You can't imagine what interesting things you can see, when you have stopped the action, and can look at your boat for 10 minutes. We routinely shoot two 36 exposure rolls on a day of tune-ups, and process them for viewing that evening, while the day is still fresh in our minds.

The accompanying photographs were chosen to give you some examples of leech shapes and what you can learn from them.

Please forward your questions to me care of MODEL BUILDER, or direct to Rod Carr, 7607 Gresham St., Springfield, Va 22151. Next month we will continue our discussion of mainsails and look at the traveler and boom vang as aids to mainsail shape. ●

F/F . . . . . *Continued from page 39*

to all cements, including epoxy. It is also completely transparent and lays flatter. Also try using the backing from Monocote or Solarfilm. Use it over plans or as a surface on which to mix epoxy. It can be used over and over again by peeling off the big pieces . . . recycle, it's another "in" thing to do.

8. Pin Magnet. Buy a large magnet and end the hunting and spilling of those pins. Simple and effective.

9. Neoprene nozzles. Heat a piece of fuel line over a flame and stretch it until it thins at the center. Hold 'till cool and cut at the thinnest part. Makes good nozzles for fuel fillers and glue tubes; gets a small squirt of fuel into that .020 port too.

There you have it. Nine neat ideas to try. Direct from the pages of "The Bat Sheet", "The Boeing Hawks Newsletter", and "Flightplugs". Thanx, fellas.

PRESSURE FUEL SYSTEMS

Pressurized fuel systems are the way to go in many events. In the FAI Power event, there is no serious competitor who doesn't use a power system. Many contestants also find them desirable in AMA events. Although they are widely used, a discussion of their installation and functioning has not appeared in the model press for a number of years.

Pressure systems fall into two categories: One is the external pressure system whereby the fuel is forced to the engine by a distended pacifier or pen bladder. In the other system, pressure is supplied from the crankcase of the engine to a metal tank, which in turn forces the fuel to the venturi.

Of the two, the pacifier system is the easiest to install and the most difficult to operate. I will discuss this system first.

A tank can be purchased already made up (from Anderson Products or from George Bahrman) or home-built from a Binky baby pacifier. Here's how: Sneak into the baby supply section of your local drug store and pick up a Binky brand pacifier (it would be better if you bought it, actually). Take it home and remove the plastic handle. Slip a short length (about 1 inch will do) of 1/8 inch O.D. brass tubing half way into the open end of the pacifier. Tie the pacifier firmly onto the tubing with monofilament fishing line or heavy thread . . . wrapping it around several times. Attach fuel tubing to the other end of the brass tubing and run the fuel tubing through your pinch-off timer (see photo) to your engine.

If you want to use this kind of system with a flood-off style timer, you

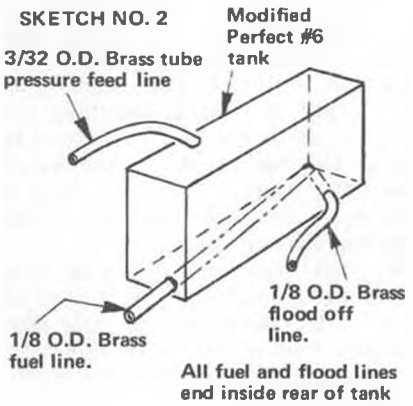
will need to construct a "T" fitting from 1/8 inch brass tubing. See Sketch No. 3.

Starting the engine with a pacifier pressure system: Fill the pacifier with a syringe until it is about the size of a large walnut. Close the needle valve on the engine so no fuel enters, then open it until the fuel begins to drip steadily into the venturi. Press the fuel tubing shut using your finger or thumb, prime the engine and start it, releasing your finger when the engine "catches". This will take some practice, but after you get the procedure worked out, it isn't too difficult. An electric starter does make the job easier.

If you haven't been using pressure fuel systems, you will find that the needle valve doesn't need to be opened very far in comparison to a non-pressure system, and that there is very little variation from flight to flight or day to day in the needle setting.

The pacifier system can function very well with a pinch-off timer. It also works well with a flood-off timer, but the resultant fuel mess makes this less desirable, from my point of view.

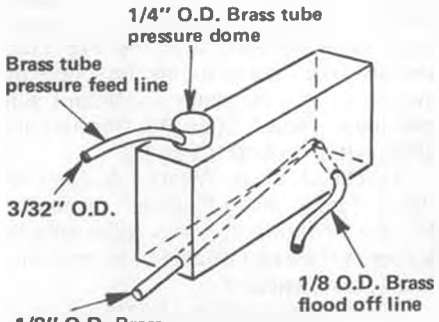
The metal tank or regenerative pressure system is a bit more difficult to set up, but it is a cleaner installation. A typical tank set-up is shown in Sketch No. 1. Using a Perfect brand Rec-Tank No. 6, remove all existing tubes and solder the holes shut, using silver solder. Drill three holes into the tank; one at the top front, one at the bottom front and one on the right side near the bottom back. The top line is for the pressure line from the engine and uses a 3/32 inch O.D. brass tube, which has had the orifice decreased in diameter so that it is approximately .006 to .010 inches. This small opening allows enough pressure into the tank without robbing the engine of needed crankcase pressure (which would make it run erratically). The two lower lines are of 1/8 inch O.D. brass and must be soldered into the tank so that they end at the bottom back end of the tank. All joints must be securely soldered to forestall leakage. To check for leaks, seal two of the tubes by connecting them with a piece of fuel tubing. Then immerse the completed tank into water while blowing into the third tube. If bubbles appear, resolder until any holes are sealed.



Install the tank in the fuselage using silicon adhesive or epoxy. Run the brass tubes so they emerge outside the fuselage. Attach neoprene or similar fuel tubing to the brass tubing and connect the pressure line to the pressure fitting on your engine. Attach the fuel pick up tube to the venturi nipple, and run surgical tubing through the flood-off timer to a flood-off nipple which you will have to tap into the venturi body of your engine (or install a piece of brass tubing softened and bent so that the end points into the open mouth of the venturi).

An alternate pressure tank is detailed in Sketch No. 2. This uses a small pressure dome soldered to the top of the metal tank. This dome is a 1/4 inch length of 1/4 inch diameter brass tubing, sealed at the top with a piece of brass shim stock. In this variation, the 3/32 inch brass pressure line is soldered into the dome. The .006 to .010 orifice is punched into the top of the metal tank with a thin pin and the pressure dome is soldered over this orifice. The effect of this is to allow a separate and

slightly larger cavity for pressure to develop in the tank to insure a more positive supply fuel under pressure for the flood-off phase of the operation.



SKETCH NO. 3

Starting an engine with a regenerative pressure system is just like starting an engine with a non-pressure tank, except that the needle valve will not need to be so far open.

The benefits of a pressure system, of either type, are several. One; engine adjusting is much less critical. Two; a hard hand launch is possible without starving out the engine or causing a critical sag at launch. Three; engine stoppage is just about as rapid as is physically possible . . . which is important with the current rules stressing short engine runs.

PLAN OF THE MONTH

This month's "plan" is a detailing of a Montreal propeller stop for John Clear's Wakefield. This prop features an integral spinner and super-simple Montreal Stop. John says the whole thing can be made with pliers and a razor blade (well, almost). The prop blades are laid up from four laminations of 1/32 sheet and sanded to shape. The facing plate for the nose block should be hard aluminum such as 2025-T3 and be about .020 thick. The auto-rudder is tripped by the stop plunger pin as shown.

LETTERS

Never a month goes by without some letters and cards coming across the old desk. Normally (if such a word applies), unless it's a Hornbeet J. Murphman type letter, we don't acknowledge them in print, but last month, I received one that's just too nice to pass up without excerpting in print.

The letter begins with "Dear Mr. Stalick;" That in itself is an oddity, as I haven't been called Mr. in awhile. It also presents another addition to the "Modelers We All Have Known" humor section of the March issue. This addition is known as:

The Fetcher:

Can be seen with wind blown hair, wet and muddy pant legs, a sun burned face . . . red as a lobster, tears running down cheeks with exhaustion, 20 pounds underweight from lack of time to eat properly, unmanicured nails, caked with dope and glue . . . and watches from the sidelines as the trophies are handed out to the deserving.

Auditory cry: 'You have GOT to take me to a ladies room'.

Subtypes: The Wife. The girl in a modeler's life."

The letter continues:

"There is no way to describe the thrill from watching the launch of something beautiful, which was once just a mess of balsa, glue and dope, and the other materials which result in such a fantastic creation . . . I have found modeling to be a great sport and one of the cleanest hobbies of this day and age . . . I wasn't sure if it was proper for a modeler's wife to write you concerning modeling, but thought perhaps if you should put this in one of your issues, it might give other wives a little initiative to start building instead of helping . . . I am enclosing a snapshot of myself and my first 'Starduster', which I would certainly recommend for a beginners first aircraft. The simplicity of construction and the flying results are really surprising . . .

Respectfully,
Bonnie L. Fry."

Unfortunately, the snapshot is in color and cannot be printed here, but from my observation, it is indeed a well built Starduster 350, and a model that a beginner or expert would be hard pressed to beat.

Thanks for the letter, Bonnie, I hope your resident Balsa Butcher is surprised,

and I hope more husbands encourage their wives to become involved with this fascinating hobby.

GOOD LUCK DEPARTMENT

Shortly after this issue of MB comes out, a bunch of FAI F.F. types are going to be gathering at Taft, California to select the 1975 U.S.A. F.F. Team. Although I wasn't able to make it past the Semi-Finals last year, I wish all of the contestants the most of luck and may the best team be selected.

HUMOR DEPARTMENT

After reading a short squib in Aeromodeller about how Americans seem to be trophy hungry, I got to thinking about how we give the biggest or the best or the most to winning contestants. Apparently, in Merrie England, a parchment certificate will suffice for winning first place, but here in the colonies, an engraved winged victory and a new engine *may* do the trick for Third Place. Researching the issue, I found that we give Grand Prize awards; Open Grand Prize, Senior Grand Prize, Junior Grand Prize, High Time, Placing First, Second, Third . . . and sometimes more. I have also found that we give Blunder-Mugs or Thunder-Mugs (a perpetual award for the stupidest flight of the day), MOMWATS towels (to the loudest complainer of the day . . . it stands for: My Oh My, What A Tough Story), and Booby Prizes (no need to explain this). We give losers prizes and winners prizes, ad nauseum.

After thinking it through for a bit, I have concluded that we Americans are simply prize hungry. However, the above listing has some obvious gaps. I suggest that some forward thinking F/F club seriously consider initiating the following awards so that no single contestant will ever be excluded when the trophies are given out at a contest's end:

1. The Average Award: A copy of "Free Flight Made Painless" presented to the contestant who consistently places in the exact middle of all entrants in all events entered.
2. The Punctuality Award. A gold painted hourglass presented to the last contestant to arrive at the flying site.
3. The Ugly Award: A life-sized poster of King Kong presented to the contestant whose model is the worst looking one on the field.
4. The Competitor Award: A Smucker's Jam Jar filled with two year old sneaker juice for the contestant with the most models on the field, who doesn't fly.
5. The Golden Tongue Award: A chocolate covered Brillo pad with directions on how to wash out your mouth . . . and enjoy it, for the contestant who has difficulty using four letter words . . . too many of them.
6. The Most Durable Contestant Award: A twice life-size facsimile of a human eyeball dyed yellow, for the contestant who never once during the contest needs to ask where the restroom facilities are.

That's enough to give you the idea. I'm sure that there are other award possibilities, but if you come up with some ideas . . . remember that the purpose of the award is to be certain that no contestant goes unrewarded for showing up on the field.

With that in mind, we draw to a close another mind-bending issue of MODEL BUILDER Free Flight . . . and none too soon, at that.

Winner of the Mystery Model Contest for June is Don Assel, Canton, O. The model was the "Oh No", designed by Glen Spickler, who is now president of the National Midget Pylon Racing Association. Where did he go wrong, men?

No one has yet identified the flying wing Mystery Model for July. ●

Workbench . . *Continued from page 4*

The famed Cliff Telford/Bob Violett duo did it again in FAI R/C Pylon, taking first place for the third time in a row. They took first in all eight heats of this event which is still on an International status. The USA's Jim Booker and Mike Helsel placed 2nd and 3rd for another clean sweep.

The R/C Soaring event, which is also still on International status, was

split into powered and powerless this year, in accordance with the new provisional rules. In the powerless category, Mike Malherbe (we're not sure, but he could be the son of our boisterous friend Monty) of South Africa was first, followed by USA's Rick Lederman and Mark Smith.

With powered soaring competition originating in Europe, we were surprised to find that there were only two entries in this event . . . and they were both from the U.S.A.! Placing first and second was the famous father and son team whose last name is a proof reader's nightmare . . . Jerry (father) and Jeff (son) Mrlik.

The biggest flying site in the world for indoor modeling is the huge airship hanger at Lakehurst. (That is, usable site. The Houston Astrodome may or may not be bigger).

It is said that the hanger has actually been known to have its own weather inside, complete with clouds and rain. This year, however, the outside atmosphere provided a downpour of rain at the height of indoor activity. Models were being shot down as if in an anti-aircraft barrage, as roof leaks permitted rain drops to wreak havoc on the fragile "microflimsies". Several world record possibilities were thus terminated!

Survivors of the carnage included Ryszard Czechowski who placed first and helped his Polish mates to a team first. USA's Bucky Servaites was second, and Karel Rybecky, Czechoslovakia, was third.

That's all we have at the moment. Hopefully we'll have more info along with pictures, next month.

AN INSURING NOTE

Fred Komlosy writes a newsletter for the Palm Beach Aeronauts that always contains interesting tid-bits of information. In the July 2 issue, he brings up a point about insurance that is worth investigation by all modelers.

According to Fred's report, a club member damaged the door of a parked automobile with his Contender. (We assume he flew into the car.) The modeler, John Ridella, decided to seek coverage through his homeowner's insurance policy. As it turned out, he was adequately covered under the "liability away from premises" clause and the claim was paid promptly. John recommends checking your homeowner's insurance to see if it contains the "liability away from premises" clause, and if not, it can be added for a nominal fee. John also noted that similar coverage can be obtained by those who rent rather than own their home.

If your insurer gives you the "never heard of such a thing" routine, write to us, and in the meantime we will find out the name of John's insurance company and pass the information on to you.

By the way, it should be pointed out that John's experience in no way reflects on AMA insurance coverage, as no attempt was even made to file an application. John simply chose his homeowner's policy as just another way to go.

"ACCORDING TO THE ROOLS"

Some controversy was raised recently concerning the legality of the Italian Rossi 15 for Quarter Midget Pylon Racing. Being R/C Contest Board Chairman, we quite naturally ended up in the middle of the hassle and had to issue a clarification and/or interpretation of the existing AMA Provisional Rule concerning engines.

Actually, the rule is not all that muddy. It states quite emphatically that the engine must be an R/C type and there must be 1000 of them available. We disallowed the engine because it has not yet been made available with an R/C carburetor. Those wanting to use the Rossi, which is unquestionably a hot performing engine, are adding a Perry carburetor, and find the combination to work quite well. However, until the engine is sold as a complete unit with carburetor, it does not meet the rule requirement as now written.

Steve Helmick, a member of the active free flight fraternity, who has been observing the fracas from a safe distance, sent us an instruction sheet which comes with the Rossi 15. He noted that on the parts list and exploded drawing therein, an R/C carburetor is shown, Thanks for your concern, Steve, but as noted above, until that carb is available *with* the engine, as an R/C unit, the engine still doesn't meet the rules requirement. When it does, the modeler may, if desired, remove the Rossi carb and substitute the Perry version.

Incidently, Steve comments that since the much desired Rossi is already so hard to come by for use in free flight

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FAI power, he almost hopes the factory won't begin marketing the R/C version because it'll make the engine that much more difficult to find. . .makes you wonder how they'd ever meet the 1000 minimum rule for QM in the first place. . . .

ABOUT THAT METHANOL

MODEL BUILDER reader and article contributor John Penhallow (Minnow Profile Goodyear, February, 1972 and "What's in a Name?" August 1973) admits he is a little late to come to our rescue, but . . . better late, etc . . .

We were taken to task by some supposedly knowledgeable individuals concerning sources of methanol, the primary ingredient in glow fuel. In a Workbench article during the "Great Oil Company Put-On to Increase Prices" era, we mentioned that methanol came not only from wood pulp, but was also one of the tap-offs in refining of crude oil, and furthermore, could also be refined from natural gas. K & B's Johnny Brodbeck was our source of this information, and he in turn was educated by his suppliers of the juice he's been mixing and selling for glow fuel all these years!

John Penhallow sent us a xerox copy of a page out of the April 1974 issue of MATERIALS ENGINEERING, in which is published a table showing how the DuPont Company uses major raw materials from oil and natural gas. From natural gas comes methanol, which is used to provide; DMT for polyester fiber, film and photo products; formaldehyde for acetal resin, finishes, and ureaform fertilizers; and methylamines for herbicides, and DMF solvent.

Now, if you "experts" want to tell DuPont Company that their chemists are full of bull manure, be our guest!

PLAN AHEA
D

R/Cers who have attended previous trade shows know how important it is to make motel reservations well ahead of time.

For 1975, the three big ones; WRAMS in White Plains, New York . . . the Toledo Conference . . . and the MAC Show in Anaheim, California, have all done a big juggling act and switched their usual show dates.

First one will be the WRAMS, scheduled for February 28, March 1 and 2, at the same location. Next comes the Toledo Conference, which in 1975 will finally desert the Lucas County Recreation Center in favor of the much larger Toledo Sports Arena facility. The dates will be April 4, 5, and 6. Finally, the MAC Show, still at the Anaheim Convention Center, will take place on May 3 and 4. There'll be more information coming later. ●

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Today's constant theme is a shortage of this and rapidly rising costs for that; everywhere you look it's either not available or costs too much! Radio Control is no exception. Fuel is hard to get and prices have nearly doubled. Building materials have skyrocketed. Many modelers are driving smaller cars with less space to carry the latest pride and joy to the field. Even so, most flyers want the positive power and responsive qualities of sixty powered airplanes—not the "flea-like-flit" of the small bore jobs.

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