

The MODEL BUILDER



AUGUST 1973

volume 3, number 21

85 cents



CARL GOLDBERG

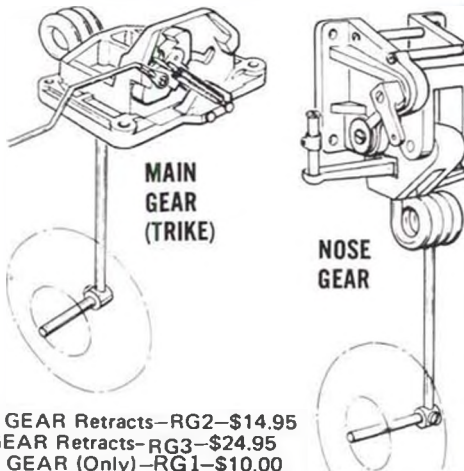
"12 Pounds 3 oz.—and some of the landings were rather abrupt!" **CG RETRACTS**

Mike Ilyin is a pilot for Delta Airlines, and knows the value of reliability in flying equipment. Read his comments on CG Retracts:

Dear Carl: Here are a couple of snapshots of my Cherokee Twin. The plane weighs 12 pounds, 3 oz. and is powered by twin K & B .40 engines with K.O. Mufflers. Of course, the best feature is the Carl Goldberg Retract System. To date I have about 80 landings on this bird with no landing gear malfunctions. And due to "Gusty Wind," "High Hum-

idity," the "Phases of the Moon," and other Acts of God, some of the landings were rather abrupt! Your landing gear system features, what I consider, the strongest construction available today. I am presently building a tail dragger Kaos featuring your retract system. My compliments on a fine product.

Michael P. Ilyin



LONG STRUTS & ADJUSTABLE AXLES

Can also be used in older model CG Retracts.

Twin Gear set RS2—\$3.00

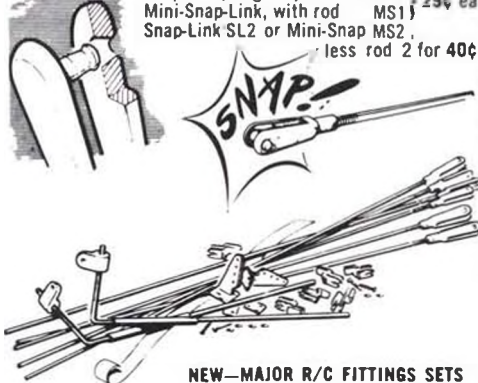
Tri Gear set RS3—\$4.50

TWIN GEAR Retracts—RG2—\$14.95
TRI-GEAR Retracts—RG3—\$24.95
NOSE GEAR (Only)—RG1—\$10.00

UNIQUE SNAP-LINK! Patent 3711134. Now for the first time—you can buy a truly safe link—the SNAP-Link!

- Tiny 45° shoulder snaps through arm, prevents accidental opening. So unique it's Patented!
- One-piece design—no separate pieces that might come apart.

Snap-Link, Regular, with rod SL1 } 29¢ ea
Mini-Snap-Link, with rod MS1 }
Snap-Link SL2 or Mini-Snap MS2 }
less rod 2 for 40¢



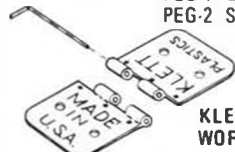
NEW—MAJOR R/C FITTINGS SETS

Here's the economical way to buy the major fittings for your multi-ship. In one set, you get all the horns, links, keepers, bellcranks, or strip aileron linkage, and hinge material—and at a saving.
R/C Fittings Set No. 1 for ship with standard ailerons. RFS1 \$3.50
R/C Fittings Set No. 2 for ship with strip ailerons. RFS2 \$3.50

NEW! KLETT PUSHROD EXIT GUIDES

To protect your fuselage and insure smooth operation of your pushrods. Precision made of tough nylon. Easy installation. Large for 5/64" wire, small for 1/16" wire.

PEG-1 LARGE 4 per pkg. 75¢
PEG-2 SMALL 4 per pkg. 75¢



KLETT HINGES — WORLD'S FINEST!

Designed and manufactured by Roy Klett, originator of world-famous RK hinges. An exclusive with Carl Goldberg, these hinges are made with exceptional care and attention to detail. The small RK2 hinges are so thin all you need is a knife slit. The regular size RK3 hinges are the slickest you've ever seen — try holding one leaf and waving the other! And both have removable music wire pins. Ask your dealer for the best — Klett hinges.

RK2-7 7 for \$1.10 RK2-15 15 for \$1.95
RK3-7 7 for \$1.25 RK3-15 15 for \$2.35

5/32" ADJUSTABLE AXLE

Adjustable axle allows you to easily have the strut length you want. Both the axle and screw are hardened steel. Just file a flat on the strut, and tighten axle in place. AA1 75¢ ea.

STEERABLE NOSE GEAR

Versatile — steering arm can be to either side, or slightly up or down, or mounted on bottom with extra collar in slot. Steering arm is nylon, stiff enough for good control, yet can flex under shock to protect servo. Collar is hardened steel — won't strip like brass. Screw is hardened steel, too. You can really torque it and get good grip on music wire strut without a flat.

Complete steerable nose gear with nylon bearing, 5/32" plated music wire strut, extra collar, blind nuts, screws and washers G16N \$2.50.

NYLON STEERING ARM

Hardened steel collar and screw SA1 75¢.

NYLON BEARING

One-piece design mounts to firewall without alignment problems. Includes blind nuts, screws and washers NB1 75¢.

CONTROL HORNS

Our new horns have the upright part rising from the center of the base for maximum stability. Holes are right size for 3/64" wire; nut plate for simplest mounting. Long horns CH1 or short horns CH2, with screws—50¢/2.

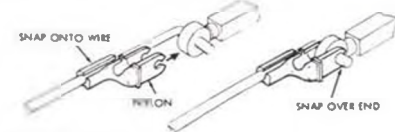
NYLON REINFORCING TAPE

This nylon reinforcing tape is extremely tough when applied with epoxy around the center when joining wing halves. 2 1/2" wide x 5 ft.—N2 50¢. 3/4" wide x 5 ft. N1 25¢.

NEW KLETT SAFETY DRIVER SOCKETS DOWN ONTO SCREW HEAD — CAN'T SLIP OFF AND DAMAGE YOUR WING!
Takes Round Head Screws and Binder Head.

KLETT SAFETY DRIVER

For 1/4" Nylon Screws SD1 } 98¢ ea
For #10 Nylon Screws SD2 }



SNAP'R KEEPER

Quickest, handsiest way to secure pushrod wire end to servos, horns, etc. Works on wire 3/64" to 1/8" diameter. SK1 50¢ for 4.

REPLACEMENT FOAM WINGS, ETC.

To go with your own design fuselage. Proven efficient Ranger 42 foam wing gets you in the air quickly — \$3.95. Stab and vertical fin, set \$1.95. Assembled Ranger 42 fuselage, plus bearings, nosegear, etc., \$9.95.



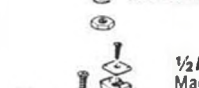
AILERON BELLCRANK

Bellcrank has steel bushing of proper size, so crank can be screwed firmly in place without binding. No electrical noise—all metal parts are screwed tightly together—AB1 50¢ for 2.



1/2A BELLCRANK AND HORN

Made of nylon, this new set provides smooth 1/2A control line operation. Easy on dacron lines, too BCH1 25¢.



SHEET METAL SCREWS

Like wood screws, but better. Sharp, clean, full-depth threads, hard and strong. Excellent for mounting servos, etc. Includes washers—#2 x 3/8 SMS2 30¢ for 10; #4 x 3/8 SMS4 30¢ for 8.

P.S. For best service, see your dealer for items you want. If not available, write direct; add 50¢ per item (\$1 outside U.S.). Minimum order \$1.

MANUFACTURERS—All our accessories are available at excellent O.E.M. bulk prices.

Carl Goldberg Models Inc.
2546 W. Cermak Rd., Chicago, Ill. 60608
I am sending 25¢ for 8 pg. Illustrated Catalog with "Recommendations in Starting in R/C," Basic Explanation of R/C Equipment and Radio Control Definitions.

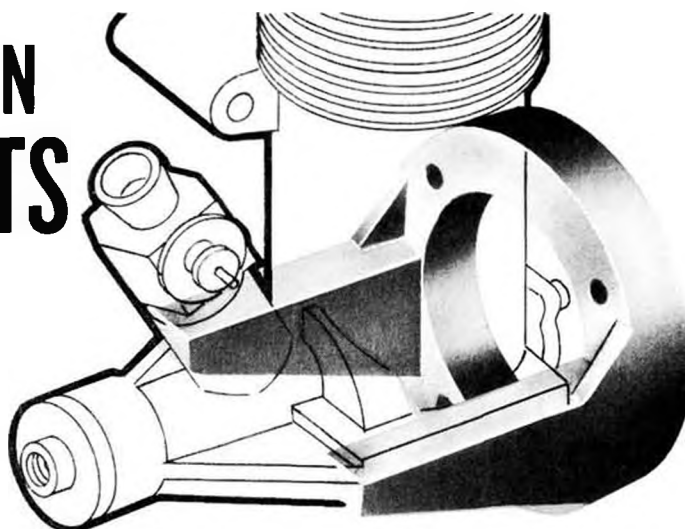
Name _____
Address _____
City _____
State _____ Zip _____

Available in Canada

CARL GOLDBERG MODELS INC.
2546 WEST CERMAK ROAD • CHICAGO, ILLINOIS 60608

GLASS-FILLED NYLON ENGINE MOUNTS

- ACCURATE ALIGNMENT
- LIGHT WEIGHT
- EASY INSTALLATION
- LOW VIBRATION LEVELS
- AVAILABLE FOR ALL POPULAR SIZES AND MAKES



Molded from high-strength glass-filled nylon, these are the finest engine mounts available. Engine mounting screws are self-locking in this material and will not loosen under vibration. They are available in eleven sizes to fit all popular engines. See your dealer for size selection chart.

KRAFT
SYSTEMS, INC.

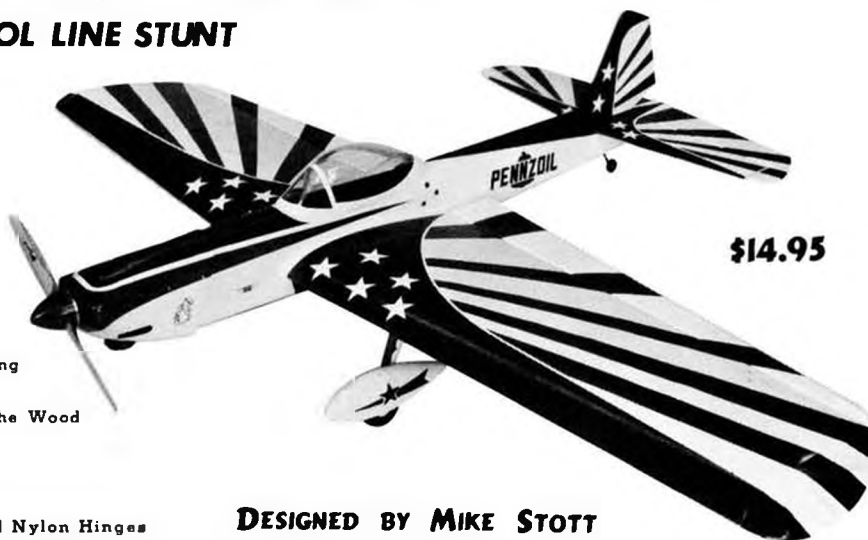
450 WEST CALIFORNIA AVENUE, VISTA, CALIFORNIA 92083
World's Largest Manufacturer of Proportional R/C Equipment

SUPER CHIPMUNK

53½" WINGSPAN

THE ULTIMATE IN CONTROL LINE STUNT

SIG
KIT CL-19



\$14.95

DESIGNED BY MIKE STOTT

- * New Look Molded Plastic Cowling
- * Sleek Bubble Canopy With Molded Framing
- * Smooth Formed Plastic Wheel Pants
- * Handy Printed Sides - Build Directly On The Wood
- * Heavy Duty Bellcrank
- * Colorful Decal Sheet
- * Formed Torsion Bar Landing Gear
- * Complete Hardware Pack Including Molded Nylon Hinges
- * Die Cut SIG Balsa And Plywood
- * Detailed Full-Size Plans

THE LATEST VERSION OF THE FAMOUS AEROBATIC AIRPLANE FOLLOWS THE LINES AND COLOR SCHEME OF THE MODIFIED FULL-SIZE CHIPMUNK FLOWN BY SKIP VOLK. THE UNIQUE LINES OF THE COWL AND CANOPY SETS THE MODEL APART FROM THE AVERAGE STUNTER. DESIGNER MIKE STOTT HAS INCORPORATED EASY CONSTRUCTION WITH STRENGTH AND DURABILITY TO PRODUCE A HIGH PERFORMANCE BEAUTY.

SIG MANUFACTURING CO., INC

401 S. FRONT STREET

MONTEZUMA, IOWA 50171



**WHY
DON'T
YOU
LISTEN
TO
TONY
BONETTI?
HE'LL
TELL
YOU...**

NO ONE SHOULD BE WITHOUT...



**The
M ODEL B UILDER**

1900 E. EDINGER AVE., SANTA ANA, CALIFORNIA 92705

The MODEL BUILDER is published monthly. Regular subscription rates are \$8.25 for one year and \$14.00 for two years. Add \$2.00 per year for subscriptions outside of U.S. and Canada. Add \$1.50 per year for Canada and Mexico. Please enclose check or money order. Do not send cash.

Name _____

Address _____

City _____

State _____ Zip _____

() One year at \$8.25 () Two years at \$14.00 Begin with _____ Issue

The MODEL BUILDER

AUGUST

1973

volume 3, number 21

STAFF

EDITOR

Wm. C. Northrop, Jr.

GENERAL MANAGER

Anita Northrop

EDITORIAL ASSISTANT

Le Gray

SECRETARY

Debbie Hopper

SUBSCRIPTION MANAGER

Jo Ann Jones

CONTRIBUTORS

Tom Christopher

Ron Evans

Bill Hannan

Dale Kirn

Walt Mooney

Fernando Ramos

Frank Schwartz

Jack Transue

ADVERTISING REPRESENTATIVES

EAST: Auke Venema, 79 Adirondack Ave.
Spotswood, N.J. 08884
(201) 251-2860

WEST: Bob Upton, 20626 Clarendon Ave.
Woodland Hills, California, 91364
(213) 883-7681

Subscriptions \$8.25 per year, \$14.00 two years. Single copies 85 cents. Add \$2.00 for postage per year outside of U.S. (Except APO). Add \$0.75 for Canada and Mexico. Copyright 1973 The MODEL BUILDER. All rights reserved. Reproductions without permission prohibited.

Published Monthly by The MODEL BUILDER Magazine, 1900 East Edinger Ave., Santa Ana, California 92705. Phone (714) 547-3963. Second Class postage paid at Santa Ana, Ca.

CONTENTS

FEATURES

WORKBENCH, Bill Northrop 4

OVER THE COUNTER, Bill Northrop 6

RADIO CONTROL REPORT, Frank Schwartz 12

R/C PYLON, Tom Christopher 14

WHAT'S IN A NAME? John Penhallow 17

R/C SOARING, Le Gray 20

MAIN SHEET, Don Prough 22

PRODUCTS IN USE, Bill Northrop 23

PLUG SPARKS, John Pond 25

FREE FLIGHT, Ron Evans 27

HANNAN'S HANGAR, Bill Hannan 30

SCALE F/F, Fernando Ramos 34

CONTROL-LINE, Dale Kirn 36

R/C AUTO NEWS, Chuck Hallum 40

FRANNY'S ENGINE FORUM, Franny Wolf 43

SCALE VIEWS

HEINKEL He 51A-03 44

CONSTRUCTION

FOKKER D-VI, Philip Foster 8

OLD TIMER RUBBER SHIP, Phil Bernhardt 24

PEANUT BLERIOT CANARD, W. C. Young 31

BABY DART, Fred Reese 39

Cover: The Fokker D-VI was a little-known fighter in WW-I, but the family resemblance is not hard to recognize. The fuselage, engine, cowl, and tail surfaces come from the DR-1 or D-VIII, and the cantilever wings are D-VII. The model, at 2"=1' scale, spans 51", and is powered by a Supertigre 40 turning an 11-4 prop. Weight without radio is 4 pounds. See page 8 for a complete construction article by the builder, who also took this Ektachrome photo, Philip C. Foster.



NAME
Belinda Rene Northrop

SPECIFICATIONS
Length O.A. 19-1/2"
Weight (dry) 6 lbs..9 ozs.
Power Lungs
Fuel Goats milk
Scale 3"=1'
Completion date June 13, 1973

DESIGNED BY:
Anita and Bill Northrop

from Bill Northrop's workbench . . .

BRING 'EM CLOSER TO HOME

The very nature of competition free-flight makes it the least understood category of our model airplane hobby . . . by those outside of the hobby . . . and by a surprising number of those within.

Prior to the advent of regular activity in Control-Line (mid '40's) and Radio Control (late '50's), free-flight and solid models were the sole representatives of our hobby. However, C/L and R/C brought with them a common character-

istic which allowed them to force F/F somewhat into the background . . . captive flying (R/C flyaways and slippery Ukie handles notwithstanding).

With "Captive Flying" came the curious and uneducated and/or uninitiated spectator, who could stand and watch one particular model doing its thing, from the beginning of a flight to the end . . . whatever that end might be. Also, that same spectator could stumble onto such a happening as a result of no purposeful effort whatsoever . . . the

reason being that the more or less "Captive Model" flyer didn't have to go too far out of town . . . if at all . . . in order to find a spot to fly.

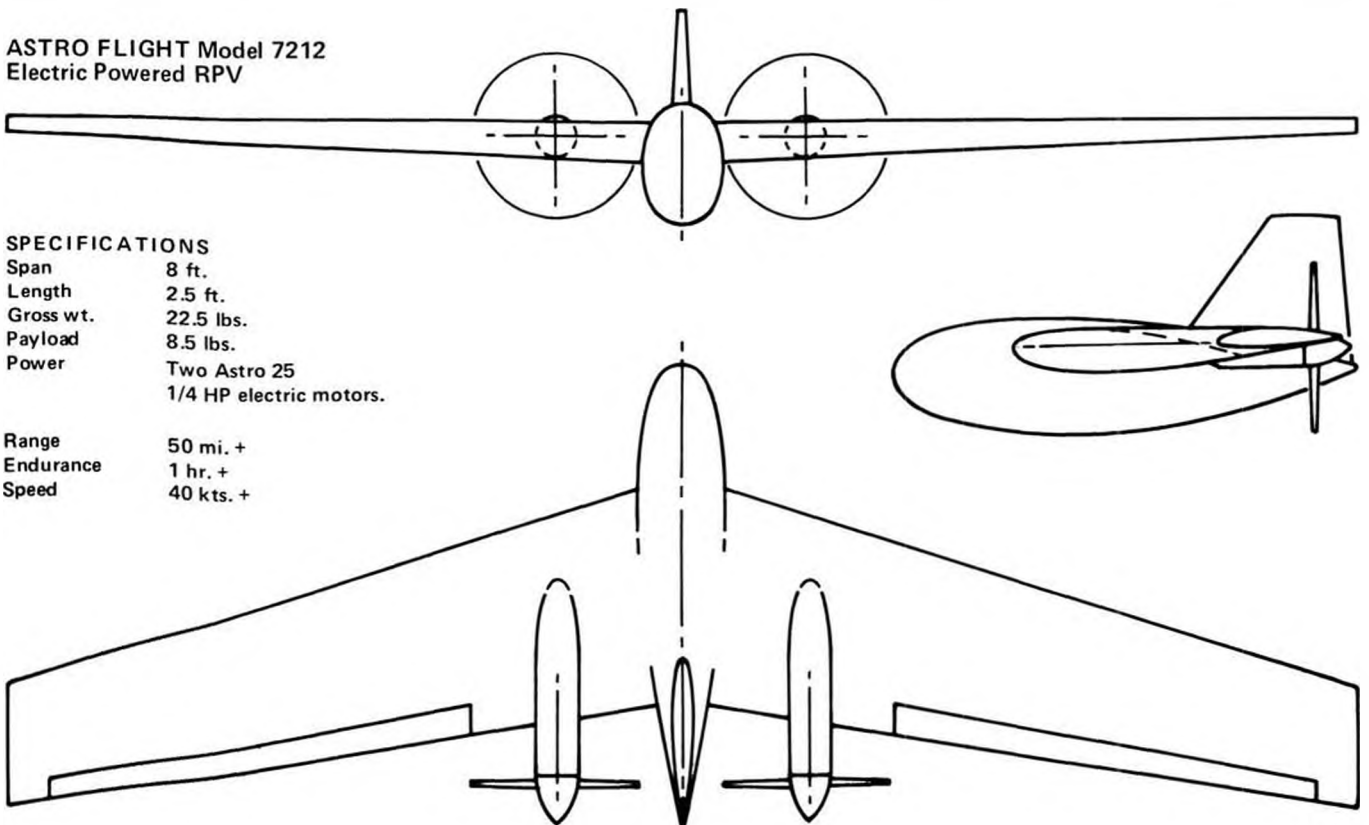
By contrast, the free-flyer, in order to find the necessary space, has had to head for the very remote "boonies" . . . oftentimes to places that the faint of heart would fear to tread. "Out there", if our uninitiated spectator friend should happen by . . . probably because he made a wrong turn two miles back . . . he wouldn't be apt to get too much of a

ASTRO FLIGHT Model 7212 Electric Powered RPV

SPECIFICATIONS

Span 8 ft.
Length 2.5 ft.
Gross wt. 22.5 lbs.
Payload 8.5 lbs.
Power Two Astro 25
1/4 HP electric motors.

Range 50 mi. +
Endurance 1 hr. +
Speed 40 kts. +

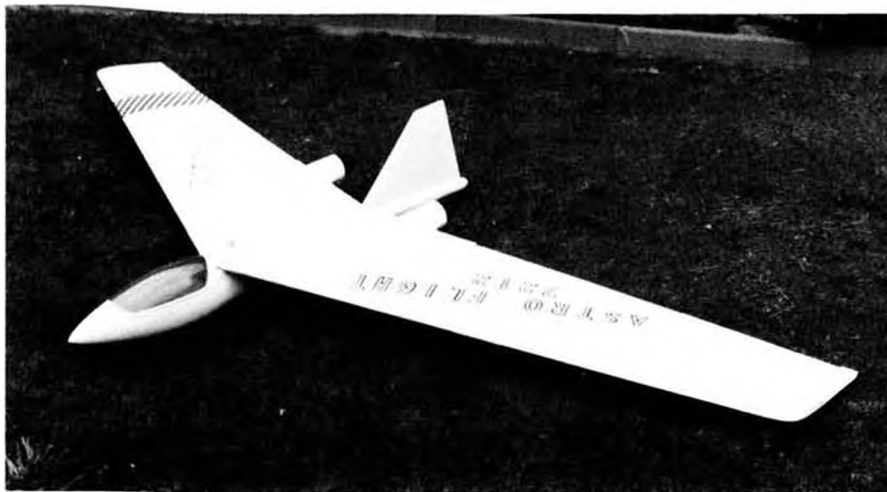




The only way to fly! Whenever we run across Irwin Ohlsson during an occasional trip to Lake Elsinore, he's always kind enough to let us fly his Pacemaker. Note that AMA number! Photo by Paul Bender.



MODEL BUILDER's intrepid Jean Andrews launches Coupe at Max Men Annual. Ship is "Deuzio, modified from Aeromodeller magazine. Jean will be lifting some of the editor's duties . . . between flights.



The Astro Flight Model 7212 Remote Piloted Vehicle (RPV) which was developed, built, and delivered to the Northrop Corp. for testing. Plane is powered by two Astro 25 electric motors, turning Top Flite 8 x 8 propellers. Interesting similarity to some famous Northrop wing designs.

look at a model airplane in action . . . only for those few moments when the ship is hauling itself up into the hoped-for thermal. Meanwhile, our modeler has jumped aboard his motorcycle (or "crotch-cart", as our Jean Andrews rather unceremoniously put it) and taken off in chase . . . and a cloud of dust . . . leaving Mr. Spectator in somewhat of a

dazed contemplation on the sanity of the rapidly departing individual and anyone who is associated with him.

Some individual modelers would like to improve their image with the "outside." Others couldn't care less. The National Free Flight Society is mostly concerned with its lobbying power "inside" . . . with AMA. The organiza-



"If you're not as completely bored with the Old Man's ravings as I am, you can turn to page 61 for more of the same."

OVER THE COUNTER



● REMCO, P. O. Box 22414, Denver, Colorado 80222, now has its newly manufactured ignition spark plugs in stock. Priced at \$2.25 each, plus 50 cents postage, these long awaited 1/4 x 32 plugs will put many retired ignition engines back into use. The samples we received individually wrapped, and boxed in a fashion similar to the old Champion plug, appear to be of very high quality. After about a half hour of test running in several engines, the plugs proved to be as good as they look.

REMCO also produces and markets new Anderson Spitfire and Super Cyclone engines, will soon market its own ignition 29 (see photo of castings), and has other ignition engine related projects in the works. With relatively inexpensive

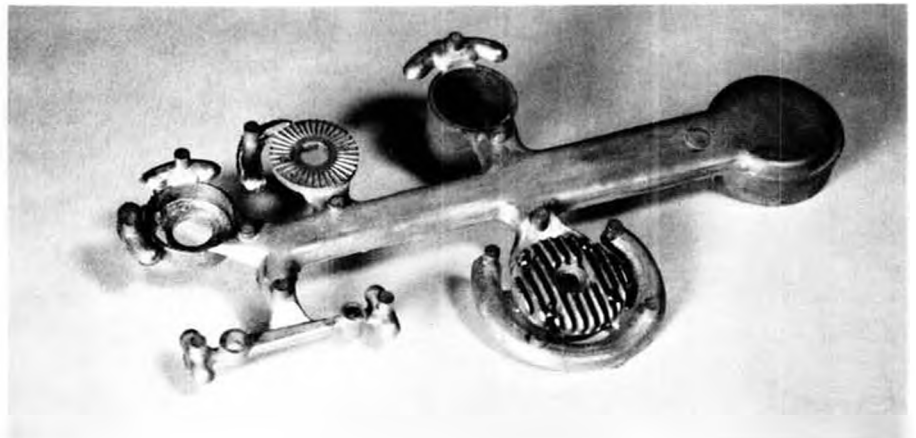
Continued on page 58



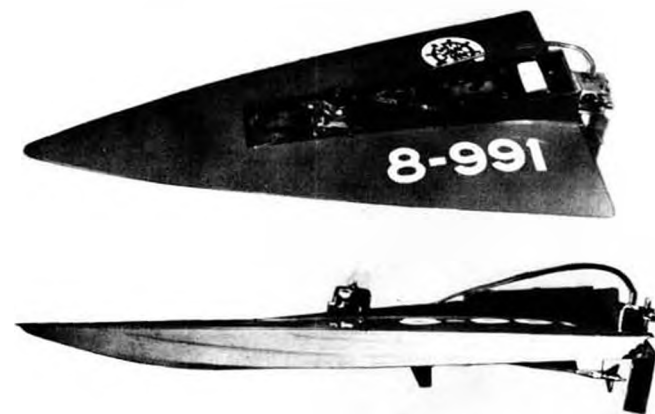
Black and white can't do justice to this beautiful reproduction of a painting of Johnny Johnson's 416 R.C.A.F. Sqdn. Spitfire. Full color, 18 x 30 inch copies available from Dave Platt Models.



New 1/4 x 32 ignition spark plugs are now available from REMCO Mfg. Co.



Castings of new REMCO ignition .29 engine which will soon be available. Company also has new Super Cyclone and Anderson Spitfire ignition engines, plus accessories.



"Lil' NORTHWIND" ski boat by Fisher. Unusual kit design features fiberglass hull. Capable of speeds over 30 mph.



New in-line fuel filter by Perry Automotive. Sealed unit is cleaned by reverse flushing. Filter element is polypropylene.



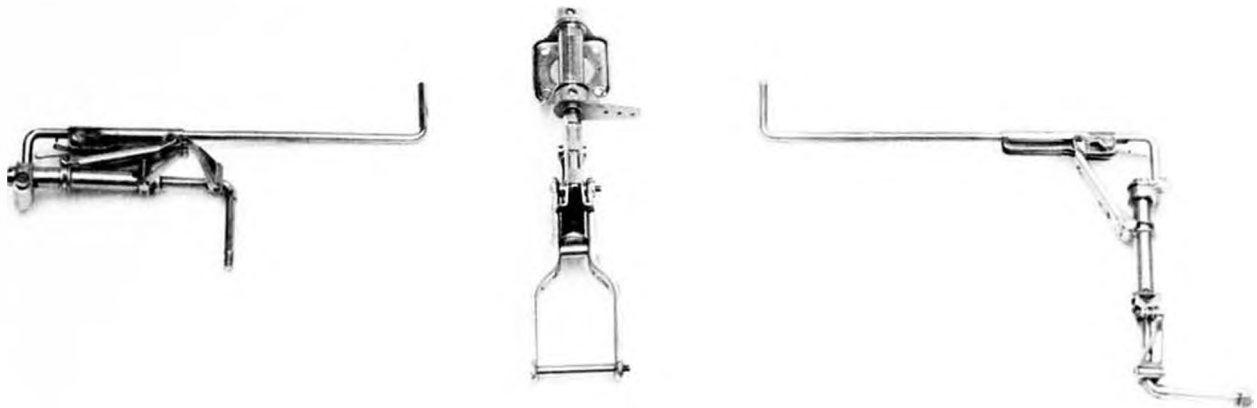
This Spitfire is built from the kit by Royal Products Corp. At 1-3/4"=1' scale, the wingspan is 64-1/2", length 52-1/8". Ship is of all balsa construction and is for .60 to .80 size engines.



R/C version of the famous Stallion .35 is now available for the economy-minded R/Cer. Price is \$19.95.



Near-future products from Williams Brothers include this plane which can be built as biplane or low wing, and molded floats. Stay tuned!



Landing gears by Royal Products. Mains are manually retractable only . . . for storage or display. Nose gear is not retractable. Both units feature all steel construction, with functional elbow joints and shock absorbers. Great for scale.



All fueled up and ready for the Dawn Patrol, the author's D-VI really could pass for its ancient big brother in this photo.

FOKKER D-VI

By PHILIP C. FOSTER

A somewhat rare biplane fighter from WW-I, the Fokker D-VI did see some action. The pleasing lines of this 2"=1' scale model make a great R/C project. Designed to be built light, it uses .40 size engines.

● The full scale prototype Fokker DVI was designed and built side by side with the famous DVII during the winter of 1917-1918. Competitions for a rotary powered fighter and for an in-line powered fighter were held January 1918, and Fokker won both. The resulting DVII's story is known well but its co-winner lost out to its successor, the rotary-engined, parasol monoplane, Fokker DVIII. The DVI saw combat in limited numbers in various front line fighter units and with the Austro-Hungarians. Refer-

ences—"German Aircraft of the 1st World War", by Gray & Thetford and "Development of Fokker Fighters", M.A.N., by Robert C. Hare.

The specifications are as follows: Span 25½ ft., length 20½ ft., height 8 ft. 4 in., area 191 sq. ft., speed 122 mph, armament 2 spandau.

The model is not a spectacular performer by pattern standards. It is slow and insensitive to aileron. Its glide is quite steep with the thick pair of wings. The wide track gear helps keep her straight.

Tail high landings are pretty and straight.

I'm a WWI airplane buff of thirty-five years experience and this out-of-the-way model was built because I think it looks good and because most of the well known WWI craft have been built by others. The model is to 2 inch scale and is practically "built in". All surfaces come off readily, but mostly I just leave it assembled so I can admire it. The span is only four feet and the total area is 750 sq. in.

Color is hexagon day camouflage with pale blue lower surfaces. An alternate standard color is dark green upper surfaces with pale blue under. Cross style is per drawing.

There is no scale rigging since the original is built as a cantilever wing structure, and I assure you that the model is quite stout.

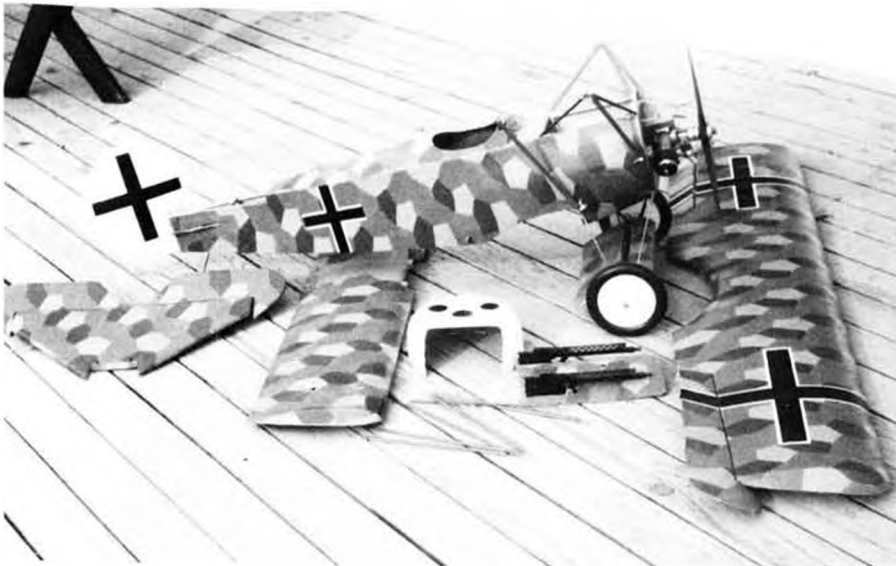
The wings are tough to build, but the rest is easy. The wings are straight on top but with tapered thickness. The front spar is simple and straight on top, but the rear spar is not straight on top because the airfoil shape gets thinner toward the trailing edge. One other thing before we get into details . . . the airfoil is semi-scale, with the center flat with increasing undercamber to the tip.



And here is Big Brother! This photo of an original Fokker D-VI was furnished by Pete Bowers, a fellow who is in no need of introduction among collectors of aeronautica . . . or Fly Baby's!



Close-up of fuselage reveals engine mounting. Guns are mounted on a removable hatch which gives access to the radio gear. All such stuff has to be well forward in this short-nosed design.



"Come on now. Pull yourself together!" This is what you might call an exploded view of the D-VI. Cabane strut attachment using bellcranks is a clever idea. New ideas enjoy infinity.



This picture, taken in 1968 (!) is of the author's son, Clark, holding up the bones of the D-VI for display. Construction was kept light.



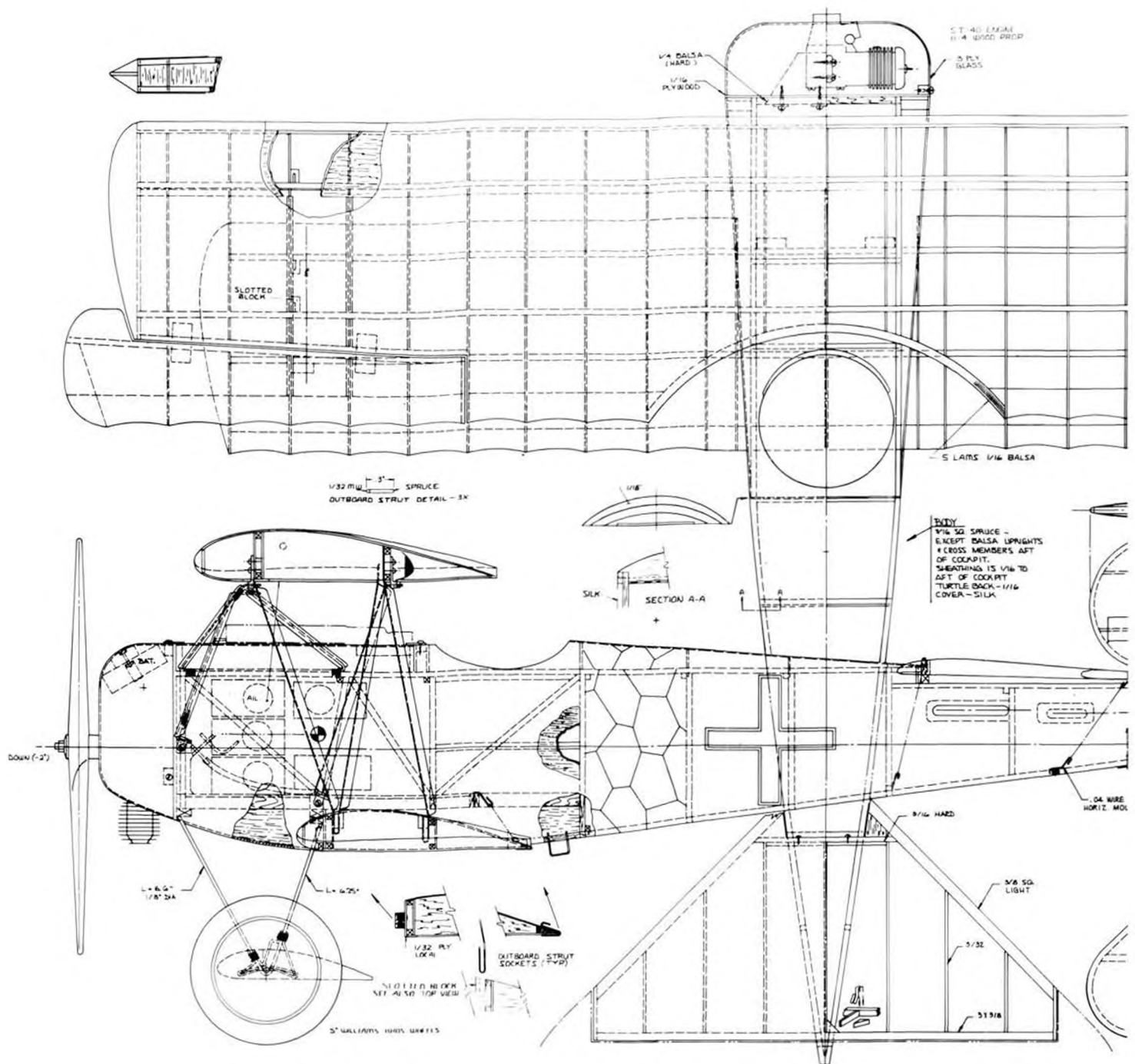
Author/designer Phil Foster (no relation to the Brooklyn accented comedian) shows the clean under side of the D-VI. Uses .40 engine.

I don't know what you would get if you tried to make it semi-symmetrical. A flat-bottom airfoil would work O.K.

A Super Tiger 40 with an 11-4 prop provides the power. The cowl, even though it is 7 inches in diameter, does not appear to interfere with the propeller effectiveness, nor with cooling.

Let's get into the construction, starting with the cowl. Once this is done, you can match the body construction to it . . . rather than the other way around. Carve the cowl shape from a foam block and seal with Sears ready-to-use spackling paste . . . sand, and then wax. Obtain an eight or nine inch plastic bowl and mix a slurpy batch of plaster-of-Paris therein. Force the carving into the mix and weight it in place until set up. The carving will come out easily. Fill in any holes with spackling paste. Let dry and then surface with paste wax. Wipe the mold with fiberglass liquid mold release and lay in three layers of open weave fiberglass glass, using polyester laminating resin. Use duckbill metal handshears to trim the cowl to shape. *(A hardwood cowl could be turned on a lathe . . . you'll need the weight anyhow! wcn)*

The body is next. Pin 3/16 sq. spruce longerons in place over the drawing. Pin and glue cut lengths of 3/16 sq. spruce or balsa uprights and bond in place. After this assembly dries, repeat for the opposite side. Now make the forward bulkhead and notch for the longerons. The upper longeron is conveniently straight, so block the body sides, with forward bulkhead, over the drawing. Then pin and glue random cut lengths of 3/16 sq. balsa inside the longerons, making a neat, strong lap



joint. This technique makes for fast, enjoyable building. If you use five minute epoxy, you can make the frame in a couple of hours. Add the 1/8 in. balsa firewall formers, which should be 1/16 less than the cowl diameter to allow for the forward body sheathing.

The landing gear is next so it can be bound into position prior to adding more work. It features scale operation, but the stroke of the axle on landing is not contained within the landing gear wing as on the real airplane. It can be contained by tightening up on the shock cords. I left the landing gear wing open on the top for my model. The landing gear wing is removable and is held in place by two inward turned wire pins

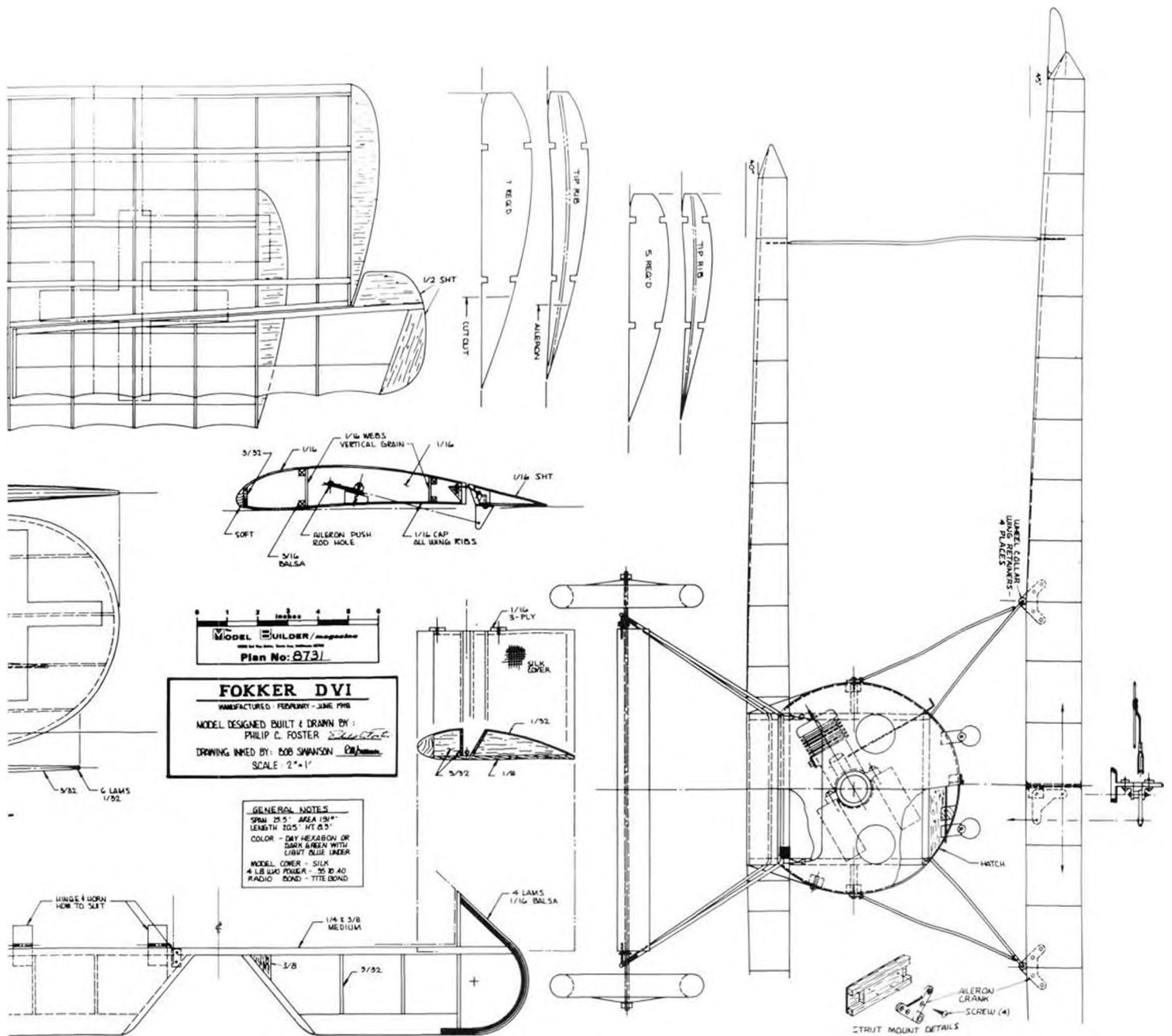
which are also the anchors for the shock chords. The landing gear is bound onto the spruce across members with heavy thread. Cross brace wires are used on the real airplane.

In order to bring the model along uniformly, we should start the tail group which, when attached, will help the eye keep things true . . . so let's get it framed next. Cut the outline of the rudder from a piece of corrugated cardboard. Cut the outline 3/16 inch under-size to allow for the balsa laminations. Make six strips of 1/32 sheet about 1/4 in. wide. Pin the reduced rudder outline on Titebond to the balsa strips . . . then stack them. Starting at the bottom of the rudder, pin and wrap the wet lamina-

tions around the whole rudder outline. The rest of the rudder frame is quite conventional.

The horizontal stabilizer is scale area and of conventional construction. Select light wood, minimize the glue, and keep the tail light. The stabilizer leading edge radius is to be kept as large as possible since the wing leading edge radii are large and we don't want the tail to stall before the wings do, even though, like any high sweep leading edge, the horizontal will hang on through large angles without stall. (O.K. aerodynamicists, any comment? wcn)

The lower wing should be started next, since it is good practice for the upper wing. Make a root and a tip



FULL SIZE PLANS AVAILABLE — SEE PAGE 64

airfoil template. Cut twenty-four pieces of 1/16 sheet medium balsa of sufficient size for ribs. Stack and pin twelve pieces together and then align. Pin the templates at opposite ends of the stack. Carve and sand the stack and notch carefully. Repeat for the other twelve ribs. Splice 3/16 sq. balsa spars and arrange over the drawing. Block up tips and pin securely. Attach ribs, using Titebond, since this dries slowly enough to make adjustments. Insert the upper forward spar, which is perfectly straight. Let this assembly dry while preparing the upper rear spar, which is also straight (see side view of the drawing). Glue on

the upper rear spar. The wing is still very flexible, so make any alignment changes in the jig at this time. (Note: When the vertical grain 1/16 balsa shear webs are glued in, the wing will become quite stiff). Cut and glue them in very carefully. Do not leave these out, as they make the upper and lower spar members work as a single deep beam, producing a very rigid wing assembly.

Now add the trailing edge and the leading edge sheeting with the wing off of the board. The false leading edge member makes the leading edge sheeting easy. Next, add the leading edge, and finally, the tips and the cap strips. The

interplane strut sockets can now be glued in and sanded flush with the upper surface

Let's turn to the body again and mount the cowl to the firewall with blocks, as indicated. Now check the firewall to see if it is 1/16 inch below the cowl contour. This relief will allow for the sheeting of the body back to the cockpit. Cut the longitudinal tapered former from 3/16 medium balsa and glue into place. Now glue in the wing cabane strut anchor blocks. Do not sheet yet since we have to attach the wire in-board cabane tripod legs to the upper longerons.

Continued on page 54



"Good grief, Emily, Teddy's gone over to the other side!" This Wankel powered Fokker E-V was built from a Schuco-Hegi kit. Ship is flown R.E.M., with the 4th channel dropping boots and scarf on Allied Aerodromes! Heath radio. Finish is silk and dope, Monokote, and Solarfilm. "Flying Razor" was built by Col. John Wormley, weighs 4-1/2 lbs. and is good flyer, with excellent glide.

RADIO CONTROL REPORT

By FRANK SCHWARTZ

● Keeping up with publication dates is not one of my best qualities and I sure do hope I get this in "under the wire" so to speak. Usually I try to keep ahead, but occasionally time slips up on me. (*Excuses, Excuses. It's a good thing the "wire" is flexible.*)

New items in R/C at this time are somewhat sparse. However, Kraft just released a new polypropylene hinge. I know there have been polyhinges on the market before, but these are really superior, I think. They are about the size and thickness of the regular type

piano hinges we have been using, but there the similarity ends. Kraft's hinges have four holes in each side to make them stick permanently in the slot, whether you use regular glue or epoxy to stick them in. The hinge point is in the center of the molded hinge and it should prove to be a most popular item. Add to that that they are priced at 95 cents for twenty! Enough for any plane and with some left over. I've already used the samples they sent me (goody!) and can say they are "tested, approved, and recommended". (*Hey! Watch that*

stuff! wcn)

Although I fly pattern and have lately been nuts about quarter midgets, I always seem to return to the "sport" type plane. Back at the Toledo show I saw the little Pronto kit put out by Tidewater Enterprises and ordered one. Finally it came in and I put it together over a weekend. Another night to Monokote it, and another evening for installation of radio and I was ready to try it out. It is somewhat different from the average sport plane . . . mainly in that it is a low wing tail dragger. I had



RPV designed and built by Astro Flight, Bob Boucher on right. Uses two electric motors.



Tom Gardner, Titusville, Fla. (left) built this P-6E. Power is a 1.4 cu. in. Cox chain saw motor with Korbo mods. Lack of power has prevented flight of this 28 lb. beast. We'll keep you posted.



Walt Moucha's latest scale ship is this 2"=1' Waco Meteor. Webra 61, Goldberg retracts, flaps, 8-3/4 lbs., RS Systems radio. Model already has a 1st and a 4th place win in scale events. Finish is K & B Super Pox. Flies fast.

a small radio to install in it and a good used .15.

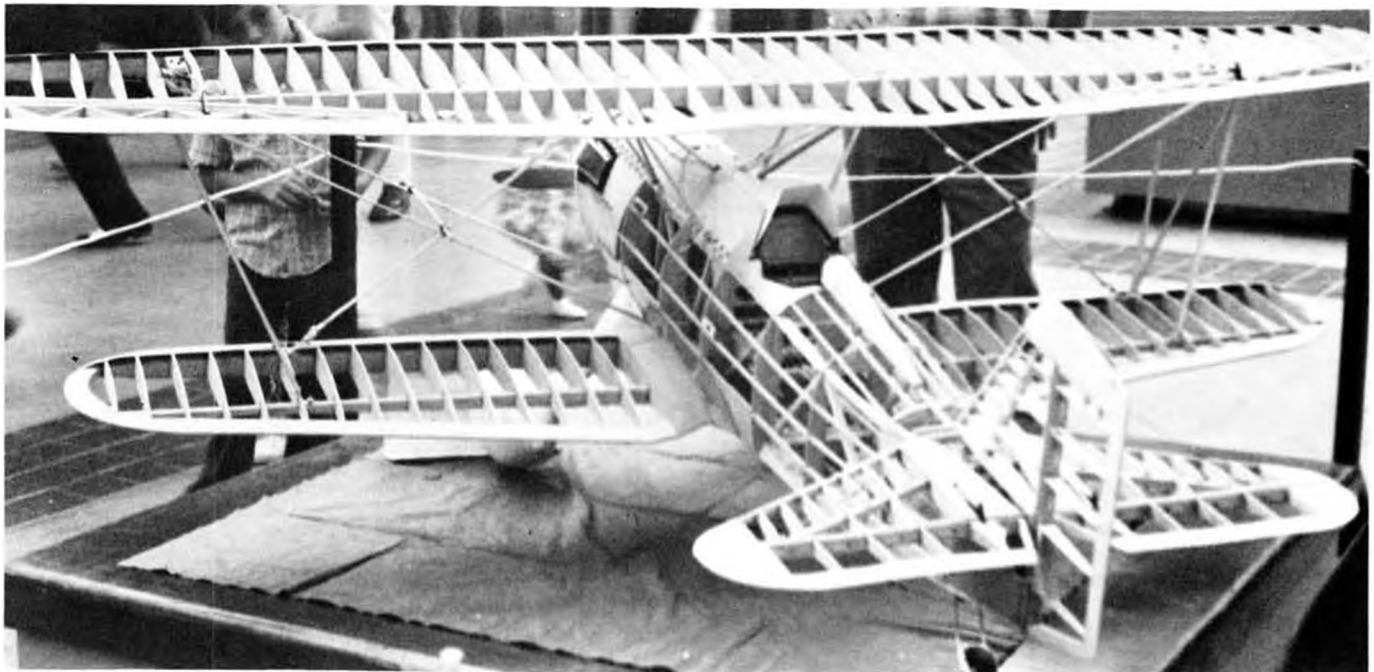
First flights were perfect and much to my amazement the plane really grooved around. There is plenty of dihedral in the wing and it is quite stable . . . takeoffs on the runway or grass are easy, and most impressive of all was the fact that although it has a flat bottomed wing it will not "zoom" upward with increases of speed as many flat bottomed wing sport planes will do. (Experts, please explain this to me.) This is an extremely well engineered kit and goes together very fast . . . good instructions are included and any good 15 to 19 will do well. Very good also for beginners and sport flying.

Almost forgot to mention that the wing uses a dowel for a leading edge, which really eased construction and

Continued on page 57



Another shot of Walt Moucha and his Waco Meteor. Walt has been appointed East Coast Sales Rep for RS Systems. Company is gaining excellent sales and service reputation.



No wonder there's a balsa shortage! Tom Gardner's P-6E before covering. It appears to be 3"=1' scale. Note individual aileron servos in top wing. We sure wish him luck on that first flight! Too bad the weight exceeds AMA limits for competition.

PYLON

By TOM CHRISTOPHER

PHOTOS BY TOM CHRISTOPHER

● What a RACE! The BARKS, of Bakersfield, California, hosted the most successful, interesting and probably the most competitive racing event that we have ever attended to date. Glen Spickler and his well organized crew of veteran Pylon race promoters have once again provided us with a weekend of pure fun and enjoyment.

This particular race being the Western Formula 1 Championships, has many things going for it! The man who puts it all together and is probably the premier Contest Director in the country is Glen Spickler. We can't say enough about this man and his attitude toward the sport. He gets it done fairly, squarely and RIGHT NOW! Secondly, the race is held at the perfect flying location. Famoso Field is located in its "Own Place" so to speak. There isn't anything to do there but have fun and race airplanes. The complete area is smooth asphalt . . . even has facilities for landing private aircraft and parking right next to the pits. All in all, it's ideal!

Now that we have told you about the most exciting race that you will enter next year, we will try to describe what happened June 9 and 10, 1973.

After two days of great racing, it all came down to the wire with a fly-off for first in the Expert Class between Bob Smith, Dan McCan, and Larry Leonard. These three competitors all had perfect scores for the two days of racing and turned times consistently from 1:22.2 to 1:27.6, average. Everyone stopped to watch as the flag dropped for the start of this tremendous race.



Nats Pylon Director, Glen Spickler, carries firm and fair authority, walks softly. He's country's best for the job.



One thing sure . . . his engine ought to run pretty good! Jack Lee placed 1st in Standard at Bakersfield, assisted by his dad, Clarence. Quite a combination.



Joe Foster and his "El Bandito" at Bakersfield. Ship was designed by brother Ed. Supertigre power by Sheldon.



Cindy Christopher, Pylon editor's wife, lends pleasant background to photo of his "Ole Tiger" and 6th place trophy. Bakersfield.

RESULTS

FORMULA 1 – WESTERN CHAMPIONSHIPS June 9 & 10, 1973

EXPERT

1. Larry Leonard—DARA—K&B
2. Dan McCan—DARA—K&B
3. Bob Smith—DARA—K&B
(best time 1:22.2)
4. Joe Foster—El Bandido—ST
5. Ron Sheldon—El Bandido—ST
6. Tom Christopher—Ole Tiger—K&B

STANDARD

1. Murphy Von Adelung—Shark—ST
2. Tony Brown—DARA—K&B
3. Mike Johnson—DARA—K&B
4. Joe Stream—Mustang—ST
5. Ron Neff—Minnow—RAF

International flavor at Bakersfield was provided by competition from Mexico. The Mexican group was headed by Joaquin Alba, Jardin Balbuena and Enrique Guzman. The fliers from South of the Border started off strong but had mechanical problems toward the end of the event.

Continued on page 52



Jim Rogers tries to console Gary Hawks after accident at Mile Square, May 27. Beautiful ST powered Minnow is no more.

Leonard was off first, McCan second, and Smith third. Leonard held a small but commanding lead throughout the race, with Smith pushing McCan hard until about the fifth lap, when Smith pushed a little too hard and hit McCan's propwash coming off No. 3 Pylon and crashed. Leonard went on to win comfortably with McCan only a few seconds

behind. Believe me this was some race to see!

The Standard Class was almost as exciting. Competition was very keen throughout, with Bakersfield's own Murphy Von Adelung team taking the overall honors. Tony Brown captured second, with third place going to Mike Johnson.



Alert, eager and right with it! Jack Fabbri surveys Form I situation at Mile Square.



Happy at his work! Bob Wilde, Stafford Midget Mustang, K & B powered, was 3rd in Standard class at Mile Square.



The Ed Von Adelung (lt)/Murphy (rt) team took 1st in Standard class at Bakersfield. M.A.N.'s Walt Schroder in center.



In the win column again, Larry Leonard receives 1st place Expert class trophy from No. 1 father. Glen looks for next victim.



Roving reporter Fred Reese, with ST powered EI Bandito from House of Balsa Shoestring kit. Fred placed 2nd at LIDS QM event. 2:11.7



LIDS winners were the Barry/Zink team, with J & J Mustang. Team also won at Lakehurst two weeks earlier.

LIDS PYLON RACES —

By Roving Reporter, FRED REESE

● The Long Island Drone Society held its second annual R/C pylon meet at Mitchell Field, Long Island, N.Y. on June 3. Formula I, FAI, Open Pylon and Quarter Midget events were flown in ideal weather. The turnout was larger than expected and it took about 12 hours to fly all of the heats and distribute the trophies and merchandise prizes.

During the day there were several hundred spectators present to watch the races and hear the colorful commentary over the P.A. system. The LIDS really did a fine job in keeping things moving, as approximately fifty heats were flown during the day.

Quarter Midgets drew the most number of entries with 25. There were 12 Formula I, eight FAI and six Open Pylon entries. The Quarter Midgets were judged by the best two times over the triangular two mile course rather than

by the newly adopted point system. Ten seconds was the penalty for a cut pylon and twenty second was assessed for a dead stick or an obvious hot landing. The landing penalty was the only idle check and it was apparent that some of the engines would not idle slow enough for a ten second unrestrained test, yet

could be landed without a penalty.

Results LIDS R/C pylon meet.

*=Fastest time

Formula I

- *1. Pete Reed — 1:34
- 2. M. Helsel — 1:39.5
- 3. Hager RAF team — 1:41

Continued on page 48



Rickey Rat from H of B Shoestring kit, by Jay Sternberg. Powered by K & B. Turned fastest time at Lakehurst, but fuel tank problems kept it out of LIDS meet.



K & B powered Miss Cosmic Wind (MB plan No. 3722) by Harold Hohne. Go AROUND the pylons, Harold!



OS powered "Yellow Jacket" Shoestring was scratch-built by Dennis Donohue. Seen at LIDS meet. Best time 2:40.9.



Bill Brennand, in Wittman's Buster, ahead of second place Dearly, flown by Keith Sorenson. Goodyear Main Event, Cleveland, 1949. Goodyear Tire & Rubber Co. photo.

WHAT'S IN A NAME ?

With the words "Goodyear", "Formula I", "Continental", and "Midget Racer" being bandied about when talking about pylon racing, it seems appropriate to get the matter straightened out. By JOHN PENHALLOW.

● A while back I decided I would try to publish my latest Control Line Scale Racer (Goodyear) (Minnow, Feb. '72 M.B.) and, to avoid being the same as the others, I would read their articles again and improve on them. I found seven articles published after Scale Rac-

ing became an A.M.A. event, and none of them, my first effort included, explained what a "Goodyear Racer" was. It seems to me most modelers only know that their model is a "Goodyear (or Formula I) racer", and that's what the rules require. I believe there would

be more enjoyment from Scale Racing if modelers knew more about the "real" racers they are copying.

Let's start with the name. Formula I has been the official name of that class of racing aircraft since 1968 when the Professional Race Pilot's Association decided to improve the image of air racing. The popular names of "Goodyear" or "Midget racer" were never official names. "Goodyear racer" came about because the Goodyear Tire and Rubber Company guaranteed the prize money for the event for the first three years at the Cleveland National Air Races. Midget probably evolved because of their size. They are very small next to a W. W. II fighter used in the "unlimited" events. The original title was "190 cu. in. class of racing airplanes," a mouth full for even the best public relations man. The name Continental also appears in some old publications. This is because the Continental Motors Corporation sponsored a few races for the "190 inch midgets", but somehow Goodyear was the name that stuck.

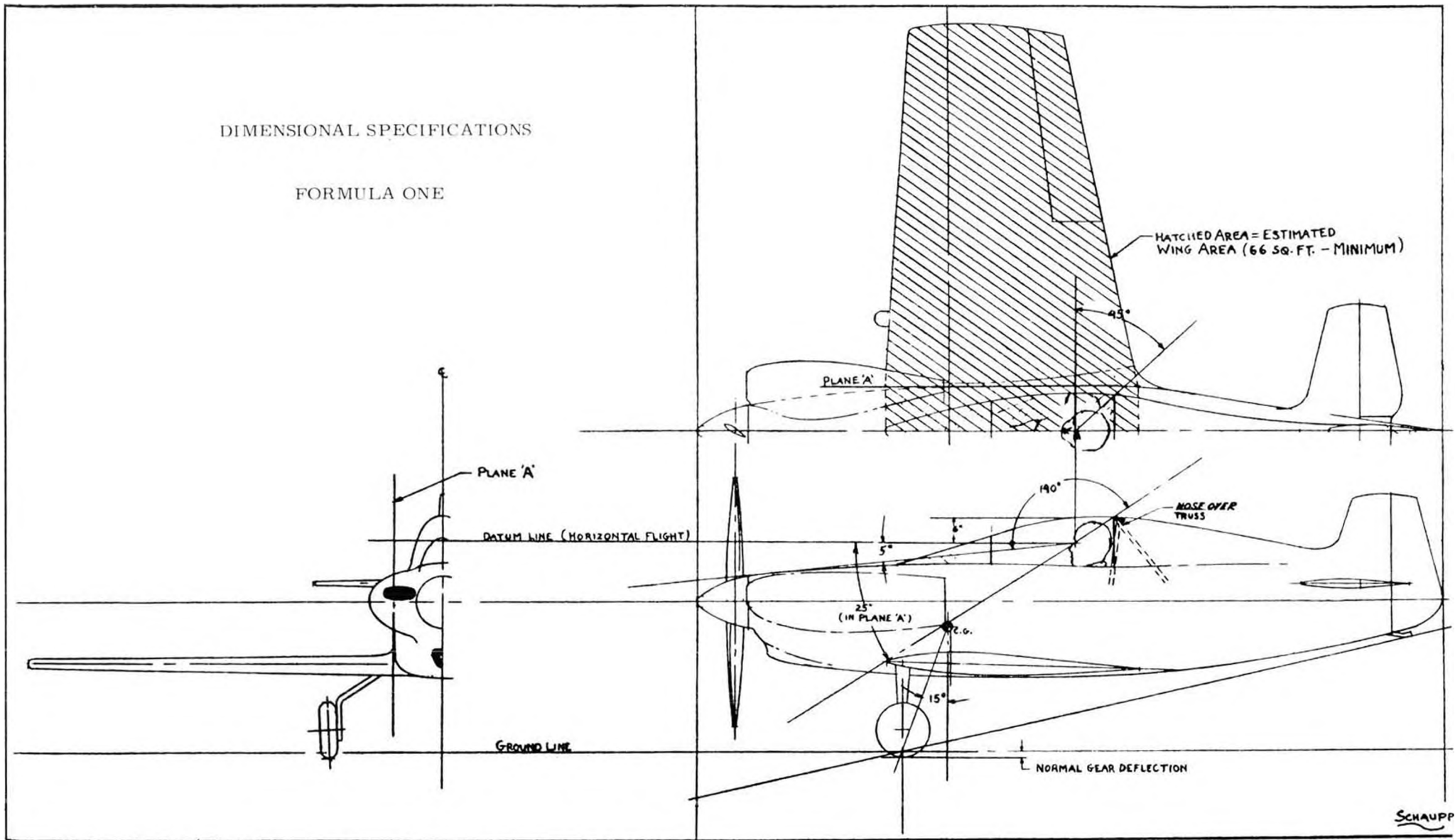
The 190 cubic inch class was created to combat inflation and improve spec-



Designed and built by the Lawrence Institute of Technology students, this airplane was later changed to trike gear. Design was never fully explored. Goodyear photo.

DIMENSIONAL SPECIFICATIONS

FORMULA ONE



SCHAUPP



John Barr's L.I.T. Special. Not a popular design in scale racing because of building and handling problems. John (hard hat) made it look easy. Would make an interesting challenge for R/C Pylon . . . if someone was willing. Photo by Joe Messinger.

tator appeal. Prior to World War II the cost of racing had risen almost out of sight and after the war the surplus fighter aircraft helped push it higher. Spectator appeal could best be served by having an airplane which could be raced on a course totally within sight of the grandstands. The first race was held at Cleveland in 1947 and the new class was an immediate success.

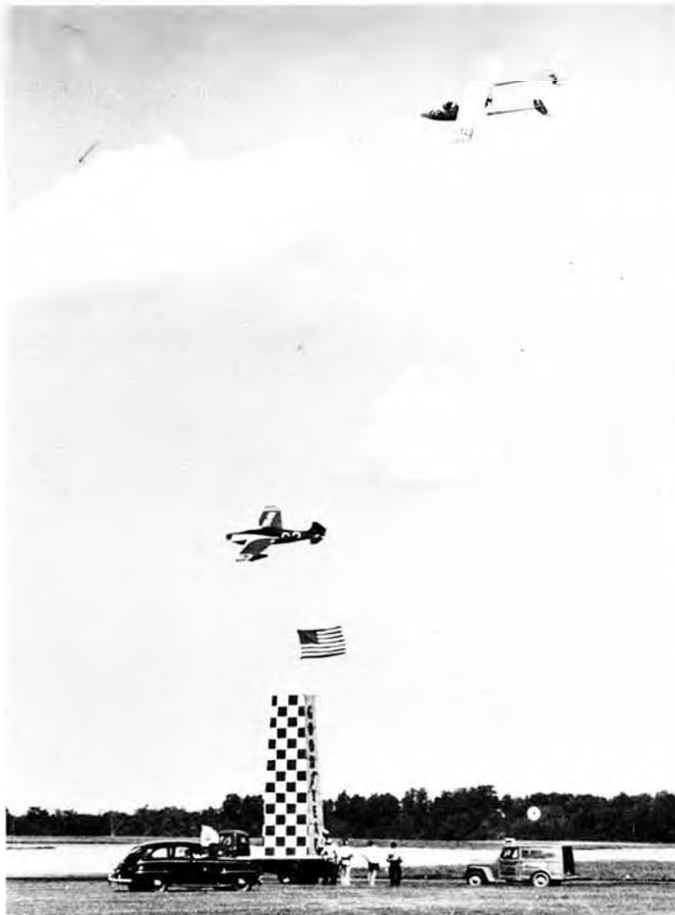
Control line racing goes back to 1948 and the F.A.S.T. club of Los Angeles. Their brain child evolved into what was called B team racing. Their rules called for a semi-scale airplane with full fuselage, and enclosed engine, among other

things. As in every other facet of life, there were those too lazy to adhere to the rules but with a desire to participate, so they gathered on the other side of the field and raced anything that would fly. It is said that "where there is a will, there is a way", and those who wanted to win did. In so doing, they pushed the performance out of reach of modelers who had created Rat Racing and drained the life out of B team racing.

As with the man-carrying craft, the control line "Goodyear" event was created to improve both spectator and competition appeal. The event goes

back about fourteen years to a Florida club named the Gulf Hawks. Their original club event called for one inch scale Thompson Trophy racers in profile. The idea was picked up by the Long Island Rams and changed to inch-and-a-half scale "Goodyear racers". The reason for the change was the great spread in size of the Thompson racers. There were some Thompson racers that were about the size of a Formula I, with a bigger engine, and it would have become a one design race in time. There are no F-1 designs that have a great advantage due to small size, and only a

Continued on page 49



Beetle Bomb, much cleaned up Ace of Diamonds, leads L.I.T. Special around pylon in 1949 Goodyear Consolation race. Goodyear photo.



Nothing to it! Not much, anyway. Pit technique required some change with engine on wrong end of model. Photo by Bill Netzeband.



Col. Bob Thacker releases his Miskeet, to the obvious interest of most everyone except Kelly Pike (back to Bob), of the Torrey Pines Gulls. Bob Hinman is prepared to reel in the winch line so a member of the "return squad" can bring back the tow ring.

R/C SOARING



Bill Davidson, Harbor Soaring Society, just after a successful spot landing (spoiler assisted) with his Airtronics Grand Esprit.



Glen Cunningham's beautiful T-tail original is all balsa construction. Tow ring jammed once . . . he had 3-1/2 minute flight while hooked!



When Le Gray hits the spot, he really HITS it! Hmm . . . perhaps his "window" was too high (See May '72 MB). Glider is his Sorceress.



"Team Astro Flight". Bob Boucher holding Monterey, and brother Roland with Kraft xmitter. New kit has several modifications.

Photo review of the Harbor Soaring Society's 1973 Western Soaring Championships

Top three winners in each task were as follows (listed 1st, 2nd, and 3rd):

PRECISION
R. Stowers, J. Walters, J. Donelson

DURATION
R. Warner, G. Webster, J. Haldy

SPEED
J. Wolfram, K. Nierich, R. Van Hellens

SCALE
H. Langer, R. Thacker, K. Hansen

OVERALL
R. Van Hellens, R. Warner, R. Stowers



Soarcraft's Hugh Stock at controls of company's beautiful Libelle, which he designed. Le Gray launching and operating the winch.



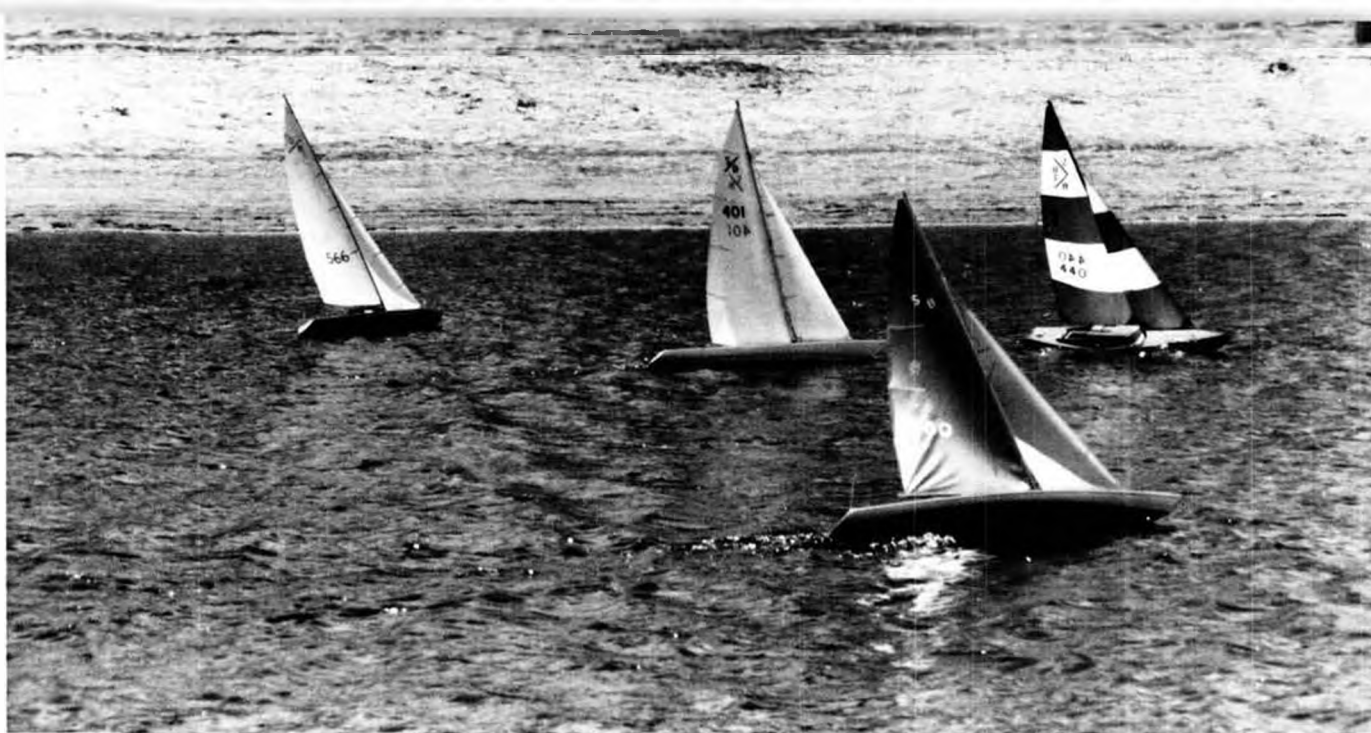
Dick Shilling launches his Wik Kestrel, while Barbara Henon, winner of last year's LSF Tournament, stands by to coach.



Airtronics' own Lee Renaud launches his new Super Olympic. Harbor Soaring Society's top glider guider, Konrad Nierich, with flag. This was during the speed event.



Hugh Stock checks his 100" Soarcraft Libelle. Kit available through Windspiel Models.



Don Prough (440), Tom Protheroe (380), Bill Barton (401), and Sandy Littlejohn (566) in a close battle with Santa Barbara One Designs. Note Tom's plastic sails.

main sheet

By DON PROUGH

● If you would like to race a boat that is capable of being just as fast as any other it competes with, then perhaps you should consider a one-design class. The whole theory of one-design class racing is that all of the yachts are as much alike as possible in their potential for performance. The AMYA (American Model Yachting Assn.) is unique among competition hobby associations in that there are several one-design classes. No other organization has made extensive use of the one-design concept. The idea is not new, because for years there have been class associations among the full sized racing yachts. Competition is based upon skill in racing and tuning, not on ability to buy racing gear and own the latest in new fast yachts.

The items that the one-design class rules govern are the hull shape and size, sail dimensions and some of the rigging. What is left up to the owner is the type of sheeting systems and the type of radio used to control the yacht. Many people start racing in the one-design classes because the quality of the kits available are superb and the competition keen. Also, a skipper can learn to tune his craft to its full potential rather quickly, because he has many boats just like it with which to compare.

With that background on the one-design concept, let's take a look at the most popular of these types, the Santa

Barbara. Tom Protheroe started making the boat in kit form in the mid-sixties and the popularity has grown ever since. The model yacht is 70 inches long, with a 63 inch water line, and weighs between 24 and 28 pounds, depending upon radiogear and winches. The older boats had a skeg-and-blade type rudder and a non-removable keel. The 300 series now has a balanced rudder and a removable keel. Conversion kits were available for the older boats to change them to the balanced rudder. The older boats with the conversion are just as fast as the newer ones. Alex Robins, sailing number 10, has beaten the newest of the Santa Barbaras. Yet on occasion, any boat can win or lose just depending on the skipper. Usually the skipper making the fewest mistakes wins, but never by very much.

The Santa Barbara was designed to use three channel radio gear; one for the rudder, one for both jib and main and the third for optional jib trim. The jib trim is used for making small adjustments to the job in relationship to the main, very handy for reaching and beating to weather, although not absolutely necessary. Boats with and without jib trim have won the annual class championship in the past.

One of the reasons that the Santa Barbara has dominated the one-design classes is that the kit is a quality one . . .

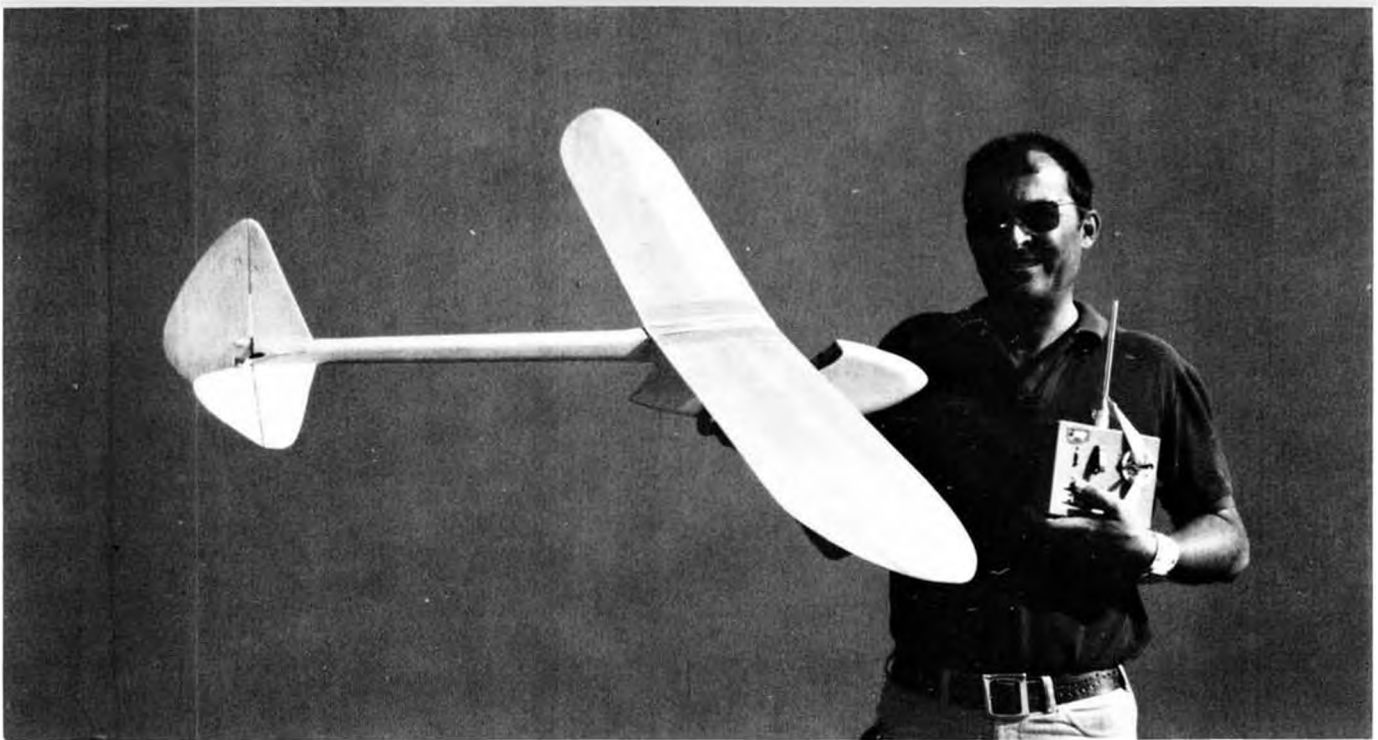
better than that are the superior instructions that are provided for the modeler. To my knowledge there is no kit that has better instructions in any field of modeling. Vortex Model Engineering is the company that markets the Santa Barbara One Design. Any further information can be obtained by writing to them at 210 East Ortega St., Santa Barbara, CA 93101.

The Class Secretary is George Montague, and his address is 305 McCormick, Capitola, CA 95010. George is Commodore of SB Fleet II and will be hosting the Annual Class Championship Regatta, at San Francisco's Spreckles Lake on August 11 and 12.

For those of you who want a good sailing yacht but have never built an R/C sailboat do not worry about it, because it is possible to buy a factory built Santa Barbara, ready to sail, including radio. The directions are very complete, and if you do as you are directed, there is no possibility of fouling up.

There have been well over 600 kits sold and that says a lot for the quality of the product, and the design of the sailboat. Vortex also markets one of the most powerful and reliable SCU's (sail control units), which comes complete with battery and charger. They are the only manufacturer that does this. The directions show how their unit is made to fit in the boat.

Comments or replies can be sent to me at P.O. Box 639, Escondido, California 92025. ●



Your editor shows how NOT to hold a transmitter for a picture in a product review article. Note the use of a big, fat thumb to cover the name tag on the transmitter. It's RS, of course . . . RS, that is! The glider, not so well hidden, is Southwestern Sailplanes' Baby Bowlus.

PRODUCTS\$ IN U\$E

SOUTHWESTERN SAILPLANES' BABY BOWLUS and RS SYSTEMS RADIO. By Bill Northrop

"Quick and dirty" doesn't exactly sound like the kindest combination of adjectives to use in describing an R/C sailplane kit. However, this particular expression is quite familiar to most modelers, and they realize what it means . . . a kit that goes together fast, and even though the designer has cheated by cutting unnecessary corners and achieving results in a functional way only, the resulting model does its thing up in the air and that's what counts the most anyway.

Southwestern Sailplane's Baby Bowlus would create howls of laughter from static scale judges and those who go for streamlined "this's" and filleted

"thata's", but when you suddenly find yourself fresh out of R/C gliders, it's the . . . quick . . . and dirty way to get back in the air by next weekend . . . and the cost is only \$19.95.

The S S Baby Bowlus is a stand-way-off-scale model of a famous glider which dates back to the 1930's. The designer, Dave Thornburg (Don Quixote, MB Dec. '72; 49'er, MB, Dec. '72; and Espritu de San Luis, MB, April '73), employs sheet balsa construction throughout in creating this 72 inch model. Tail surfaces are machine-cut to shape from sheet stock and only require light trimming and sanding. Fuselage sides are also machine cut, as is the

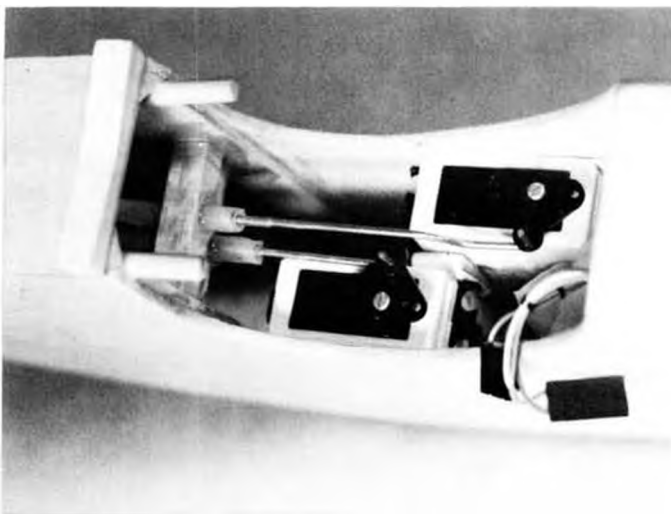
noseblock profile.

Fuselage construction consists merely of glueing triangle stock in place, joining the sides with the noseblock in between, and then planking away until it's all boxed in.

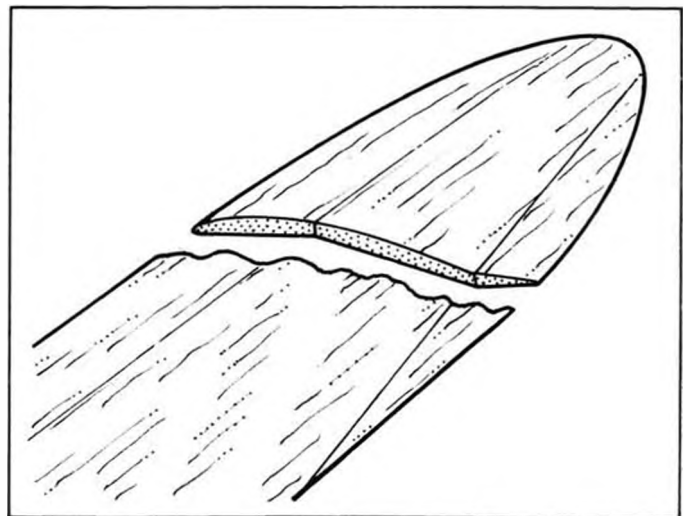
The wing consists of two panels, joined at the center in hand-launch glider fashion, with the joint reinforced by applying a layer of celastic (supplied) top and bottom. Each panel, as furnished in the kit, is made up of two sheets of balsa, joined Jedelsky style but without ribs, and the tips cut to an elliptical (scale outline).

We felt it appropriate, and in keeping

Continued on page 60



An installation that only a glider would put up with! Servos are stuck to unfinished sides and a wad of paper wedges them in snugly.



An important modification to avoid tip stalling. Cut part way thru from bottom, crack upward, and fill joint with glue.



Should we tell you that John Pond was in such a hurry to finish his cabin version of the Cleveland Playboy that he forgot to drill a hole for the high tension lead? Naww, we won't tell you! It was the National F/F Championships, and Tom Laurie is holding. Ship made some nice flights.

PLUG SPARKS



By JOHN POND

It's nice to have a word or two (with him, that's impossible) about Old Timers from the man most responsible for it all happening.

● Hi there, fellows! It's been over a year since this scribbler has put anything down on paper about old timers, but the latest developments in the old timer game are worth talking about. I'm referring to that latest modeling explosion occurring on the eastern seaboard.

Despite what any die-in-the-wool free flighter says, the biggest shot in the arm the old timer movement has received in the last two years has been the advent of the Old Timer Free Flight R/C Events. These have been just what the doctor ordered for those easterners who are

literally dying on the free flight vine for lack of good flying sites.

Originally conceived by Dick Tanis, President of the New Jersey R/C Club, and spark plugged (how appropriate!) by Woody Woodman and Joe Beshar, these events have become the rage of the east coast. Put yourself in the place of an easterner who has had to put up with ridiculous motor runs of five to seven seconds for two minute flights. All that just to be able to fly a free flight model from the size of a field we westerners wouldn't consider enough room for a picnic. All of a sudden, you can now build a competition model, run it to any engine run you are allowed, and get a "max" flight (probably five minutes) without sticking it in those notorious wooded glens that dot the eastern landscapes. Doesn't that turn you on?

No question about it, the New Jersey club is to be highly commended for its pioneering work in promoting Old Timer Free Flight with radio control. Starting with a local trade show, the club put on displays to show what can be done with old time free flight models. Their first contest attracted nationwide interest with numerous photos being featured in various aviation publications. The whole idea spread like wildfire.

The famous Eastern States Championships, which for years hosted the finest free flight contests, was again revived with the addition of the O.T. F/F events. Did that ever bring the old time modelers out of the woodwork! Naturally, who wins the first Eastern States Championships . . . none other than Leon Shulman with his redoubtable Super Zomby. Who says lightning doesn't strike twice in the same spot?

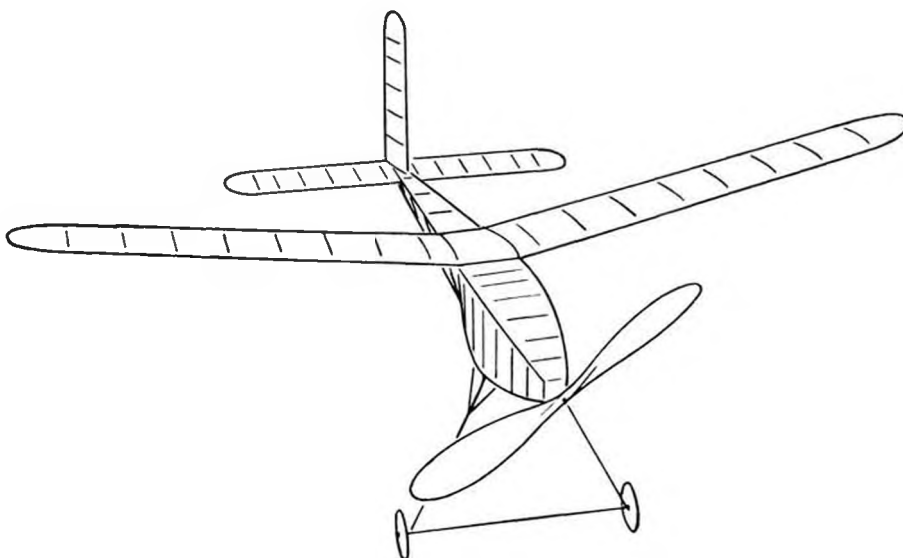
Actually, what makes old timer F/F

Old Timer Model of the Month, Fienburg's 1931 Record Holder.

When you compare it with other models of the time, this design by Emanuel Fienburg of Detroit, Michigan, was quite advanced. It won the 1931 National A.M.L.A. meet in Dayton, Ohio with a flight of 29 minutes and 30 seconds, setting a then new world record.

Plans, and an article describing the construction of this model, were published in the January 1932 issue of The American Boy - Youth's Companion. It was called to our attention by Bob "Satellite" Hunter.

Of special interest is the "locked axle" landing gear arrangement . . . still a great idea for improved ground handling of tail dragger designs, particularly on those cantankerous WW-I scale R/C ships!





AMA No. 4 himself, Irwin Ohlsson, fuels up his R/C Pacemaker for us to fly at Lake Elsinore (see page 5). This famous old time F/F design by Irwin is enjoying a second life on floats. A very smooth and realistic bird to fly. He wouldn't let us shoot a touch-and-go under the power lines!

radio control so attractive (besides flying models that look like airplanes) is the simplicity of the rules. You are simply given so many seconds of engine run per pound of model and that's it. Go gettumm!! It's then up to you to coax that "max" flight out of your model. Of course, on windy days (and when isn't it windy back east?), you always have the gamble of getting down wind too far without enough altitude to get back over the trees surrounding the clearing. But this is the name of the game, a little skill, a little luck, and one heckuva lot of fun!!

Old timer free flight R/C has proven so popular that these events will be staged unofficially at the upcoming

A.M.A. National Model Airplane Championships at Oshkosh, Wisconsin. Correspondence with Woody Woodman indicates that the old timer R/C events will be held on Thursday, Aug. 9, one day ahead of the traditional Old Timer Free Flight Events (again unofficial) on Friday, Aug. 10. The writer will be C-D'ing the free flight events, but is all ready to compete on Thursday. When it comes to Old Timers, this writer will compete in any event bearing that name! If you modelers (sometimes referred to as readers of this mag) think this is great like I do, let "Old Dad" Bill Northrop know about it! (*That's "New Dad" now, buddy! wcn*) After all, he has the last say with the blue pencil in response

to reader demand.

If this writer gets any more enthused, he is going out next week and lead a torchlight parade for old timers, both classic free flight and the new vogue, O.T. R/C. Of great interest to us is the upcoming S.A.M. Championships on June 19, 20, and 21 which will be history by the time this appears in print. Old Timer R/C Events will be held in conjunction with the Old Timer Nats (as they really should be called). Although the writer will be busy running this three day affair, he is hopeful of getting in a little stick time when it gets too windy for the majority of the regular free flight contestants. It will be interesting to see how these events draw with little or no publicity.

Also upcoming is a new gimmick in the classic Texaco Event, which was revived by the Southern California Antique Model Plane Society (SCAMPS) about six years ago.

For those easterners who die when they hear about the tremendous times of the Texaco Event (an hour duration generally is the winner), how would you like a shot at the boys with your R/C version?? Mind hoggling! Like all real good ideas, there is a catch or handicap system (whatever way you want to call it). Whereas all models are given one quarter ounce of fuel per pound of airplane weight, then allowed to fly as far as the motor will take it, the R/C boys are required to remain at the original

Continued on page 45



This photo was given to us by our C/L editor, Dale Kirn. We don't know who built the model, but it's such a nice rendition of the Comet Sailplane as designed by Carl Goldberg that we couldn't resist printing it. Can anyone identify the owner?



The calm before the storm . . . MAN's Dave Linstrum (lt) patiently stands by as Hardy Broderson waits for some indication of up air.



Here it comes . . . we hope! Hardy about to javelin his flying barber pole into a riser as Dave stands by to time the action. It was a max.

FREE FLIGHT

The Editor's new assistant takes a shot at reporting on his favorite modeling category. By JEAN ANDREWS

● As one minor voice crying out in the wilderness of Free Flight activity, I would like to start off by congratulating the co-ordinators of the Taft-held U.S. Free-Flight Championships. The idea of allocating an event to each of several active Southern California clubs worked admirably.

The meet was run smoothly, and the "Time one, fly one" rule, which was instituted a few years ago by those same clubs, worked exceptionally well. At some tables it was modified somewhat, however. A flyer presented himself to fly, and his card was pulled and put in line for a timer. If he timed a flight while waiting, and his card came up, he was placed in a separate pile of "Priority" cards, and upon his return, this Priority pile was called first to fly. Result: those who timed actually waited a shorter time between flights, and had better choice as to when to fly.

The competition was truly on a "Championship" level, with maxing-out

a prerequisite for reaching any of the trophy levels.

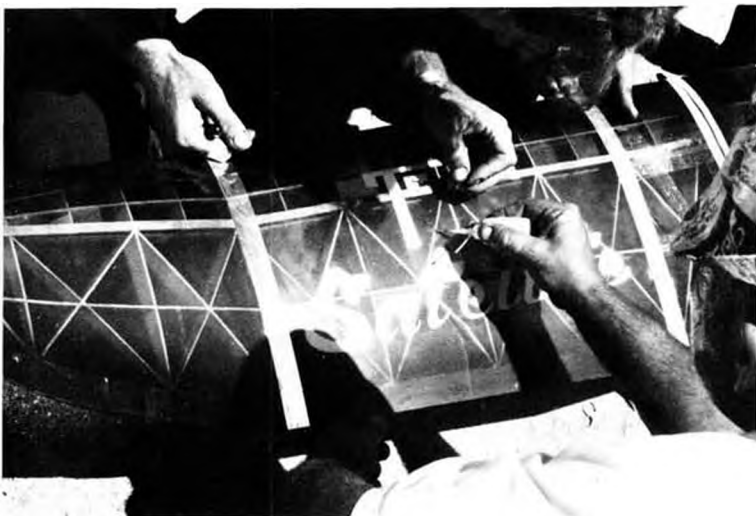
The Taft site is one of the finest in the world for a free-flight meet, and most of the out-of-town modelers had no difficulty adjusting to the spotty but strong thermals encountered there, thus cancelling any "Home-Field" advantage the locals might have thought they enjoyed. Retrieving on foot or on scooter is easy, and most of the brush is thin enough that a downed model can be seen through it. No detours around fences and through gates, which can destroy your "line", are required.

Let's hope we are successful in getting a future World Championship meet here.

While on the subject of Championship meets, the AMA Nationals will be held in Oshkosh the first week of August, and there is a ground swell of opinion throughout the country that



Grand Champion, a Senior from Phoenix, Randy Bunch, tries to decide which trophy to take home.



While busy hands hold broken ribs in place with wire inserted thru covering, Bob Hunter applies quick-hardening "Hot Stuff" glue.



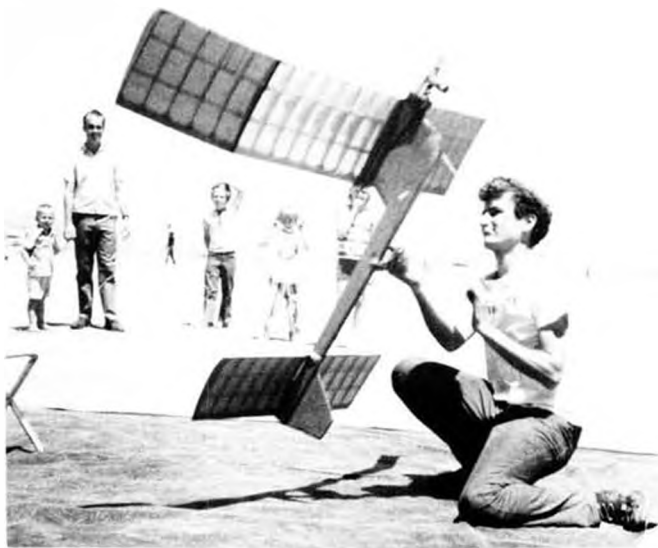
Moments after the shot to the left, Team Satellite member Hulan Mathies' ship was up, up, and away in a cloud of dust.



Winners of the Team Event, the Magnificent Muthas (l to r): Tom Carman, Brian Van Ness, and Paul Ryan. Unfortunately we don't have name (or phone number) of Trophy Girl.



"Who knows what evil lurks . . ." Aw come on now, what story did you really give your wife?!



Jeff Kirkendall of the Dyer Team, VTO launching his Starduster 900. K & B 41RR. Jeff is 16.



Another Dyer Team member, Loren Fancy, launches his "Raggety A." Loren is also 16.

free flight is taking a back seat to the R/C and U/C events. Cries of "Why should I drive there for two-minute maxes," and "I can't see going there just to tear my models up in the trees," and so forth, seem to be common.

Frankly, I hope modelers don't boycott the Oshkosh Nats just because of the less-than-ideal conditions which might be found there. Remember, the two-minute max will only be called if the wind direction and velocity is sufficient to cause airplanes to drift toward the full-size field at the north end of the site. Otherwise a standard three-minute max will be the rule of the day.

The mere fact that we will be able to retrieve by crotch-cart is a great improvement over the Navy-sponsored Nationals I have attended, for instance, where the only pursuit was by foot or by "Official" vehicles, which never went where my models were. This alone should allow more efficient retrieval, and thus better flight times than in the past.

It has always been the policy of AMA to hold the Nationals for ALL classes at the same time and site, in order to arrive at a true test of a National Championship. This is the first Nationals to be held since the Navy discontinued sponsoring of them, and a poor showing by the free-flyers may well justify a further reduction in the amount of support we will be able to get from AMA in the future. Just because the site is not ideal, let's not cut off our noses to spite our faces.

One discouraging word at the end, and then I'll get down off my soap-box; if reservations have not already been made AND CONFIRMED at a motel in the area, chances are that you'll be camping out, whether you planned on it or not. Late word is that all motels within a twenty mile radius of Oshkosh are already booked for the week.

Maybe the free-flyers are boycotting the Nats this year, but somebody is sure going to attend . . .

(From the D.C.R./C Newsletter, June.)

Ron Bozzonetti, in poring over the Italian modeling magazine MODELISTICA, finds that in the October 1972 issue there is an article entitled "Airfoil Profiles for Flying Models." It appears that the ASA Aero Club of Abbiagrosso has a small wind tunnel available to it, and their member and engineer, Enrico Gallazzi. They have tested several of the common airfoils, especially those suited for radio-controlled gliders and motor-gliders, including some new airfoils such as the Eppler 392 and Bogart.

The results, in the form of graphs and charts, have been put in an album available for sale to the general public. Of special interest is the fact that it is in both English and Italian, and that it is for Reynolds numbers of about 60,000. The coefficients of lift and drag are, therefore, practical to the modeler. We find that the cost of the album is 4,000 lira, (which, as of May, was \$6.80).

Their address:

Continued on page 56



NATIONAL FREE FLIGHT SOCIETY NEWS

Editor's Note: During the NFFS General Meeting held at Glenview NAS last year, which we attended, AMA's Executive Director, John Worth, made the following statement:

"Don't be complacent about the guy who flies next to you who has not paid his NFFS dues. If you can get all Free-Flighters to belong to this organization, you will find that you will have a much bigger voice . . . and maybe that will help solve some of the problems in the AMA."

At that time, because the NFFS Digest was in a state of limbo, we offered to help the Society by carrying its message in MB. Since then, the Digest has been reactivated under the capable editorship of Bob Meuser. It still seemed to us, however, that in order to expand . . . and improve its leverage in AMA . . . the NFFS had to reach beyond its membership and contact the non-member free-flighters.

Following a discussion with NFFS Executive Director Hardy Broderson, (between thermals at the F/F Champs in Taft), it was agreed that a capsule version of the Digest, "NFFS News," would appear in each issue of MB. The content is supplied by, and is the responsibility of, the NFFS.

"Ti . . . mer!!!"

NFFS NATS ACTIVITIES

NFFS Supply, Membership and Information Booth, probably shared with AMA Information Center, will be in the center of things. It will include Plans Publications, Supplies, Membership Processing, and a willing ear to listen to ideas, recommendations, and complaints. The NFFS center will serve as a message center, notice board, a place to meet old friends. We'll try to have a phone at the disposal of the NFFS membership to receive and place calls. The booth will be manned during the afternoon and early evening hours by B. J. and Kay Kelch, plus any other members who wish to help.

NFFS SYMPOSIUM, TECHNICAL MEETING

Wednesday night at 8:00 p.m. in the meeting pavilion. The Sixth Annual Symposium Report, edited by Tom Hutchinson, will be on sale for the first

NATS UNOFFICIAL EVENTS

Sunday, 8-5-73 — Gen. R. L. Jones Armory, Chicago, 3 p.m. — 9 p.m.

Peanut Scale
Navy Scale
Penny Plane

Wednesday, 8-8-73 — Oshkosh, 1 p.m. — 5 p.m.

Payload

Thursday, 8-9-73 — Oshkosh, 1 p.m. — 5 p.m.

Helicopter

Friday, 8-10-73 — Oshkosh 1 p.m. — 5 p.m.

Cargo
Oldtimer

Saturday, 8-11-73 — Oshkosh, 1 p.m. — 5 p.m.

Rubber Speed

time. Several of the papers will be given either by the authors or by proxy, supported by slides and demonstrations. Advance orders being accepted now. Contact Jack Shafer, \$4.50 to AMA & NFFS members, \$5.50 to non-members.

NFFS GENERAL MEETING

Thursday night at 8:00 p.m. in the meeting pavilion. The movie, "180 IS MAX", super-quality film of the '71 World Championships, will be shown, and the presentations of the 10 models of the year will be made. Other plans

and demonstrations are in the works, all of which will prove very interesting. (electronic timers!?!).

NEW MEMBERSHIP DIRECTOR

B. J. Kelch is the newly appointed Membership Director and lives in Terre Haute, Indiana (a modeling desert he says) and works for Columbia Records. A man of infinite energy, he offered his services to the NFFS because he saw the work that needs doing. The NFFS Directors were quick to confirm his appointment. His basic job is general direction of membership matters. Two specific assignments are the signing up of 2,000 members by June of '74, 4,000 members by '76. His plans for membership recruitment are shaping up and look very promising. Doug Galbreath, the printer, who has membership address plates and records (in addition to the general printing responsibility), will continue to handle the mechanics of membership records and notices under B. J.'s direction.



B. J. Kelch does the Uncle Sam bit on behalf of NFFS. The Digest alone is worth it. JOIN!

NFFS MEMBERSHIP AND RENEWAL APPLICATION

(Make checks payable to; National Free Flight Society)

Mail to;

B.J. Kelch, R.R.4, Box 475,
W. Terre Haute, Ind., 47885

FEES

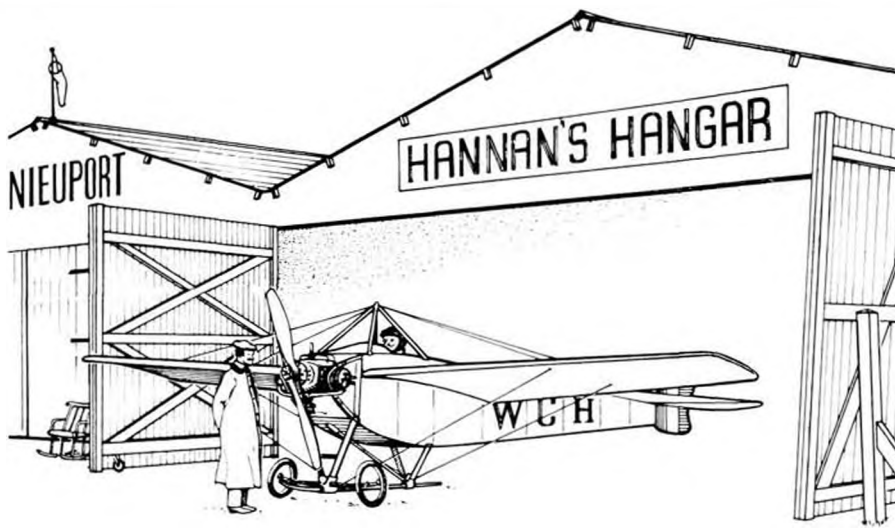
			1 yr	2 yrs
RESIDENTS OF FOREIGN COUNTRIES			\$4	\$7
U.S. RESIDENTS	Age 19 and up	AMA Members	4	7
		Non-AMA Members	5	9
	Age 15, 16, 17, and 18 (Senior)		2	4
	Age 14 and under (Junior)		1	2
Family membership*			1	2

All members receive NFFS Digest. Family membership fee includes all additional family members, but no additional copies of the Digest. Ages are as of July 1 of current year. Please circle applicable fees.

New Member
Renewal
Address Change

Current expiration date:
Month Year

Name	AMA No.
Address	
City, State	Zip
*Please list family members	
Name	
	AMA No.



... being a casual collection of aeronautical trivia.

AEROPLEUSTICS, ANYONE?

According to an Associated Press release, Englishman George Pocock was the innovator of a new sport, Aeropleustics, which is navigation by the use of kites. Pocock's chariot attained a ground speed of 20 miles per hour, being pulled along by kites. Not bad at all, especially considering that this was back in 1827!

FROM THE NAA NEWSLETTER!

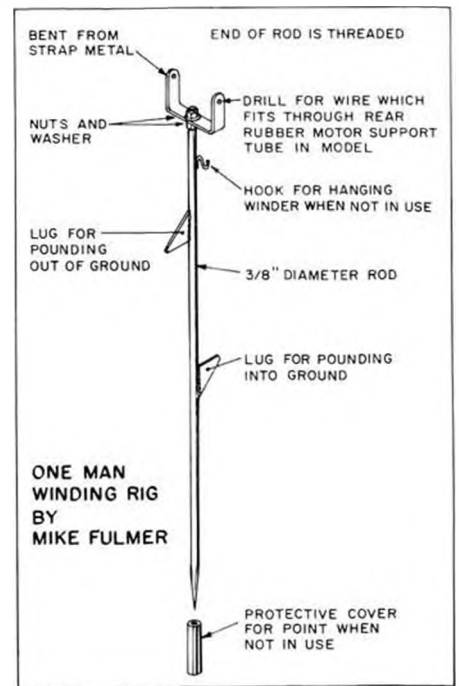
Take a little hot air, add a Volkswagon engine and you have the world's first hot-air airship. Cameron Balloons, Ltd. of Bristol, England, built the ship and launched it early this year. It has a top speed of 20 knots, and Cameron thinks it will become popular for aerial photography, survey advertising and sport. The 100-by 60-foot ship folds up to fit into a car trailer.

CONSIDER THE HUMMING BIRDS

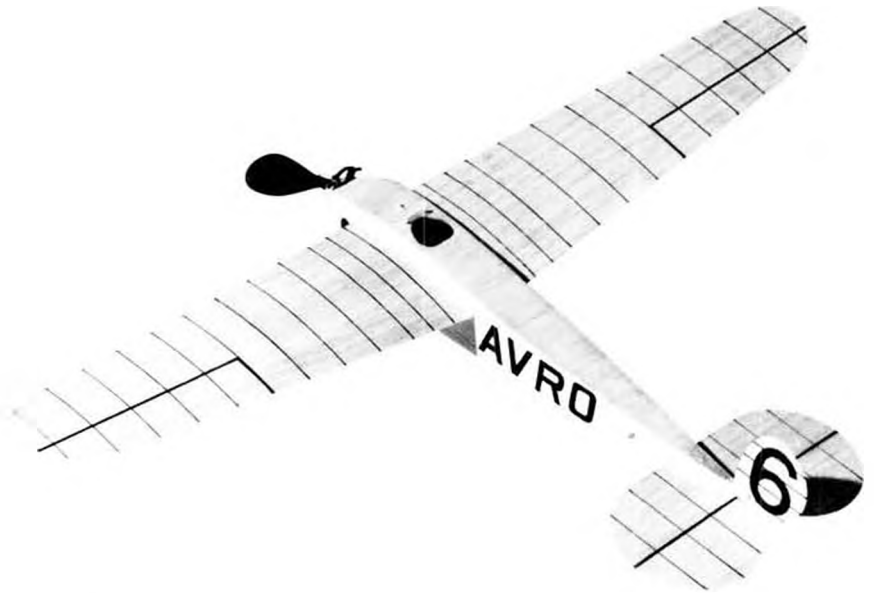
Many people express surprise at the performance demonstrated by Peanut Scale Models. Doubtless this is partly because, for years, the modeling press has been "brain washing" its readers concerning the supposed decrease in efficiency of airfoils with reduction in

size. This theory was usually accompanied by much supporting data regarding scale effect, Reynold's Numbers, etc. Unfortunately, much, if not most of this

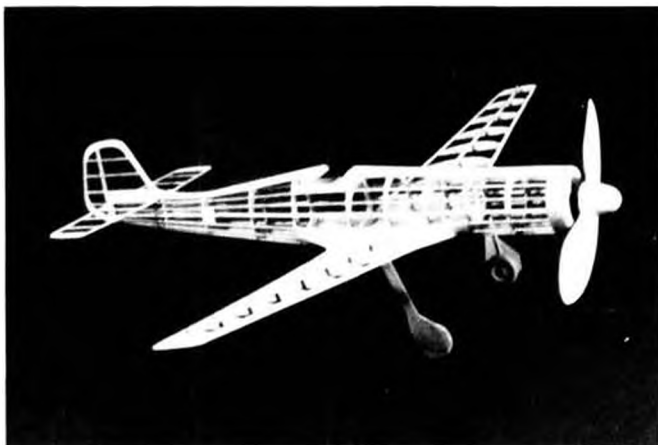
Continued on page 51



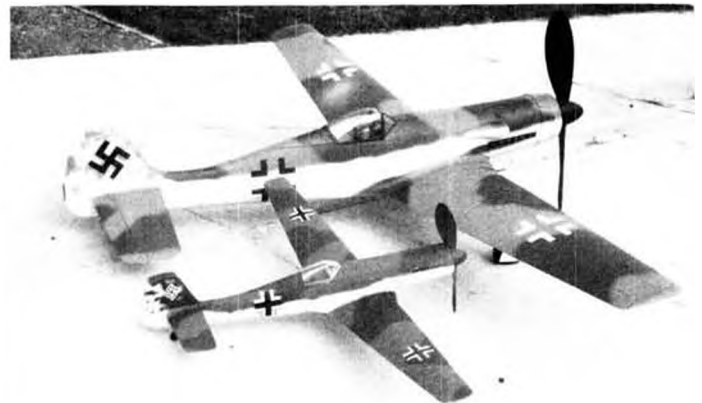
ONE MAN WINDING RIG BY MIKE FULMER
Do-it-yourself model holder for those solo flying sessions. For smaller rubber jobs. An outrigger could be added for the big ones.



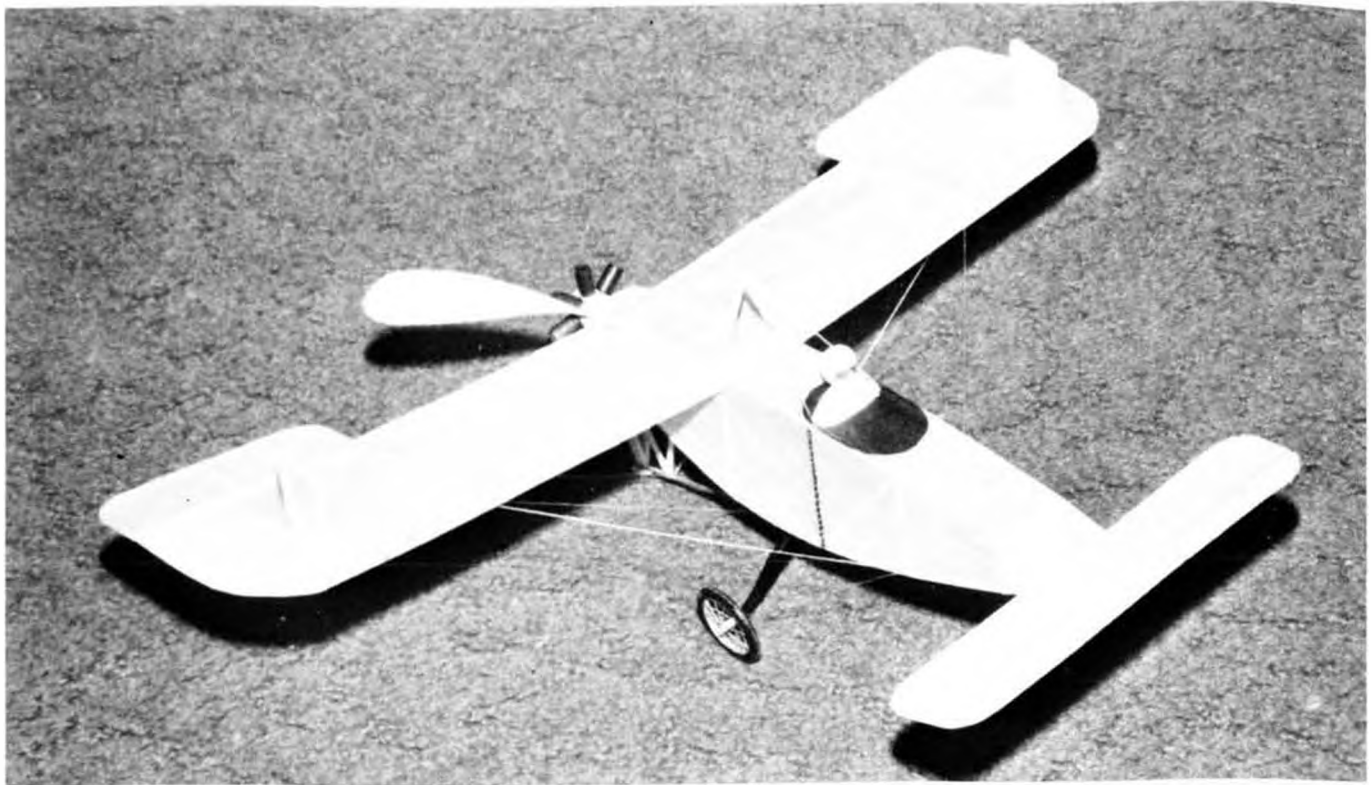
Avro 560 all balsa model built by Bob Clemens, a professional photographer for Eastman Kodak. Beautiful job of building . . . and photography.



Structure shot of Focke-Wulf TA-152 by Hal Cover, 1/2"=1' scale. Will be featured in forthcoming scale model book.



Model at left, after covering and finishing, poses with its Jumbo Scale brother. Big one is of balsa covered foam.



PEANUT BLERIOT CANARD

By W. C. YOUNG. This month's Peanut Scaler is not only a little unusual, it is also a contest winning flier. Be the first one in your club to have someone say, "Hey, Mister, your plane's flying backwards!"

● Here is a very unusual peanut scale subject which surprised the author by its excellent flights off of the board and in spite of changes in CG and trim. These plus changes in rubber size and contact with the walls have very little effect on the flight of the aircraft. This is probably due to the fact that a canard is almost stall proof.

The real aircraft was built in 1911 by Mr. Bleriot, while at his summer villa in Hardelot, near Boulogne. The engine was 50 HP Gnome rotary coupled to a Chauviere propeller. The ailerons were actuated by tubes inside the wings. All

of the information regarding this airplane was furnished by Bill Hannan of Hannan Graphics. The plans have been checked against several photographs of the real ship to verify scale.

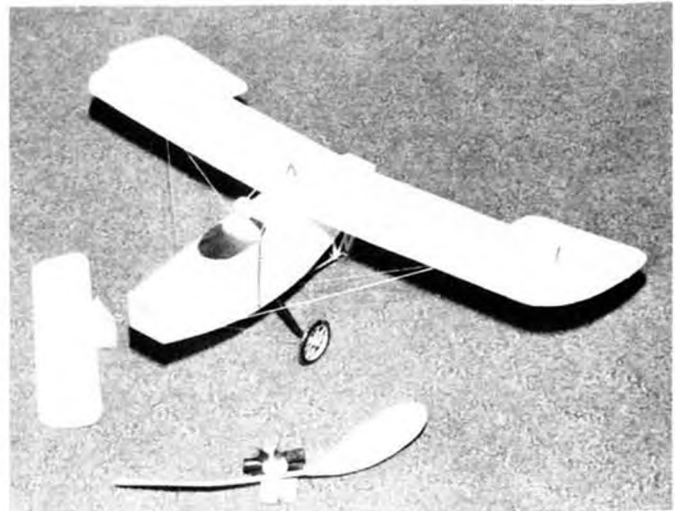
The model was built entirely from Sig Contest balsa of 5 pound density. The covering is white tissue from Micro-X Products. This is the lightest and tightest Japanese tissue I have found. I used model airplane cement thinned 50% with acetone for the entire assembly, as well as the covering. The ship was flown with 0.080 inch Pirelli rubber of 12 inches length, using 1200 turns on each

flight.

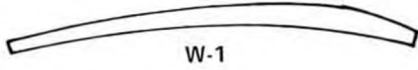
Adjustment is conventional and very simple, as the aircraft is very forgiving. Stab tilt and wing washout were used to get correct powered glide trim. Vertical and side thrust were used to control the power burst. Best time to date is 1:18.00 and it is obviously capable of much more. Scale was judged as +12, using the published AMA provisional rules, and the finished aircraft weighed 5 grams, ready to fly, but minus rubber. I hope you have as much fun with your Bleriot canard as I did with mine. ●



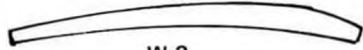
Underside shot of the Bleriot displays the leaf-spring landing gear. Prop would have to be shortened for R.O.G. flights.



The little canard causes no problems in winding or replacing the rubber! Prop is made up of formed sheet blades on toothpick hub.

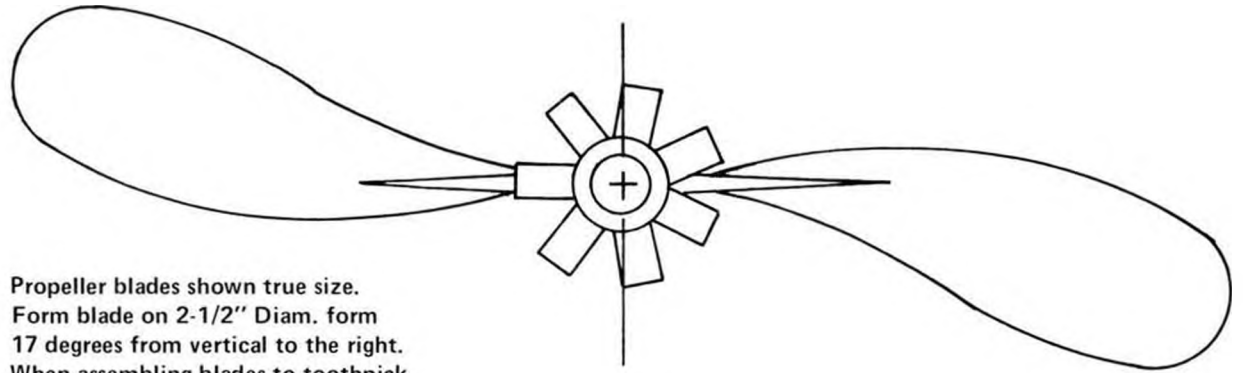


W-1

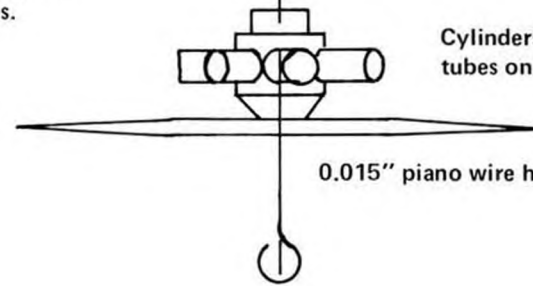


W-2

All parts sliced from 1/20" Sig Contest balsa unless otherwise noted.

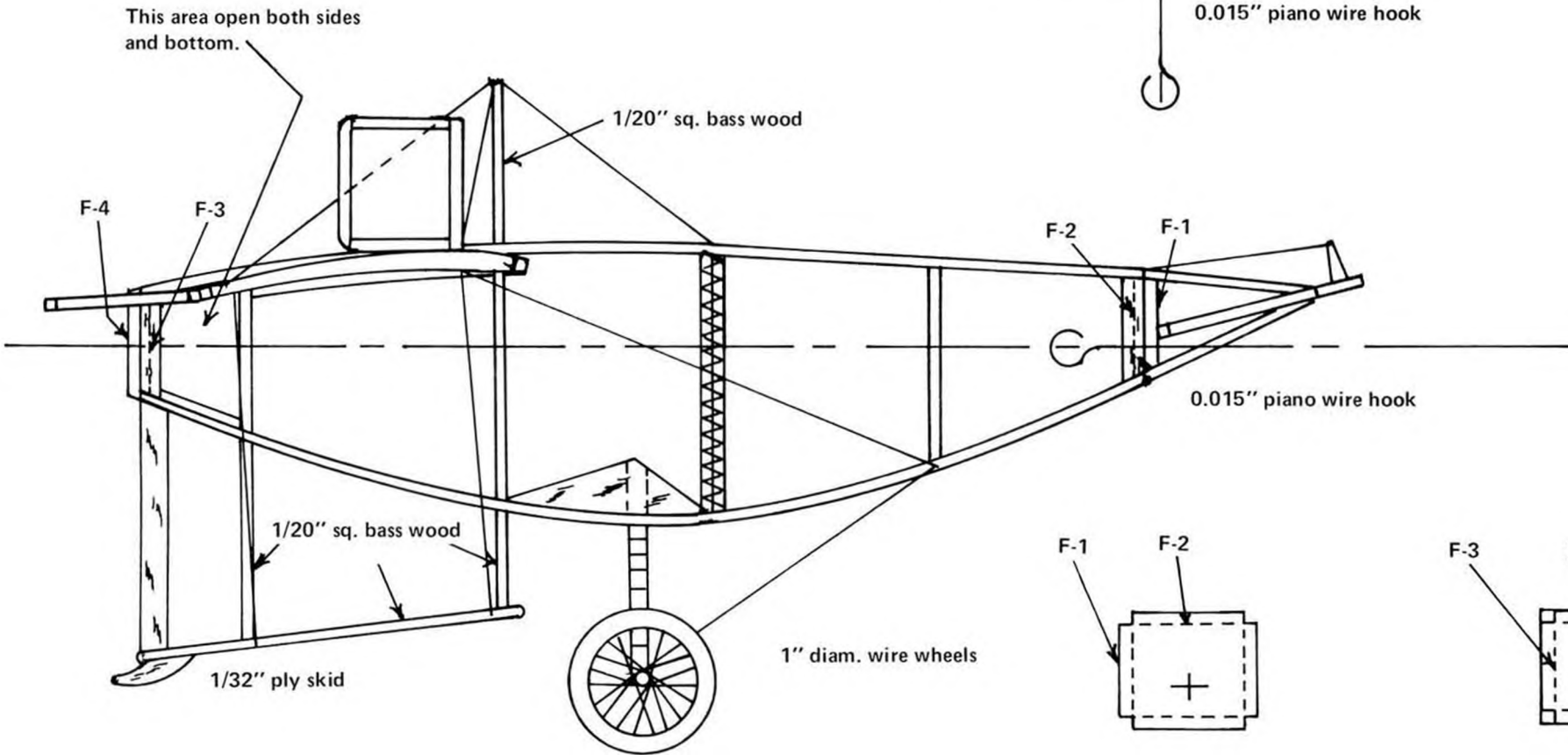


Propeller blades shown true size. Form blade on 2-1/2" Diam. form 17 degrees from vertical to the right. When assembling blades to toothpick spar, fix tip angles at 30 degrees.



Cylinders are rolled tissue tubes on 3/16" form.

0.015" piano wire hook



This area open both sides and bottom.

1/20" sq. bass wood

F-4

F-3

F-2

F-1

0.015" piano wire hook

1/20" sq. bass wood

1/32" ply skid

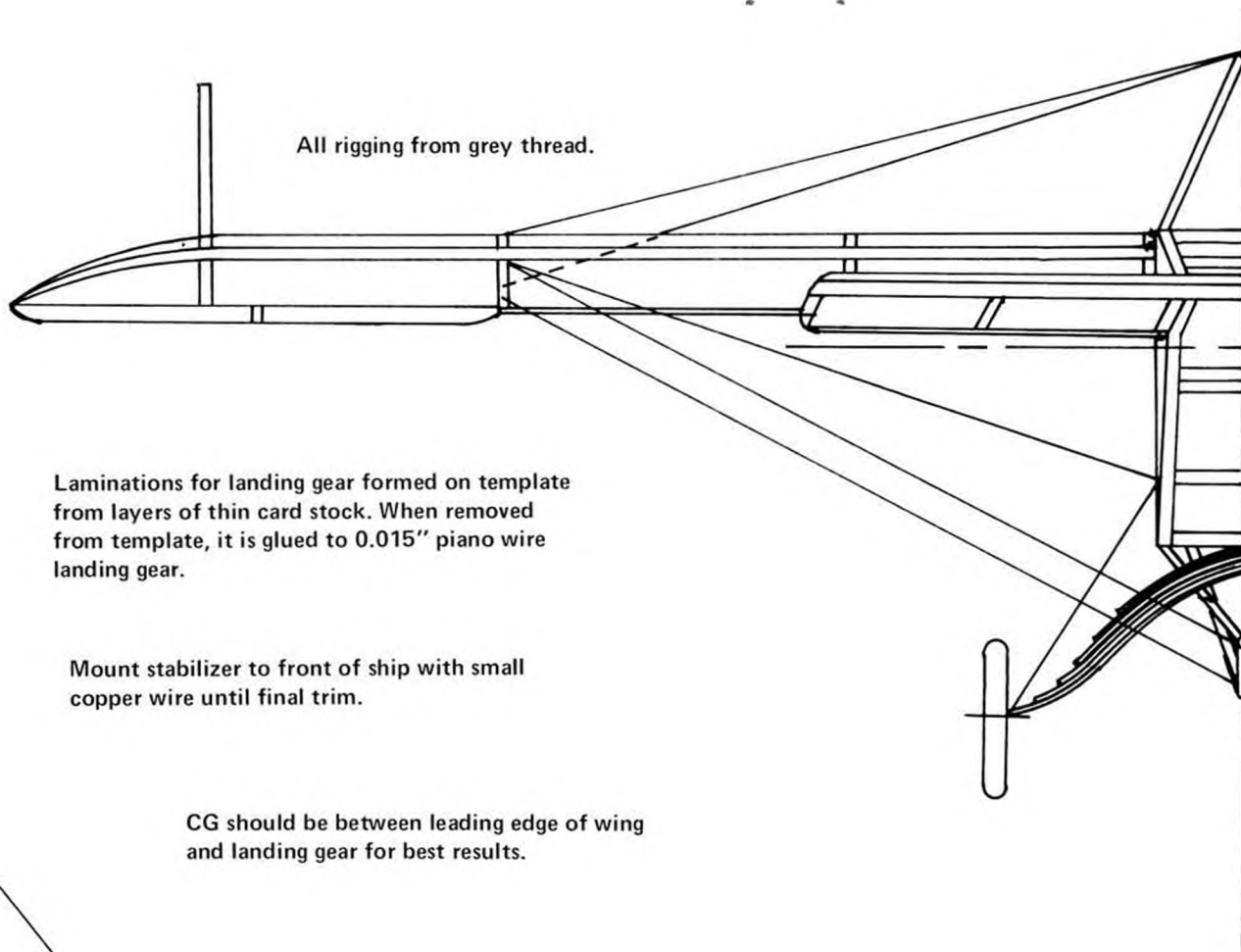
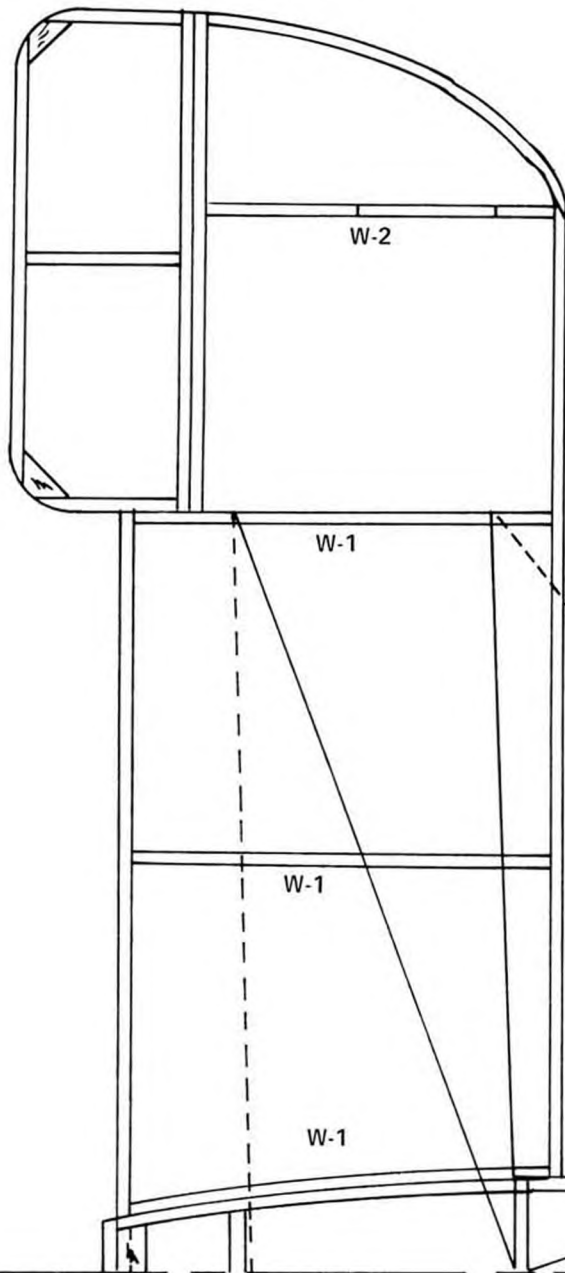
1" diam. wire wheels

F-1

F-2

F-3

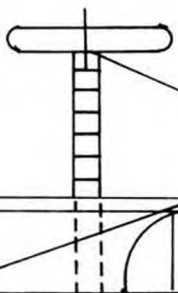
F-4



Laminations for landing gear formed on template from layers of thin card stock. When removed from template, it is glued to 0.015" piano wire landing gear.

Mount stabilizer to front of ship with small copper wire until final trim.

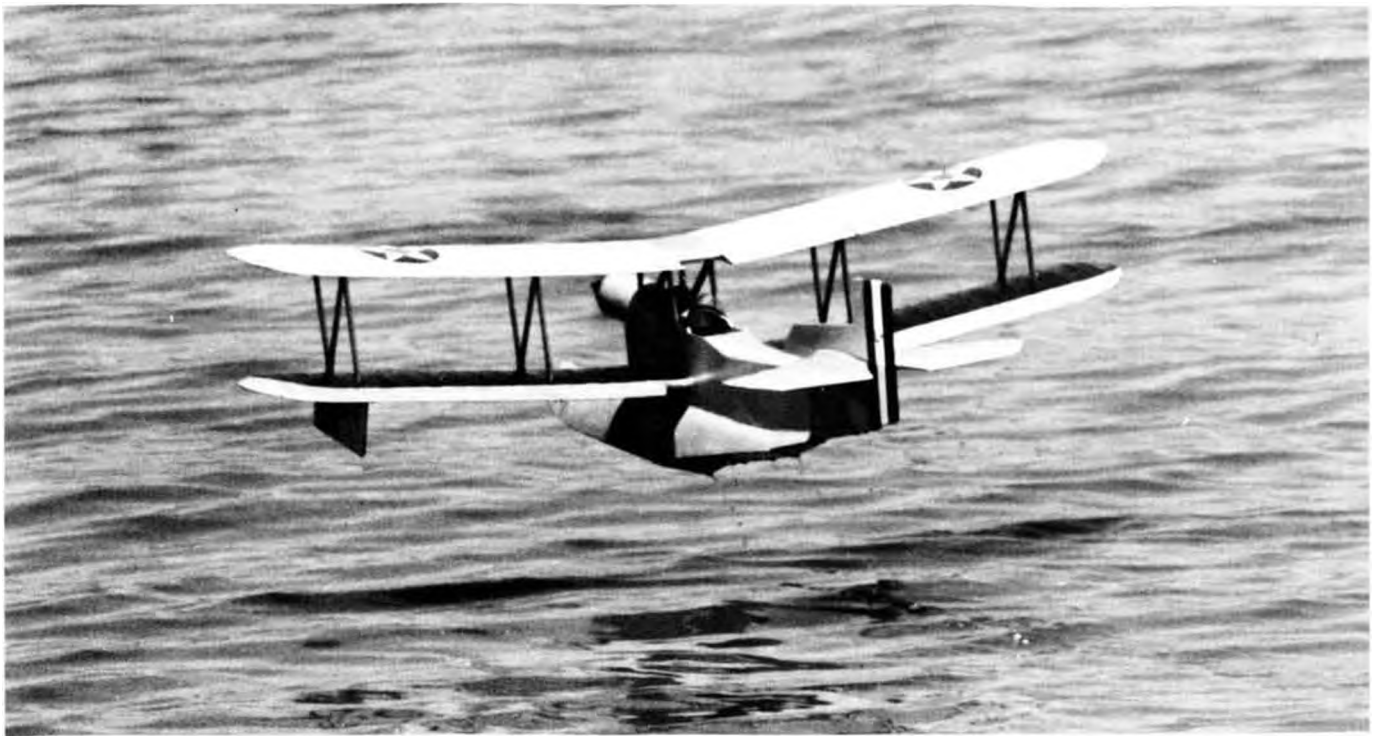
CG should be between leading edge of wing and landing gear for best results.



Note washout in ailerons; this is important for stable flights.

Drawn By

W.C. Jones
W6AJH



Jim Adams' veteran Loening F/F scale model just after takeoff at Lake Elsinore. A tired .06 Taifun diesel powers (?) this 48" span model.

FREE FLIGHT SCALE

By FERNANDO RAMOS

● The Flightmasters just held their fourth annual scale R.O.W. contest at Lake Elsinore. There were 28 planes entered in F/F rubber, F/F gas, R/C and CO₂. The weather, as in the past, was perfect, and the hundred plus spectators were well entertained during the contest.

Of the 28 models entered, there were only 13 that qualified. Why so few? Well, there are several reasons for this. Flying a model off of water is not the same as trying to R.O.G. from a tarmac or grass. A rubber model, for example, which can readily take off from land will usually just taxi in the water. So, for starters, you have to put in more rubber to get sufficient power to overcome the water's adhesion to the floats. A similar situation is also found in gas powered

models. If the model is too overpowered then the flight will be scary, to say the least. With CO₂ it's a question of proper size, design, and weight. Take for example John Lueken's double-sized Hannan-designed Aristocrat. The plane flew beautifully indoors at the Santa Ana Blimp Hanger, but would hardly taxi at Lake Elsinore. Yet, Walt Mooney's Dornier C, which is about the same size model, almost jumped out of the water! Who can say what is going to work best for a scale model?

Another problem with R.O.W. is that too often a modeler will not or cannot take the time to test fly his model from water and have it adjusted for both R.O.W. and flight. Those who do are usually the eventual winners. For an

example, I was working on my Avro Baby up to the wee hours of the morning of the contest. So you can imagine how well prepared I was to R.O.W.! However, I did have a chance to test fly the model a few days before the contest.

You'd think that after four years of trying we would get the message and come up with the best design to do the job. However, there is still a lot to learn. Example: last year I entered a 1½ inch scale Sopwith Tabloid, (weight . . . a heavy 2 lbs.) which was powered by a .09 Mills diesel. It did a beautiful job of taxiing and that's all!

This year my approach was going to be different. I decided to build the Avro Baby to a scale of just over one inch (span 30") and power it with an



Joe Tschirgi's Brandenburg W-20 is radio controlled, and flies quite well off the water. How about that chord-to-gap ratio!



Frustrated F/F Scale editor's water-hugging Avro Baby. Maybe next time, Fernando.



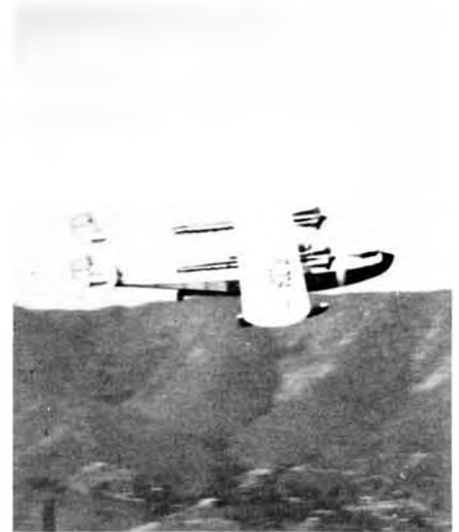
Walt Mooney's LAT 283. Float tops are single balsa sheet molded over form. Excellent takeoffs.



Clodbuster Venture's first book of rubber plans include Folkerts, Crosby, Floyd Bean, others. Kuenz and Bruning are doing it. See ad.



Hal Cover's Lanzo Puss Moth (MB Plan No. 1722) on Edo floats made excellent takeoffs and flights. We will have plans and instructions for the floats in the near future.



Dick Siefried's Cleveland Commodore made many flights though short in duration.

.049 Merlin diesel. I figured this would give me ample power to jump off the water. This assumption was based partially on the way it flew during the test flights, which were rather fast.

One may ask why always a biplane? First, I'm hung-up on biplanes, and second, that extra lift is helpful in getting off the water. To prove my theory, take Jim Adam's Loening. Jim has won the F/F gas event two years in a

row with this biplane which has a span of about 48 inches and is powered by a .06 Taifun diesel that is practically worn out! The Loening barely moves through the water, but all those square inches of wing get it off. Once airborne it flies just like a scale model should fly.

The contest lasted from about 8:30 a.m. until noon, with the judging of the qualifiers following the flying. Most of the morning was exasperating for many,

as the number of unsuccessful attempts increased. In this event, you just don't fly unless you have a judge watching for you never know which attempt will be the lucky one . . . the qualifier. Take for example Tom Arnold and his Japanese Rufe. The first time he made an attempt, the model took off and went into a gigantic loop. However, it was in the air long enough to qualify. From

Continued on page 45



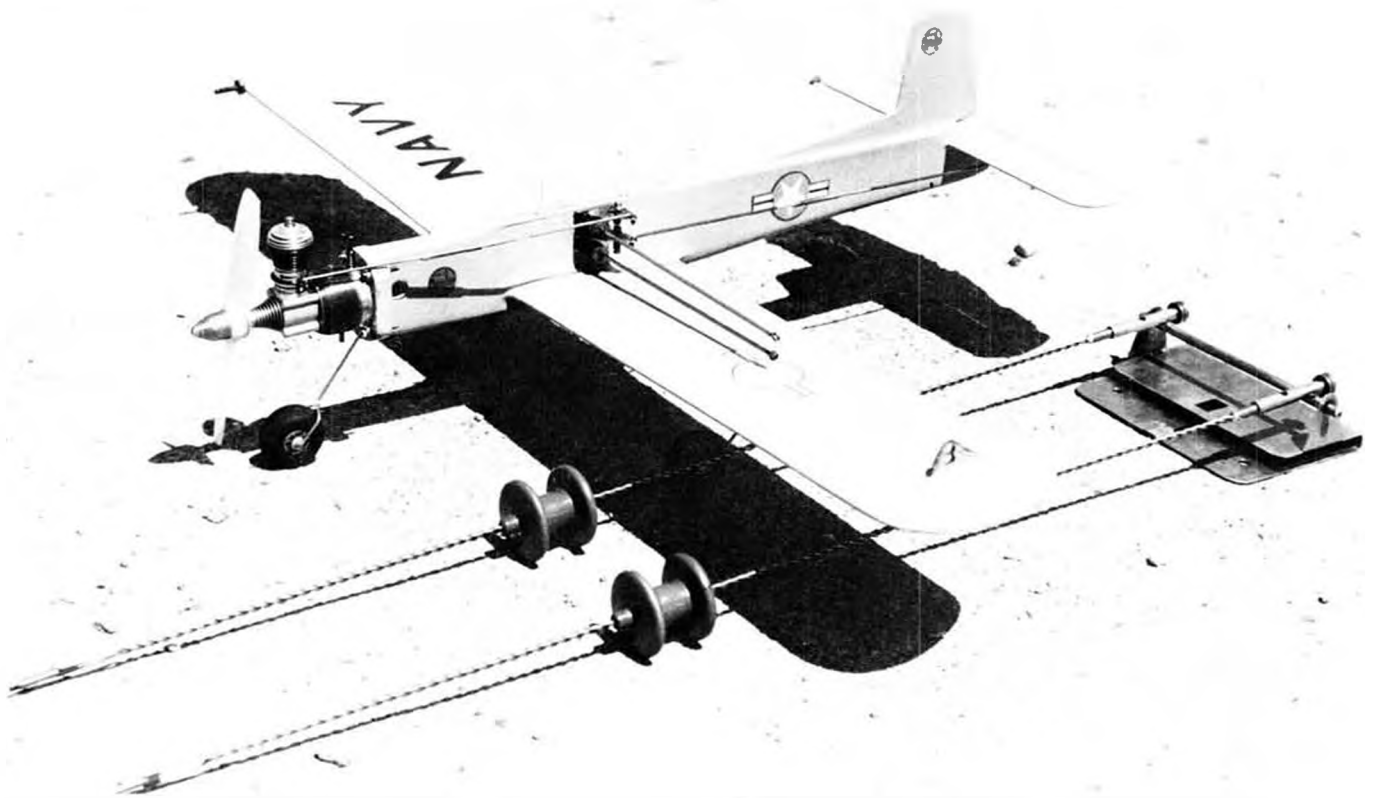
Walt Mooney releases his LAT 283. Ship came unstuck very quickly.



Bill Pardoe and his Stinson. You might say he is thoroughly absorbed in his hobby!



Tom Laurie's single channel .049 Osprey. It oscillated, couldn't get off. Any ideas?



Modified Cox RR-1 .049 engine with wrap-around exhaust restrictor powers this 1/2A carrier plane with two Mono-Line control units; one for engine control, the other for elevator.

Control line

By DALE KIRN

NEW FLYING SITES

● The County of Orange (just south of Los Angeles County) has approved plans for a new county regional park which will have facilities for model airplanes. Three asphalt circles and one asphalt takeoff strip for R/C planes will be provided. Actual construction of this park (Carbon Canyon Dam) will start

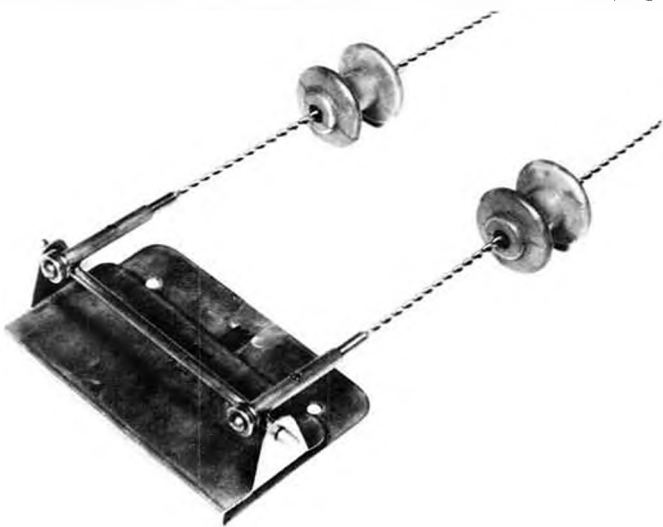
late this year, and is expected to be operational early next year.

The Anaheim Parks and Recreation Department has provided another flying site for its club members. Arrangements were made with the Anaheim Union High School District to use its parking lot on assigned dates. This alternate site assures flying facilities when the

Anaheim Stadium parking lot is in use . . . due to scheduled baseball games. Hats off to Anaheim for its interest in this new control line club.

1/2A NAVY CARRIER

If your club is looking for a new interesting event, take a look at this one. The idea of 1/2A Carrier is not new. Western Associated Modelers (WAM) has



Close-up of carrier handle with two Mono-Line twist units. Bracket slips over flier's belt, leaving both hands free to operate controls.



Interesting self-launching rig by Steve Fauble; great for combat types. Foam holds wings, spring released by pilot. Near-future MB article.



All-plastic 1/2A stunt kit by Cox. Real performer on 40' of .008 braided lines and the Cox 290 engine. (See text)



Tom Keehn and son Jimmy, age 7, with their Mono-Lined Lil Wizzard. Flies extremely smooth on 50 feet of .016 wire. Bill Hoyt photo.



Two young club members show off the new sign that the Park and Recreation Dept. made recently. Flying site is a section of the Anaheim Stadium (Angels) parking lot.

been flying it for years. It has all kinds of possibilities and could be a very inexpensive way to get going in carrier.

The reliability and ease of flying can be greatly improved if the mono-line control system is used. By using two control units (see photo) and only two lines (.014 x 42') you can have true

proportional engine speed without a troublesome third line. One control unit operates the engine speed and tail hook release; the other unit is for the elevator . . . and flaps. And the real bonus is that line tautness has NO EFFECT on achieving the desired control!!

Word has just been received that Mono-Line handles will be available again in the near future. Tooling is nearly completed, and finished handles are expected in about 6 weeks. Two handles are required for carrier (see photo). They are mounted on a plate that slips over the flyer's belt. This enables the flyer to have both hands free to operate the controls.

A three-line system can be used to accomplish the desired controls. However, it will require some real fancy footwork when the lines go slack. Believe it would be worth your time to check into the Mono-Line system.

COMBAT/STUNT

It has been reported that several combat and stunt pilots fly 1/2A planes to sharpen up their reflexes. Some of those 1/2A combat planes can really get wild when a hot Tee Dee .049 and a pressurized fuel system are used. (See "Whetstone", 1/2A combat construction article, May '72.

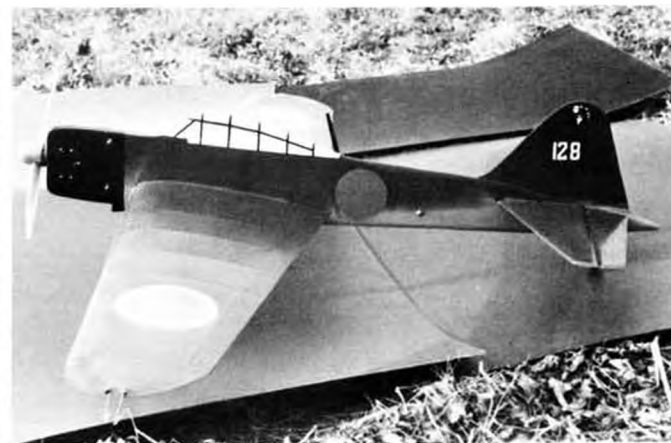
This "small" combat event is growing all over the country. Who is the champion in your area?

Several years ago Cox brought out an excellent 1/2A combat and stunt plane called the Spook. It was all

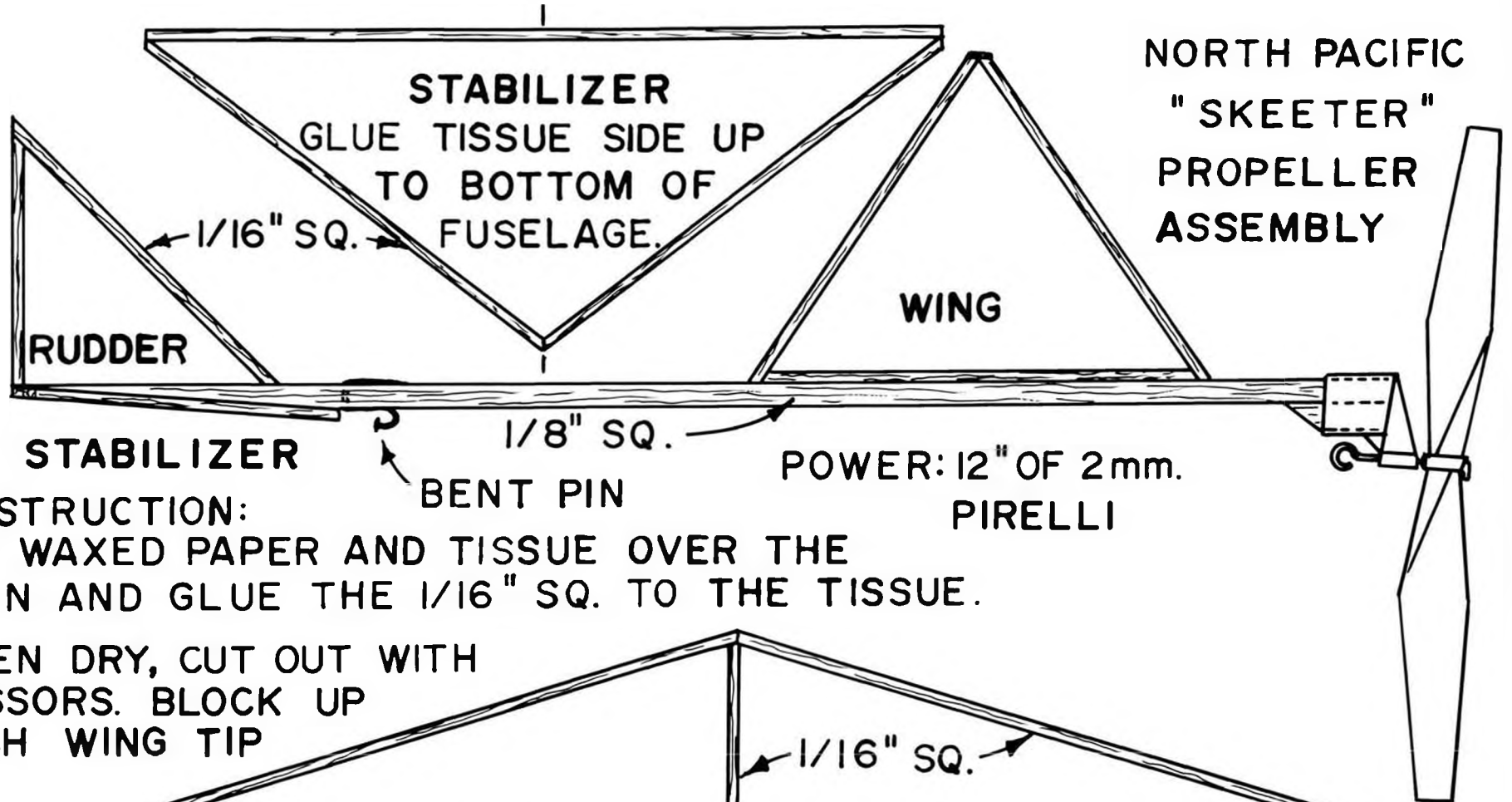
Continued on page 52



Profile Grumman F-6F Hellcat, designed and built by Steve Fauble. Fox .36 power.



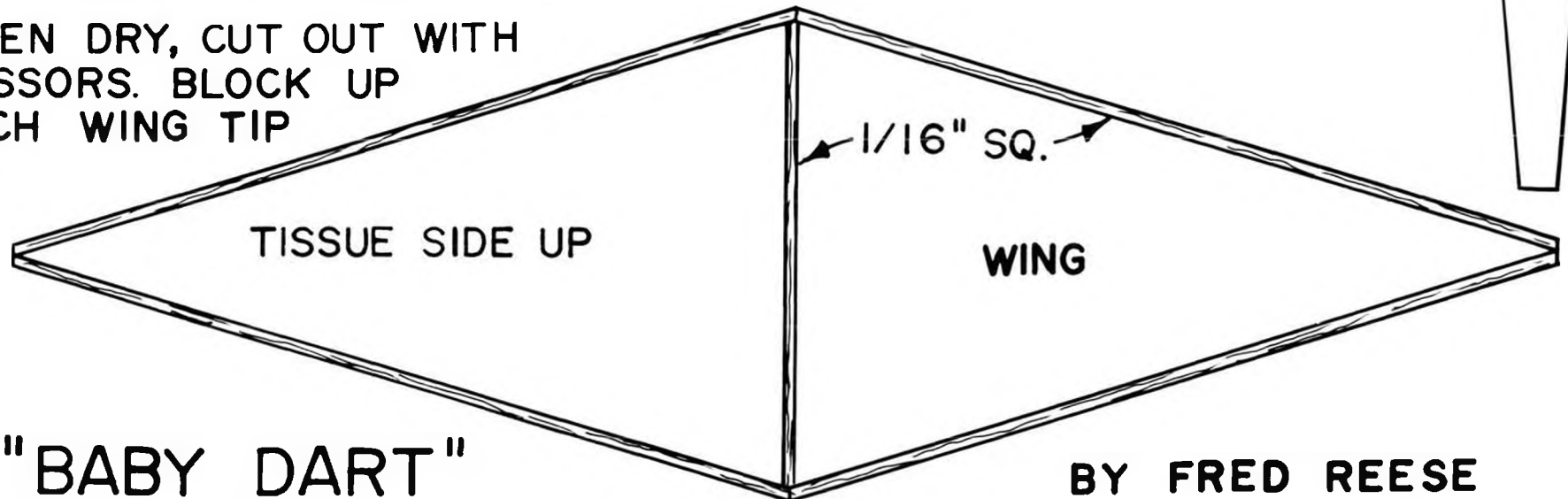
Profile Zero was also designed and built by Steve Fauble, for Fox .36. Let's hear from modelers who would be interested in plans.



CONSTRUCTION:

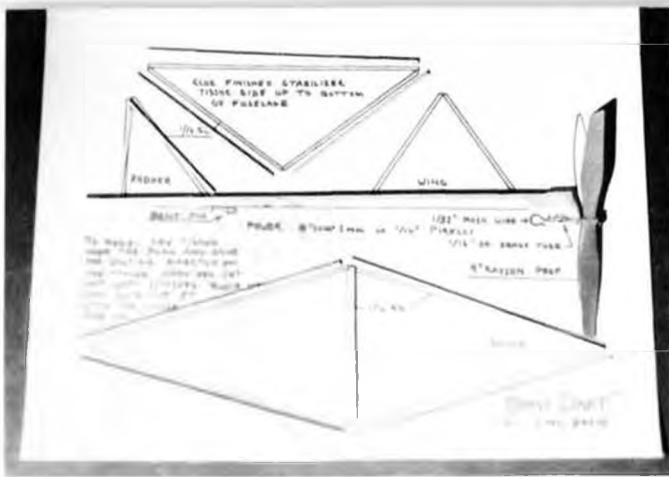
LAY WAXED PAPER AND TISSUE OVER THE PLAN AND GLUE THE 1/16" SQ. TO THE TISSUE.

WHEN DRY, CUT OUT WITH SCISSORS. BLOCK UP EACH WING TIP 2".



"BABY DART"

BY FRED REESE



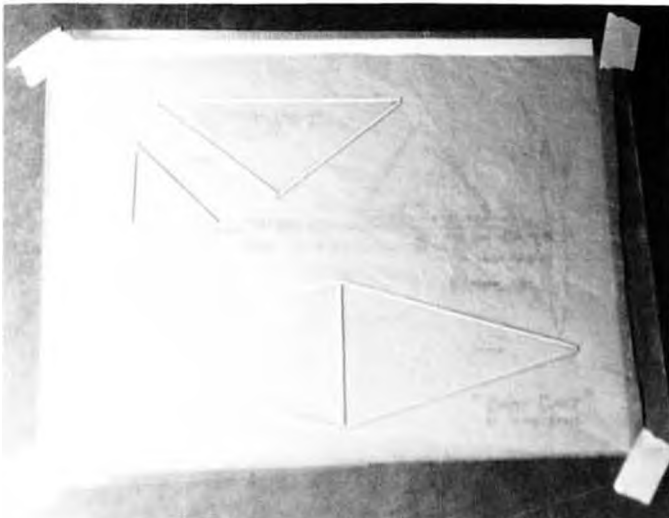
(1) Cut all of the wood pieces to size. Make sure ends are properly beveled. Photo is of preliminary drawing.



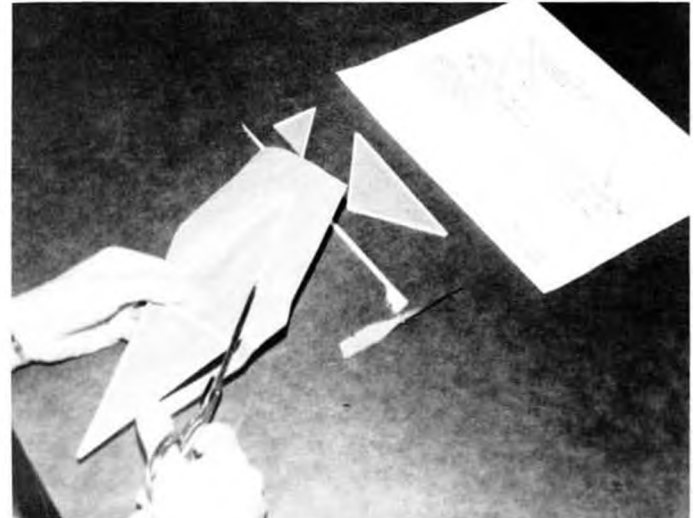
(2) Lay waxed paper or plastic film (Saran) and then tissue over the plan. Press out flat with hands and tape corners down.

BABY DART

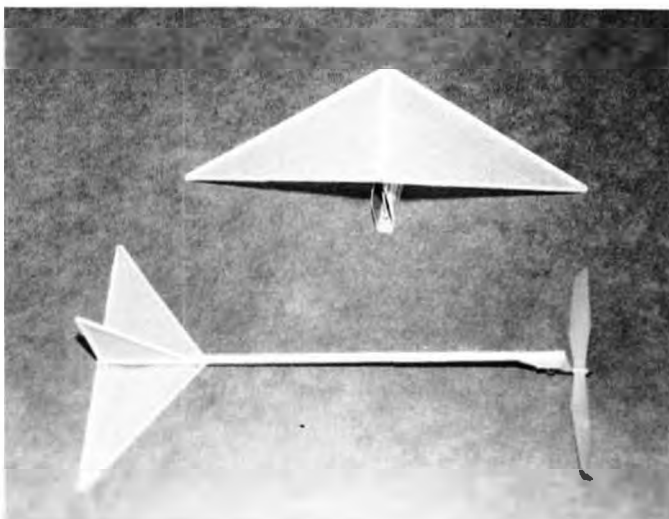
Perhaps this is what happens when you move into a motor home . . . our Roving Reporter has even reduced the AMA Dart to a more compact size. Complete project on these two pages. By FRED REESE



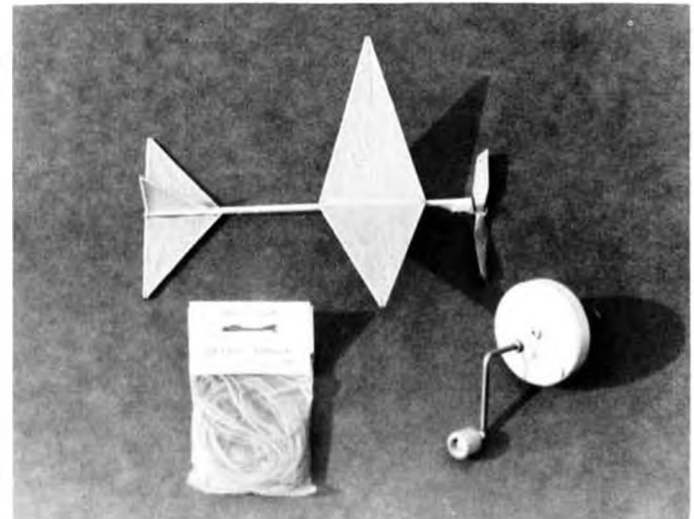
(3) Glue down to the tissue (and together) all of the 1/16" square pieces that form the wing, stabilizer, and rudder.



(4) Cut out the wing, stab and rudder. Scissors are fine for this job, since cutting with a razor could chop up plans.



(5) Glue stab and rudder to fuselage stick. Fuselage becomes bottom frame of rudder. Crack wing for 2" dihedral, glue, and prop up while drying. When dry, glue to fuselage.



(6) Finished Baby Dart with Marlow 16:1 winder and 2mm Pirelli rubber from Plans & Things. Average flights over a minute.



Supermodified roadster which was designed and completely scratch-built by Ron Eisold, Milwaukee, Wisconsin. Photo by Jim Remington.

R/C AUTO NEWS

By CHUCK HALLUM

It ain't so much how fast you can make it go, but how quick you can stop it once you git it going! Our car editor explains why and how to brake down for that next turn. It's the **ONLY** way to win!

● The 1973 season here in Southern California has gotten off to a rapid start. Earl Campbell won the Winter Championship race at Cars of the Stars, Don Amedo won the 1st SoCal Series race at Cunningham's, the McCoy race at Thorp Raceway, the 2nd Series race at the San Fernando Valley, and the Cancer benefit race at Mile Square. Your reporter won the 3 hour Consistency Race at Cuning-

ham's and Mike Morrissey won the Pomona Series race. John Thorp and Amedo were 2nd a couple of times and Morrissey, myself and Jack Garcia were 2nd once.

What do all these cars have in common? They're Taurus, Associated, Thorp, and Norkar cars, using Veco's and new McCoy's for power . . . so that's not it. The fuel mixtures range from no nitro

to about 20% nitro so that's not it either. The bodies used were T1 22's, Porsches, Lolas and Sigmas. Car weights go from 5+ pounds to over 6 pounds. Do you give up? The common factor is that all these cars used controllable brakes on the rear axle or a non-energizing brake on the clutch bell!

Don't laugh. Once you've tried rear axle brakes you'll know what they can

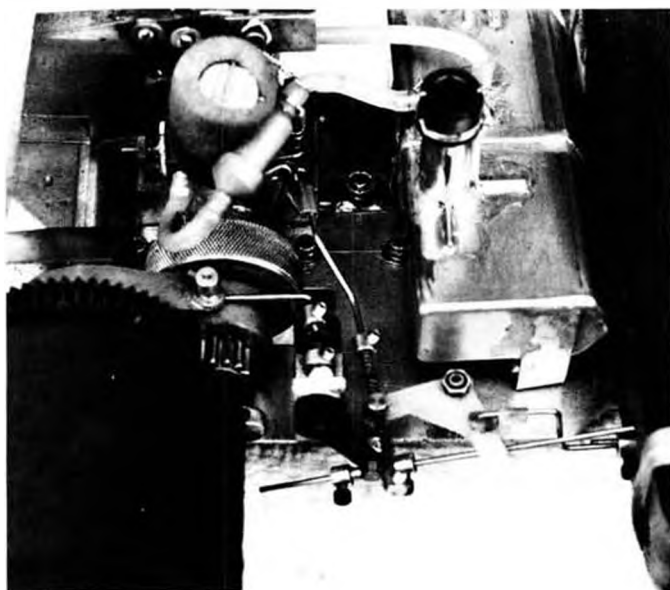


Figure 1

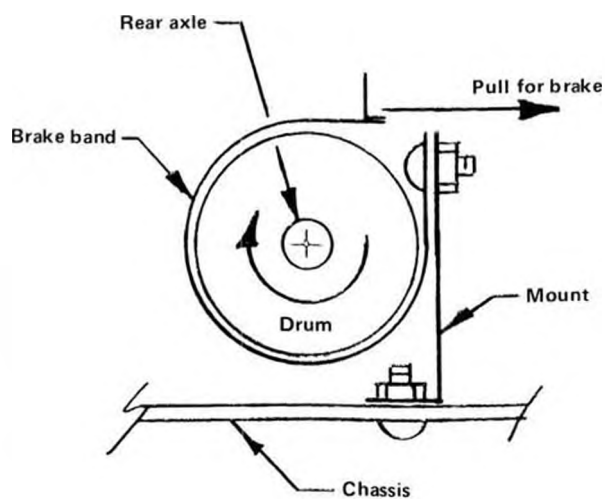


Figure 2

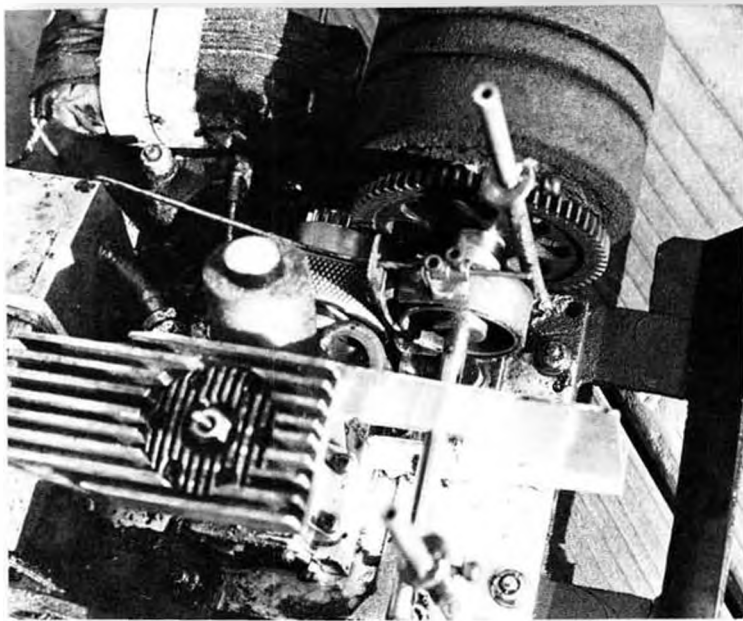


Figure 3

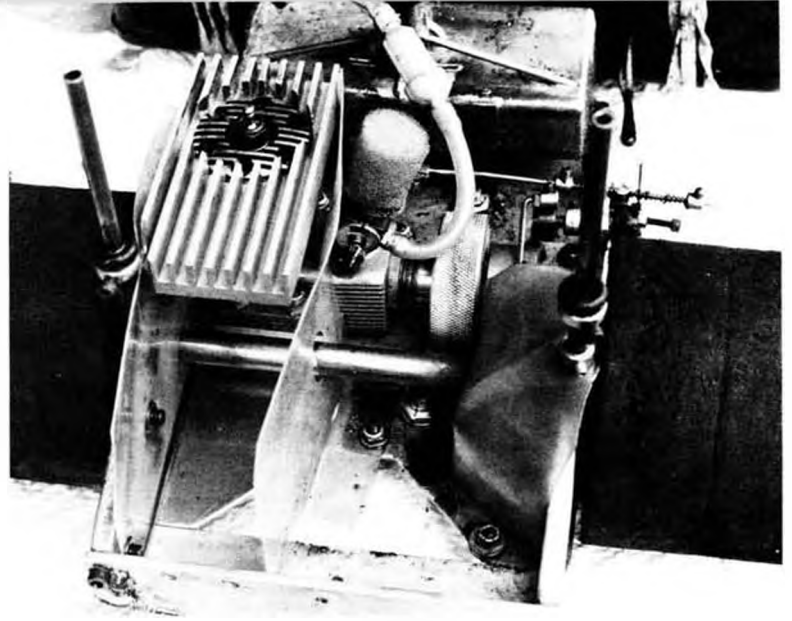


Figure 4

do. I think reverse, non-energizing, brakes on the clutch bell are almost as good but can present other problems. The various brake installations are described and pictured in this article and I'll try to point out some of the little things you have to look out for.

John Thorp says he drives without using his brakes too much because he can be smoother . . . but he's got the brakes when he needs them. Morrissey and Amedo go for the super brakes all the time. They boil up to a corner and brake and chatter hard, then accelerate through the corner. I guess I'm in the middle here cause I have my brakes set lightly for low speed with the throttle released and hit the brakes hard to slow down from high speed.

When I've had the chance to watch, I've seen Morrissey sucker people into

a corner then brake and be going down the next chute while the other driver is still sliding and overshooting the corner. In my case I always prefer to pass on the inside because it's safer, so I try to slightly outbrake my opponent and get between him and the "Bott's Dots". We all have our own driving technique, but brakes can really help, as you'll find out.

The main advantage of the rear axle and de-energizing clutch brake is controllability. At high speed, full brakes will not lock up the rear wheels and cause the car to slide and spin out. In the past, with self-energizing brakes on the clutch, if you weren't stopping quick enough and put on slightly more brake, the rear end would lock up. Once the rear wheels lock up, the rear end loses traction and switches ends with the front. We've done it. With the brakes

discussed here you can have controllable brakes up to the lock-up point. You have to amplify the servo force with bellcranks or cam type action to get the required force, and you have to be sure not to stall the servo.

The Taurus brake is pictured in Figure 1. The brake drum is part of the gear. One thing which makes the Taurus brake excellent is the bellcrank which amplifies the servo force. The brake band goes around the drum 3/4 of the way, and it's set up in the energizing direction. All of this gives the high braking force required when the rear axle is used with its 4 to 5:1 reduction in RPM rather than the clutch. The line drawing (Figure 2) shows how the band is wrapped around the drum and mounted to the chassis.

A rear brake setup on an Associated

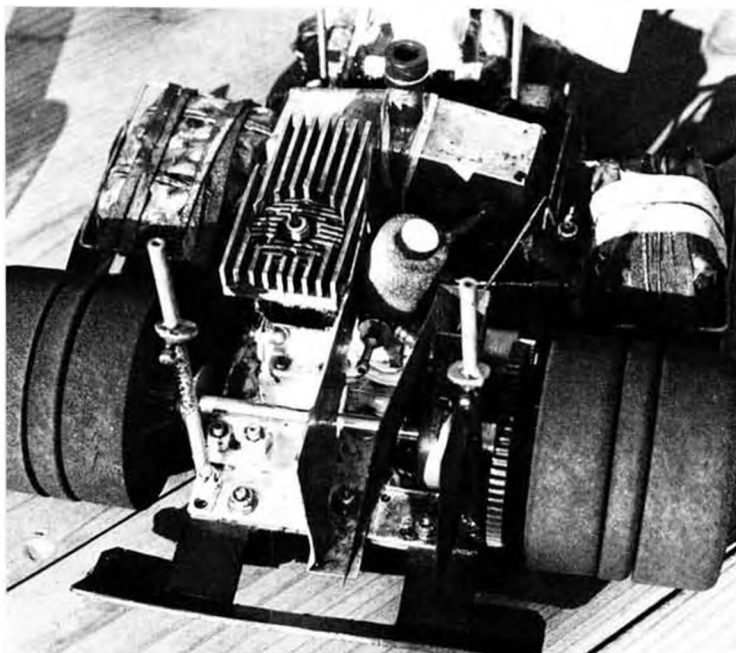


Figure 5

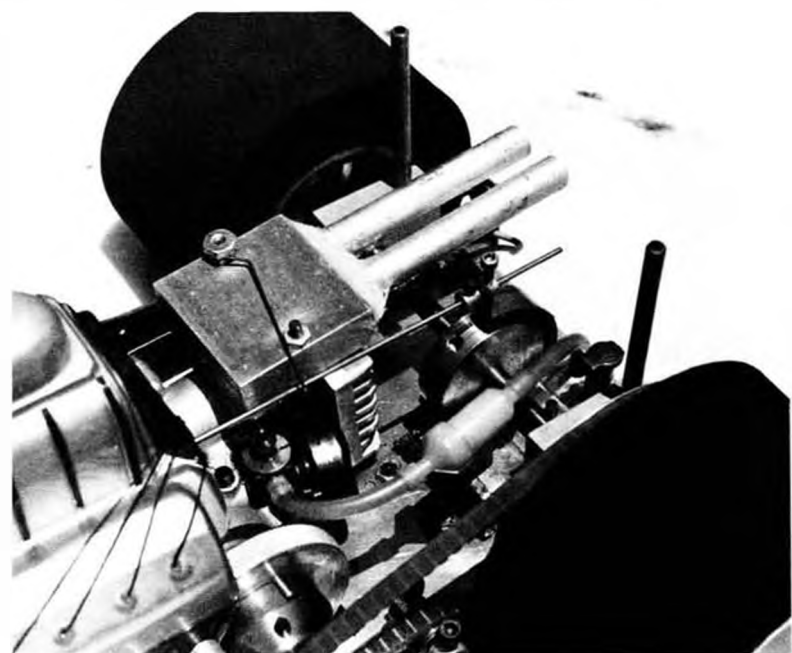


Figure 6

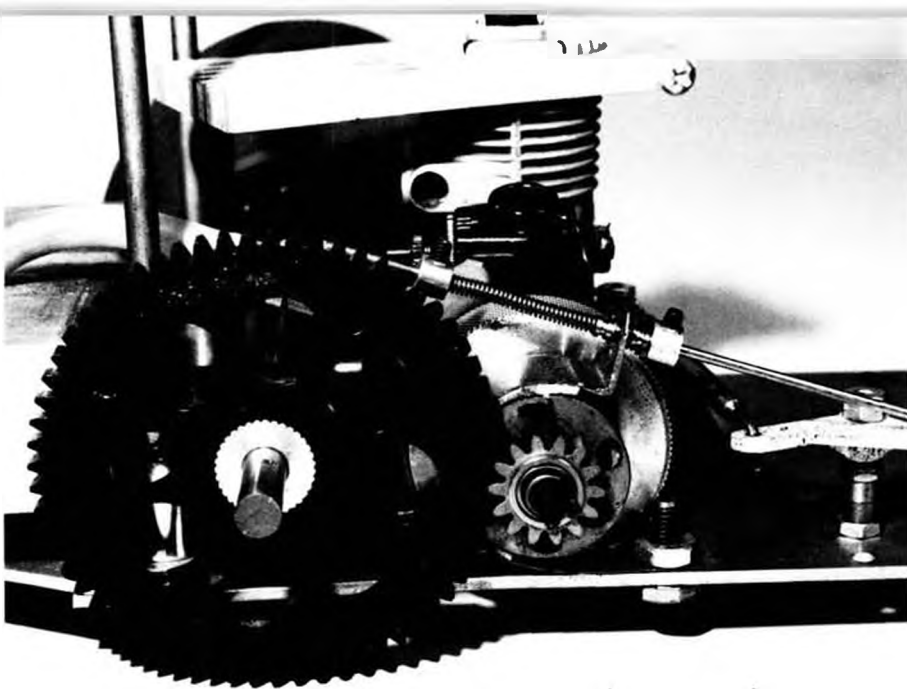


Figure 7

car is shown in Figure 3. The brake band here also goes 3/4 of the way around the drum. Note that the rear axle mounting bolts had to be inverted to give brake clearance. Both the Taurus and Associated have complex exhaust baffles and shields around the rear axle brake to keep oil vapor off the lining, as can be seen in Figures 4 and 5.

The Thorp car brake, shown in Figure 6, is also on the rear axle, but the brake band only goes half way around the drum. In the past, several of the Thorp cars used leather bands instead of the brass band and liner. Thorp believes he gets some braking with his variable ratio pulley drive arrangement, due to drag, so he doesn't need quite as much true brake force.

The non-energizing brake on the clutch bell is pictured in Figure 7. Re-

member that the clutch speed is 4 to 5 times the rear axle speed, and the half-way-around-brake-band is O.K. The clutch bell has cooling holes drilled in it to keep the bell, liner and pinion from overheating. Both the brake and the clutch heat the bell so it can be a problem. Figure 8 shows a non-energizing clutch bell brake which goes 3/4 the way around the clutch. The force-amplifying bellcrank can also be seen. With the brake located on the clutch bell, there doesn't seem to be an exhaust problem. Neither an exhaust stack, nor air control baffles are needed, as can be seen in Figure 9.

The common problem of the brakes shown here is braking force. First you need the force to operate the brake properly, but second, you don't want to work the servo too hard and stall it. I've

popped a couple of output transistors because of stalling the servos while trying to get the force required. All the brake layouts pictured use bellcranks which amplify the servo force up to that which is required by the brake.

The air and exhaust gas guides and shields are a necessity when you don't have a long exhaust stack. First, there should be a shield which specifically prohibits swirling gases from getting around the brake drum. Look at Figures 4 and 5 closely. When oil gets on the brake lining the brakes go to pot rapidly. With just a little oil the brakes seem to work O.K., but with a little too much, as soon as they get hot the brakes are gone. Servo force won't help here. I usually have to change my brake lining for about every other race.

The biggest problem is setting up the brake band to release fully at part throttle. The motion of the servo has been cut down (by 3 or so) to get the force up. A lot of time has to be spent here, because a little drag can really kill the top end speed and/or cause the engine and clutch to overheat. I spend a lot of time on brake alignment and setting. I've also seen other guys spending an hour or so at a race between heats, adjusting the brakes . . . but then they go out and gobble up the competition.

Anyhow, you should give these kinds of brakes a try. You'll be amazed at how quickly and controllably you can stop. Once you've tried them you won't mind the extra work that was required to set them up. In fact, you may find that good brakes help you drive better and will improve your lap times more than having super power. ●

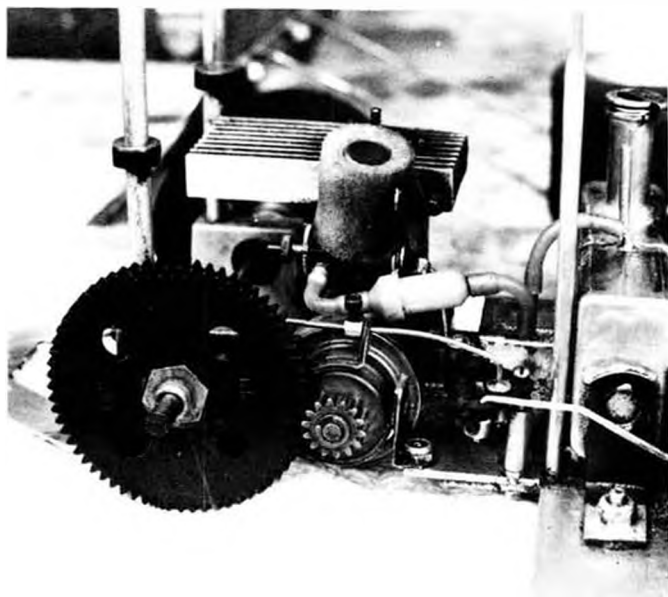


Figure 8

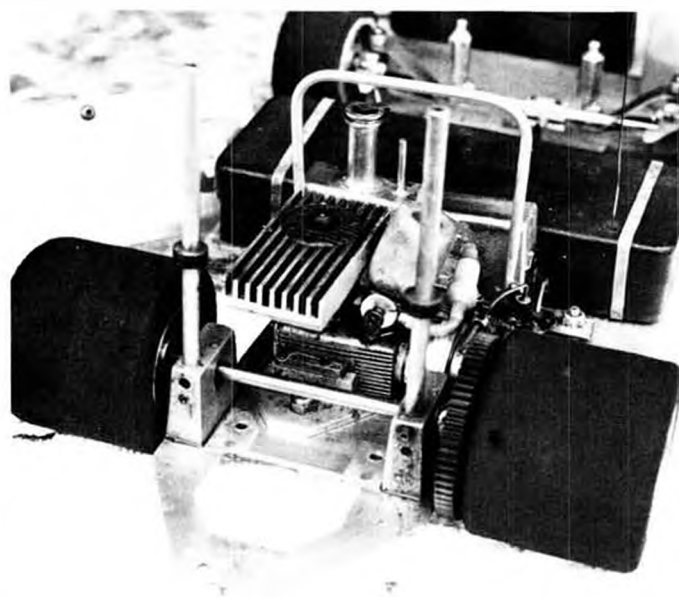


Figure 9

Franny's Engine Forum



By FRANNY WOLF

513 Vesta Place, Reading, Pennsylvania 19605

● Being a learned discourse on the working and re-working of engines mechanical, toward the added performance thereof:

OR

Being a clinic conducted by one of the country's most knowledgeable engine re-workers, on the refurbishing and refurbishing of things mechanical.

"Dear Franny:

I have several old-timer airplanes, and was lucky enough to dig up a McCoy 60, Dooling 61, and Hornet 60. They all run fairly well on glow plug, but lousy with spark ignition. Since the main idea of Old Timer events is to run the engines on ignition, I am at a loss as to why they all run so poorly. I've tried other coils, spark plugs, etc., but with no success. Can you help me?"

Jim Norton
Orlando, Fla.

There can be any number of faults. First, the moveable and fixed points are all interchangeable with the mentioned engines. Since you didn't give me much to go on, I will attempt to read between the lines. I assume coils, condensers, and spark plugs are all O.K. Set the gap on the plugs at .015 inches, and make certain the electrode is not shorted out by carbon deposits. If it is, any service station can sand blast it clean for you. Incidentally, you can purchase a very good compact spark plug cleaner for about ten bucks from: Jaycraft Corp., 760 N. Marshall Avenue, El Cajon, Calif. 92020. We use one of their units in our own shop.

Double-check that all soldered connections are tight. "Cold" soldered joints can cause lots of problems. It's also a good idea to cover all soldered connections due to vibration. Make certain the moveable point is free. Point gap should be lined up so that they meet flat, not crooked or cocked away from each other. Set the point gap at .005 inches by using a feeler gauge.

If everything checks out, then, if you're batty like me, check for spark by shorting out the plug top to the engine

head with your thumb and forefinger. Pull the prop through slowly by hand. You should get a good wallop. It's not so bad when you're expecting it! If you have a good hot spark at the plug, set the points to open about 1/8 inch after T.D.C. (Top Dead Center) on all these engines for each starting. Maximum setting would be 1/4 inch B.T.C. (before, etc.)

"Dear Franny:

I recently purchased a new Rossi 15 Normale. It had no compression, but I thought this was normal so attempted to run it, which I could only accomplish using an electric starter. After running, the compression wasn't any better. Please advise what I should do to remedy the situation."

Bill Ally,
Saginaw, Mich.

Well, you have a problem, but one that is readily solved. Take it back to your dealer and explain your findings. The Rossi is a good engine, but from what you tell me, a bad one got out. Personally, I would drop a line to Rossi, at

the name and address on the engine box: F. Lli Rossi, 25060 Callatica, Brescia, Italy. Be patient; you'll wait a little longer for a reply from Rossi, but you'll wait longer for a reply from their stateside distributor, who is slower than molasses in January.

"Dear Franny

Being mainly interested in Carrier, I thought I'd get a little jump on my competition by installing a pipe on my Torp 40. After much study of various makes I decided on an E.D. set-up. The Torp ran good, but after installing the pipe the engine wouldn't get enough fuel. I know nothing about pipes, which is the reason I bought the E.D., since the manufacturer claims it will work on any engine. Please give me your opinion."

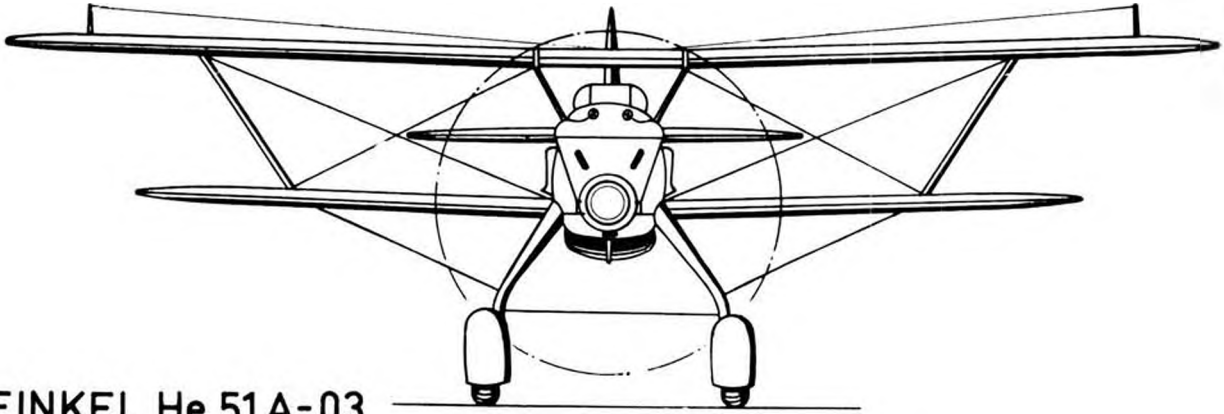
Jeff Pearson,
Tulsa, Okla.

I'll have to do a little guessing, then advise you what to do. No doubt you have been using pressure off the rear cover with no difficulty. You then installed the E.D. pipe which is tops from my experience, but didn't change this pressure tap source. I'm only guessing, but this is probably where your troubles began. It's enough to drive anyone batty, but it's easily remedied. First, remove the pressure fitting from the rear crankcase cover, and block the hole with a small screw. Install a NEW pressure fitting on the pipe, halfway up the slope of the pipe from the exhaust outlet on the engine. Make sure it is equidistant from the bottom and the top shoulder of the pipe, per sketch; epoxy can be used to secure it in place.

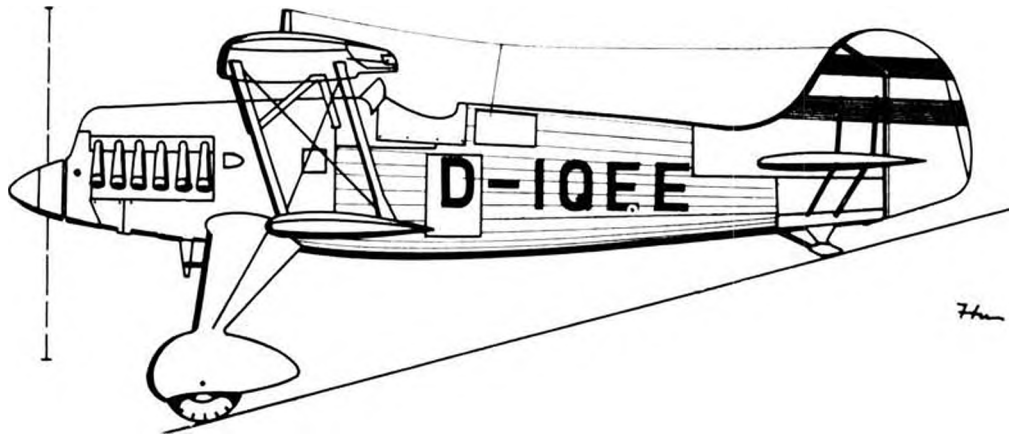
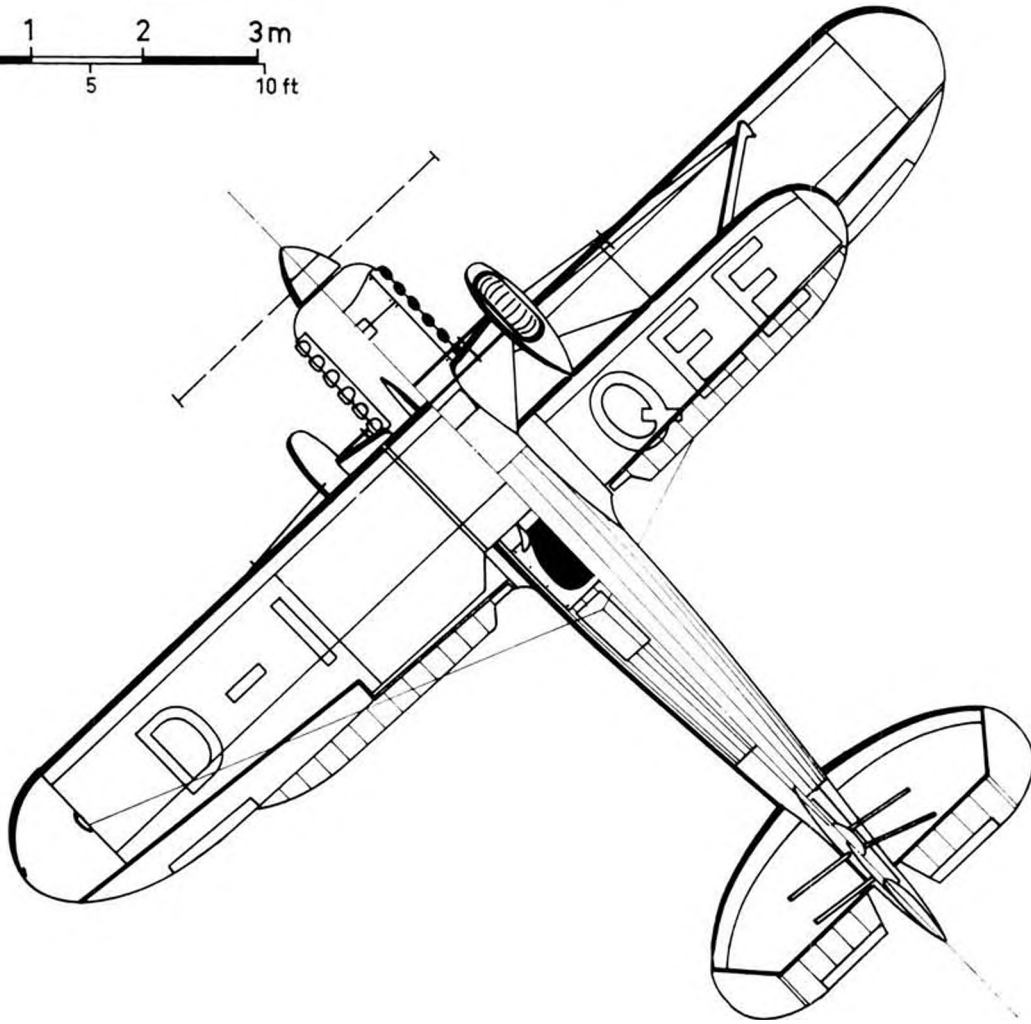
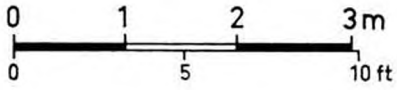
Continued on page 48



Repeated from our June '73 issue, but just in case you forgot, this is Franny Wolf, well known engine specialist and chroming expert. He's holding his 1972 Championship OPS powered car.



HEINKEL He 51A-03



F/F Scale Continued from page 35 then on Tom couldn't even get his plane to R.O.W.! Yet, that first harrowing flight was good enough to get him 3rd place in gas. Tough? You bet!

Other problems arise too. Bob Haight after qualifying his Hanriot, tried to qualify his .09 powered Walrus, only to put his fingers in the prop. Bob had to go to a nearby emergency hospital and get sewed up.

On the other side of the coin is Bill (Waco) Warner who had a peanut size Druine Turbulent. The model literally jumped off the water, flew very well, and also landed on the water. All this accomplished on a couple of loops of 2mm rubber.

Hal Cover had his Chet Lanzo designed Puss Moth (plans in Jan. 72 MB) that carried a wad of braided rubber that would literally choke an elephant. The realism of the Moth's entire flight was near letter perfect. *(We'll have a construction article on his Edo-type floats real soon. wcn)*

Dick Siefried had an interesting rubber model, a twin engine Commodore. This model also flew very well and managed to get airborne nearly every time.

Here is the list of winners:

F/F Rubber:

1st Bill Warner - Peanut Turbulent; 2nd Hal Cover - Puss Moth (48" span), 3rd J. Oldenkamp - Aeronca K. (This was his first contest!)

F/F Gas:

1st Jim Adams - Loening; 2nd Bob Haight - Hanriot HD-2; 3rd Tom Arnold Japanese Rufe.

F/F CO₂:

1st Walt Mooney - Dornier C (only one to qualify in CO₂)

R/C:

1st Joe Tschirgi - Brandenburg W20; 2nd Granger Williams - Deperdussin.

AND NOW SOME HOW-TO:

If any of you like to laminate as much as I do when it comes to building wings and tails, but dislike the inconvenience of having to fill the bath-tub with hot water in order to soak the wood, here is a tip that just may help. Obtain a glass tube about 50 inches long with an inside diameter of 1/2 inch. Place a cork in one end and seal it with wax. Then nearly fill it with hot water and place the strips of basswood in it for soaking. With basswood it doesn't take very long. Obviously, any kind of tube will work, but I like to be able to see inside. Since my workshop is far from the house, this saves me quite a bit of time and is very handy.

By the time you read this article, a

new plan book will be available. It is the first in a series, and is called CLOUD-BUSTER RACE WINGS. The energy behind this endeavor comes from Preston Bruning and Ralph Kuenz, both members of an active scale group from Detroit, the Cloudusters. Both are superior modelers and winners in many scale contests including the NATS. They propose to come out with others in the series, titled WAR WINGS, B1 WINGS, and SEA WINGS. All plans are for rubber power (also suitable for CO₂ and electric). Each model presented has been built and flown, and the plans will include building tips, techniques, finished weight, flight adjustments, prop blank for flying, pilot profile, and information on where to obtain scale reference data. They even tell you where to purchase 8 x 10 glossy photos!

In the RACE WINGS series the following plans are included: 20" Folkerts SK-2, 20" Crosby CR-4, 15 1/2" Grumman F/F (Smirnof model), 13" Folkerts SK-2, 13" Floyd Bean Special, and 13" Chambers Chambermaid.

Of this first set, only the Chambermaid has not been entered in a contest. All the others have won or placed. The models are not recommended as first scale ships because canopies have to be vacuum-formed, props carved, etc.

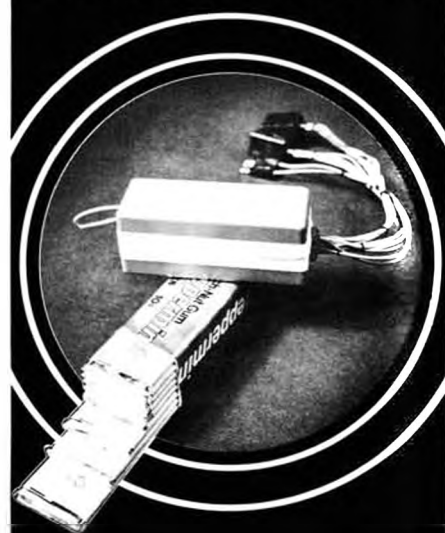
Each plan set will cost \$4.00. This is a terrific buy, because these two expert modelers really know what they are doing. I'll report on the others as they become available. ●

Plug Sparks . . . Continued from page 26

site and land on the field. However, the F/F boys can chase all over the countryside, with the timers in their cars, in pursuit of that errant model! This is gonna be a ball! No question about it, the F/F boys have the edge in being able to chase all over the acreage, but it will be interesting to see if the R/C boys can find enough new thermals to keep their models in the air. Sounds almost like R/C glider thermal soaring, huh?? Well, there is a close analogy, but remember, you also have to be pretty good in squeezing out a real economical motor run from your engine fuel allotment. Ya gotta end up as high as the free flight models. No use letting them have all the frosting on the cake!

In closing off this article, before you burn this avid old timer at the stake for a heretic, remember, modeling is just like women, "they are all good, just some's better". The writer will continue to support all forms of modeling (in particular old timers), so if you wanna hear more of this stuff, support your local friendly model airplane magazine publisher. Let's hear from you! ●

COMPACT



Smaller
than a pack
of gum?

The smaller the receiver, the easier to tuck into the model. The RSS receiver occupies only 1.45 cubic inches, and barely tips the scales at less than 1.3 ounces. ICs with a low parts count make it the mini of the industry. Sensitivity of 2µV/full control; selectivity, 3db down at 2.5 KHz; signal rejection greater than 60 db; noise rejection, 10 db s/n ratio.



Available through your local hobby dealer.

RS SYSTEMS

2407 SOUTH BROADWAY
SANTA ANA, CALIFORNIA 92707
TELEPHONE (714) 979-5822

The Great Age of Sail . . . Lives Again in these Authentic Scale Model Kits

THEY'RE EASY TO BUILD

We know it seems unbelievable, but it's true. New techniques in the heretofore difficult rigging installation and ratline making, are simplified so that almost anyone can produce a craftsman-like job. Density selected prime balsa wood is a real pleasure to work with, and the step-by-step plan is simple and complete.

THEY'RE COMPLETE*

With machine carved hulls, that require only a little trimming and sanding. Kits include many finely detailed cast metal fittings (as required for each kit) such as: Cannon, Life Boats, Windlass, Anchors, Steering Wheel - Wheel House, Water Cask, Lights, Stern Castles, Figure head, etc. Brass Chain, Black and Tan rigging line, Printed Cloth Sails, Decals, Display Pedestals and much more . . .

* Dry Kit, paint and cement not included.



USS FRIGATE
CONSTITUTION

KIT G2 — Length 11"

SPANISH
GALLEON

KIT G1 — Length 10"

SCHOONER
BLUE NOSE

KIT G3 — Length 11 1/4"

THEY'RE UNIQUE

Because such amazing detail and authenticity is achieved in kits that are relatively easy to build. Plans include full size, as well as assembly drawings for each step of the way. Authentic color scheme shows on full color kit box lid.

THEY'RE HISTORIC

Plying the Spanish Main, the Galleons carried the treasures of the New World back to Spain. Outfitted with cannon they were used both as merchant men and warships . . . The Blazing Guns of the *Constitution* helped to establish our Nation. Now enshrined in Boston Harbor, it is the oldest commissioned vessel in the U.S. Navy . . . Built by Angus L. Walters the *Bluenose* was one of the finest Schooners to take the water. It came to world-wide fame racing against the *Gertrude L. Thebaud*. *Bluenose* captured the hearts of U.S. and Canada to such an extent, that today it is on the back of every Canadian Dime.

THEY'RE ONLY

6.95
ea.

- CARVED WOOD HULLS
- CLOTH SAILS
- CAST METAL FITTINGS

AND THEY'RE AT YOUR DEALERS NOW

GET OVER AND SEE THEM . . . BUY ALL THREE!

You don't have to STAND OFF to admire this

CITABRIA

SPECIAL THANKS

The beautiful Citabria is manufactured by one of the oldest and respected names in American Aviation, The Bellanca Corporation, who so graciously provided us with the plans, photos and details of the full size aircraft. With this illustrious lineage, it is not surprising that the Citabria is just about unbeatable as a fun plane. Primary trainer, or for Aerobatics.

CITABRIA IS FOR YOU

If you're a Sport Flier, if you have a feeling for Scale, if you love R/C*, then this is your ship. It's a beautiful machine that builds easy — goes together fast — plenty of room for any equipment — rugged for hard use — flies great — and is just about the right size.



Span 54" Area 415 sq. in. Length 36" For Engines .23 to .35 Scale: 1.61" Equals 12.0"

ABOUT THE KIT ITSELF

This kit is a real joy . . . Balsa Wood is the finest grade, density-selected and sanded to micrometer tolerance; as is the imported Finland Birch Plywood. Every part is numbered to insure fast and accurate assembly as shown on the easy step-by-step plans.

* Can be flown Control Line too—structure on plan

THE FUSELAGE

Fuselage sides are die cut full length. Cabin sides and inner doublers are plywood as are the firewall and landing gear bulkheads. It's easily assembled with die cut balsa bulkheads, nose block, formed music wire landing gear, custom dural engine mounts, etc. Cowling and wheel pants are rugged plastic.

WING AND TAIL SURFACES

Complete wing is built on work bench without having to remove it—so it's flat and warp-free. Parts are die cut and carved. Balsa sheet cover makes for tough wing. Wing is installed like it ought to be—with dowel pins and nylon screw in wood nut-block. No unsightly rubber bands to deteriorate.

break or slip. Rudder and Stab are die cut sheet for simplicity and no warp. Included is all the linkage hardware: pushrods, aileron and elevator horns, bellcranks, clevis, connectors, etc., plus giant authentic decals, plastic windows, etc., etc.

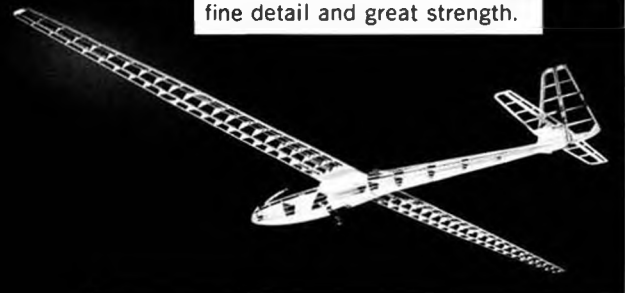
beautiful
Cirrus



over seven feet of sheer grace and beauty . . .

STRUCTURE

Frame Photo reveals the excellence of the design engineering of the kit. Although structure is relatively simple, it is one of fine detail and great strength.



SPAN: 87 $\frac{1}{16}$ "
LENGTH: 37 $\frac{3}{4}$ "
WEIGHT: 12 oz.
SCALE: 1.5" Equals 12.0"

KIT E7
10.95

GREAT FLIGHT PERFORMANCE

A real soaring machine is this model Cirrus. Eiffel 400 soaring wing section seeks out and takes full advantage of every thermal current. Can be flown Tow Line - Free Flight, Single Channel or pulse R/C for Slope and Thermal Soaring. Large Cockpit area provides ample room for R/C Equipment.

A FINE KIT

Top quality Balsa used throughout. All parts accurately die cut and numbered to insure fast accurate assembly, as shown on the detailed plan. Also included are shaped trailing edges, finished nose cone, giant clear canopy, authentic decals, full size plans with step-by-step drawings and instructions, etc.

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. 160c 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 _____



AVAILABLE
IN CANADA



Problem: How to Achieve a "MFS"?

K&B FIBERGLASS



The first component in the "MFS" is K & B Fiberglass, the highest quality, toughest weave fiberglass available and made especially for use with polyester or epoxy resin. Its excellent contouring qualities make it easy to apply to compound curves.

Available in 3 weights — 38" wide	LINEAR YD.
LIGHT 3/4 OZ. CLOTH	\$2.95
For all wood airplanes — cover 100%	
MEDIUM 2 OZ. CLOTH	\$2.95
For increasing structural strength around fillets, nose, or interior of plane.	
HEAVY 6 OZ. CLOTH	\$2.75
For joining wings or molding your own parts.	

plus

K&B SUPER POXY RESIN



K & B Polyester Coating Resin is the second element in your "MFS." It has been created to include all the characteristics desirable in a resin and its application.

Easily workable: Requires minimum sanding Little, if any, clogging of sandpaper Curing time adjustable by the amount of catalyst.	
Durable: Does not become brittle	
1 QT. (including catalyst)	\$3.95

plus

K&B Micro-Balloons FILLER



Mixed with K & B Resin the Micro-Balloons FILLER is perfect for fillets or filling in defects (or repairing later damage). As part of the "MFS" it sands beautifully to a smooth, strong, hard finish.

1 OZ.	\$1.49
--------------	---------------

plus

K&B SUPER POXY PAINT



A development of the space age, Super Poxy Paint is the concluding phase of the "MFS." Formulated exclusively for models . . . mix and use (NO WAITING TIME — NO HAND RUBBING). Fast curing and quick drying, it sets up rapidly for minimum dust adherence. Stays glossy longer, least affected by ultra violet sun rays or manufactured fuels

Six Basic Colors — 21 additional by mixing	
4 OZ.	\$1.15
8 OZ.	\$1.85
Clear and Primer	8 OZ. \$1.70
Primer Catalyst	8 OZ. \$1.70
Thinner	PT. \$2.25
	QT. \$3.50

Answer:

K&B "MATCHED FINISH SYSTEM"

A total system — everything for finishing balsa wood model planes.



K&B MANUFACTURING
DIVISION OF AURORA PRODUCTS CORP.
12152 WOODRUFF AVE. DOWNEY, CALIFORNIA 90241

LIDS Continued from page 16

- FAI
1. R. Barowski — 2:16
 - *2. Pete Reed — 2:10.5
 3. L. Weddle — 2:27
- Open
- *1. Ernie Weiss — 2:08
 2. R. Ferris — 2:11.4
 3. R. Sarpolus — 2:17
- Quarter Midget
1. Barry/Zink — 2:13.5
 - *2. Fred Reese — 2:11.7
 3. Bert Dees — 2:17

COMMENTARY

Having been a racing contestant for

the last two years, I have seen many arguments over scoring and the relaying of scores to the scoreboard. Individual score sheets are used at most events and are filled out during the most hectic time between races . . . while planes are landing, people are packing up and others are setting up. Pilots grab their flight boxes while callers retrieve the racers and move out to make way for the next heat. Sometimes it is an hour later before these scores get posted and if there is a discrepancy, it is often too late to correct, as timers and judges can hardly be expected to remember all the details of an earlier heat.

Therefore, it is the responsibility of the pilot alone to see that his score sheet is filled out correctly . . . on the spot. If he fails to stop and confer with the timer or judge after he has landed and there is a discrepancy later, he has no one to blame but himself.

I know, I found out the hard way and the difference was between first and second place overall. ●

FRANNY . . . Continued from page 43

The pipe, manifold, and pressure tap fitting must be leak proof; no hole to prime engine. To prime the engine, place your finger over the open end of the pipe and rotate the prop. This will give plenty of pressure to prime it. Naturally, remove your finger when it starts. Since you didn't mention how to improve performance of the engine with the pipe I won't go into that as E. D. supplies easily-understood instructions.

While we're on the subject, those goofy chunks of tubing to connect the exhaust manifold to the pipe, are just no good. I've tried several times to locate a source of silicon tubing which will fit, but with no success. Perhaps someone reading this column can help.

"Dear Franny:

One of my early model Cox 049's just won't run anymore. Compression is surprisingly good after many years of running, the glow head still lights up and everything. I've tried various fuels, but no luck. Help!"

Stephen Gull,
Bayonne, N.J.

You really don't give me much to go on, but I'll bet the reed which controls the intake of the fuel/air mixture at the rear of the crankcase is either bent or broken. These parts are still available from Cox Mfg., so ask your dealer to order them for you.

Some old Cox engines are scarce. You might check with an engine collector as to whether yours is one of the rare ones.

"Dear Franny:

My buddy and I are thinking of re-working our model race-car engines. Please forward info, as we haven't got the slightest idea how to start. The few shops that do this sort of thing seem to charge too much."

My advice to you is to leave the re-working of your engines up to an expert; you'll be money ahead in the long run. If you think they charge too much, consider how much money they have tied up in special equipment just for this work. Consider also that it takes a certain brand of machinist to do such tedious labor. If you really want to do it yourself, grab up a GOOD lathe, mill, polishing and chroming equipment, and have at it. More power to you. (no pun intended). ●

When you see the winning ship in a thermal contest perform an axial roll or outside loop. IT HAS GOT TO BE A

TODI



send for
FREE BROCHURE

DODGSON
DESIGNS

2904 so., West Camano Drive, Camano Island, Wash. 98292

- 6.8 oz. Wing Loading

- FLAPERONS

With exclusive DODGSON
COUPLER & instant connect
wing linkage (no sliding servo)

OTHER FEATURES:

2 SETS OF WINGS - 100" & 76" spans
FLYING WT with 10 oz radio. 32 oz
FIBERGLASS pod & ROLLED
BALSA tail boom

\$ 55.00

- All orders prepaid or C O D
- Retail orders shipped post-
paid within the U S & Canada

TESTED, APPROVED & RECOMMENDED
by RCM (see Oct 1972 issue)

PHONE (206) 387-9395

Goodyear . . . Continued from page 19
very few that can be considered too big.

The consistent size of the man-carrying F-1's lies in the fact that they are tied up by more rules than an F.A.I. team racer, and we all know that they "look alike". Yes, granted there were some drastically different looking ships, such as the L.I.T. and P.A.R. Specials and the Midget Monocoupe, which never raced, to name a few. These "different" designs present problems for the modeler and are not very popular, though I have seen a successful version of the L.I.T. Special.

To show you why they are what they are, I'll go through the rules that affect the appearance of our models. Get out the three-views of your favorite racer and we'll be off.

Until recently most racers had prominent cheek cowls which covered a Continental C-85, later a C-90 and then an O-200 engine. I say most racers, because some early airplanes had the cylinders hanging out in the breeze and the recent exceptions are the George Owl designs with smoother, blunter noses. The engines listed are in effect the same engine produced at different times, going from a "stock" horse power rating of 85 in 1947 to 100 today. The C series engines are 190 cu. in. and the O-200 is 200 cu. in., almost identical externally. There are three pages defining "stock" in the P.R.P.A. rules.

The next limiting factor is pilot position . . . it may not be prone. The pilot must be in a sitting position, inclined no more than 20 degrees from the vertical. This establishes the fuselage depth in the area of the cockpit. Pilot vision also has minimum requirements which

prevent the near flush canopy style of the F.A.I. team racer.

An interesting sidelight to pilot position is Bill Falk's Rivets. This airplane was designed with a prone pilot cockpit and was hurriedly changed for the 1948 Cleveland races when the pilot position rule was added to the books. There was one other plane built for a prone pilot which crashed, killing the pilot, and causing the rule addition. This was Ed Allenbaugh's Gray Ghost which would probably have been a trend setter had it been raced successfully.

There is also a pilot weight rule. He must be 160 pounds with crash helmet and parachute or carry ballast to that weight. This rule is apparently to discourage the use of 105 pound pilots to gain a weight savings. No effect on size, just interesting.

Moving aft we come to the empennage, or tail feathers, as they're sometimes called. The only legislation governing the tail is aerodynamic and, because we are all using the same air, there are few variations in arrangement. The outline is the only thing that can be easily changed. Sure, Rivets had a different tail, but it started life in the "conventional" arrangement and was turned upside down in the mid-1950's.

The landing gear is not always fuselage-mounted, but does have an effect on the profile appearance. The requirements are: Non-retractable type, wheel brakes, two wheels with 5.00 x 5 or larger tires. A third wheel, tricycle type landing gear, may be any size, but also non-retractable. Because a third wheel would be more drag, I could find only one airplane which had tricycle gear, and it didn't even get honorable mention.

This was a modification to the L.I.T. special which originally had the required two wheels in tandem in the fuselage belly and castoring wheels on the bottom of the rudders.

Now for an overall look at this airplane from a control-line modelers point of view . . . profile. There aren't many ways to assemble the areas I have discussed. It would seem tradition has the engine in front with pilot in the middle, and the tail bringing up the rear. Well, as the old saying goes, you can't knock success, so let's press on. All that is left to change the appearance is to move the engine up or down and reshape the rudder, and there is a limit as to how far the engine can go up because of the pilot visibility requirements. If you could superimpose several of the racers, the similarities would become more apparent. Something like comparing F.A.I. team racers or control line stunters.

No, I did not forget the wing. It really is not too important in the side view, except where pilot visibility is concerned, and since we are looking at an airplane that already exists, you saw the wing even though I wasn't talking about it.

The P.R.P.A. rules call for a minimum of 66 square feet, 148.5 square inches in our models. I know of only one airplane to race with a smaller wing, but it was a fill-in for the 1947 Cleveland race with no chance of winning. Many of the early racers were several square feet over the minimum, but not enough to slow them down.

In looking over the twenty-five years of this class of racer, one thing shows up frequently, the "barn-door wing". The probable reason for its popularity

1909 ANTOINETTE

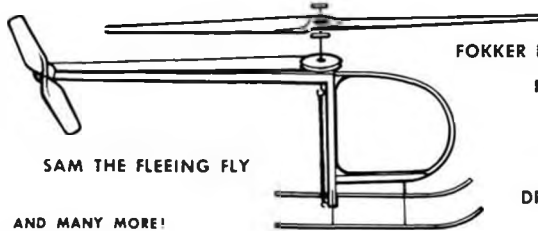
"UP-SHOT"

FOKKER DVI

PIETENPOL "AIR CAMPER"

"BONZO" RACER

"SODA CRACKER"



SAM THE FLEEING FLY

FOKKER F II

REX RACER

BD-4

AVRO "G"

DRUINE "TURBULENT"



WATERMAN RACER



AND MANY MORE!

PLANS & THINGS

OUR LATEST CATALOGUE 25¢

W. C. HANNAN, GRAPHICS • BOX A
ESCONDIDO • CALIFORNIA • 92025

AVATAR slope & thermal soaring sailplane

The "Hi-Performance Compact"

72

FEATURES

- contour-sanded wing ribs
- machined balsa & plywood parts
- plug-in wing panels & stabilizer
- spruce spars
- all flying stabilizer
- 8 hour building time

price \$27.50

if not at your dealer, order direct
Calif. Res. add 5% Tax dealer inquiries 1176

SPECIFICATIONS

- wing span 72 inches
- length 39 inches
- weight 24 ounces

M&S LIMITED
box 39745L A Calif 90039

was the success of Steve Whitman's Buster and Bonzo, as well as ease of construction. There is yet another "design theory" which is a bit far out but which I think was used. It goes like this: The area in the fuselage is part of the minimum and a low aspect ratio wing puts more area inside where it can't cause drag(?). Well, yes, but . . .

The barn-door wing would seem to be 16 feet or less. The last of the Garland Pack designs called Gray Ghost (not the one with prone pilot) raced with a wing only 13 feet in span, the shortest wing I could find in this class of racing aircraft. There seems to be a trend to long wings now, over nineteen feet. Apparently, the designers have been looking at the records as well as the aerodynamics books, as the two most successful racers over the years have been Rivets and Shoestring.

Now that we know why they are similar in size, let's take a look at the markings. Because this class of racer has been around for 25 years, the markings vary somewhat depending on the date of the photo.

In 1947 the aircraft registration was prefixed by NX, X denoting experimental. Newly registered or re-registered

airplanes in 1948 did not have the X even though the C.A.A. carried them as experimental.

The location of the aircraft registration up to 1960 was large characters on the upper right and lower left wing surface and small characters on the rudder or aft fuselage, as in the case of the Vee-Tail. At some time prior to 1960, this was changed to large characters on the aft fuselage, effective in 1960 or when the airplane was recovered (or repainted). Up to this point the racing number was in large characters on the fuselage side. Some of the more enterprising souls applied for new aircraft regulations numbers or racing numbers, or both, so as to combine them.

It would seem at this point that there is nothing to be confused about, right? Wrong. I've only just begun.

Somewhere in the mid-1960's, someone found some small print which said experimental and antique aircraft need not comply. Now we are back to the large racing number on the fuselage and a small registration number on the rudder, along with the combined numbers on the fuselage, separate numbers on the fuselage and registration number on the fuselage and racing number on the

rudder.

What about the racing number on the wing? I'm glad you asked. In writing the previous paragraph I suddenly realized that I had photos of four airplanes which did not have racing numbers on the top side of the wing, and all this time I thought it was one of those mandatory things that all air racers had. I dug out all my pictures, books, and drawings, and found several more without the racing number on the wing, but usually missing from the underside. Only six without the number on the topside. Well, is it required or not? The first check I made was the Formula I class Specification and, sure enough, it's not required. I obtained my copy in early 1970, and some airplanes built after that date have wing numbers. How come? After several phone calls this is what I found:

My first call was to the local F-1 racer which was the plane that brought all this to my attention. His answer to my question was, "It's not required now. My first wing has the number on it, and I was going to put it on this wing when I got it painted, but it's not required." He is new to racing and didn't know the history. My second call went to an old timer in his class. When I explained what I had found in my pictures he said, "My ship has the number on the wing and I think it's required." I politely explained that the rules did not now require it, and my question was, did they ever, if so, when did they change, and if not, why is it done? I also added that his ship was one of the four I had pictures of without the number. He then said that he really didn't read the rules, that was what he had a pit crew for.

I then called an aviation historian who happened to work with designer George Owl, and neither of them had a hand on this illusive rule, but suggested yet another person to call. This is now the fourth call, fifth person, and pilot

SU-PR-ROD^{T.M.}

THE ALL WEATHER PUSH ROD

BEATS THE OTHERS *HOT* OR *COLD*

COMPLETE WITH ALL HARDWARE

44" LONG AND FLEXIBLE



PLAINFIELD, ILLINOIS 60544

MAKERS OF ADVANCED PUSH RODS SYSTEMS: PROROD-NYROD-MASTEROD & MASTEROD-XF

of one of the new airplanes with wing racing number. He was fast to admit that he did not know the history of the wing number even though he had been associated with racing since the thirties. His reason for having one was insurance. He wanted to be absolutely sure that all concerned could see his number. It was his speculation that the wing number was never mandatory and was applied, as he did, for insurance. He, in turn suggested yet another person to call, Tony LeVier, one of the founding fathers of the P.R.P.A. and very active in the beginning of this class of racer. Remember the Cosmic Winds?

When I explained the reason for my call, Tony said, "Oh, boy, that was over 20 years ago, but ask away and I'll see what I can do for you." He put the wing numbers on his airplanes and it was his feeling that it was mandatory at that time. He did not know the history of this rule, and I have spent too much time on it already to go on. Suffice to say the racing number on the wing is not required now and there is precedent in the past for not using it.

There is one thing which will make scale racing more exciting, and that is to see the man-carrying craft race, especially if you have modeled one of the airplanes that is racing that day. Another benefit you can derive from a trip to the races is that you may get a good look at an airplane you had only seen fuzzy pictures of. Most publications give coverage to the winners and, most also-rans make very good models, too. The reporters covering a race will also get sidetracked by a new and unusual looking craft which has poor features for a model. To name some, Hanson's Thunder Chicken, with its "T" tail and the Mac Shark, with its very low aspect ratio "elliptical" wing. Anyway, there is a lot to see at an air race and you may see something you like.

One word of caution, though, after

my first two trips to the Reno National Championship Air Races, I had an almost uncontrollable urge to step on all my models and build a "real" racer, and I'm not a pilot. A trip to the races may not bite you the way it did me, but it will add to your enjoyment of Control Line Scale racing (Goodyear).

Hannan *Continued from page 30* material was based upon experimental wind tunnel findings, rather than "real world" trials. Mother Nature provides many examples which confound man's puny efforts, with the bumble bee perhaps serving as the most publicized living proof that engineers just don't have all the right answers!

Theory and practice are simply two entirely different ball games. Butterflies are remarkably efficient flyers, in spite of their minute size, flat airfoils, and other "inefficient" design specifications. Not much larger than insects, are certain species of humming birds, sometimes referred to as "Nature's Helicopters". These living jewels have flight capabilities far surpassing that of any other bird or man-made contrivance. Some actually migrate all the way from South America to Alaska, yet they can hover, fly sideways, or backwards if they so desire.

Here at the Hanger, immediately in front of the window where this column is composed, hangs a humming bird feeding tube, at which these fascinating creatures conduct "mid-air refueling" exercises all day long. Last year one of these little guys misjudged his landing approach (a VERY rare occurrence) and crash landed. We took this opportunity to examine him carefully, and here are his vital statistics:

- Wingspan: 4 inches
 - Length: 3-1/4 inches
 - Beak Length: 3/4 inches
 - Max. fuselage diameter: 3/4 inches
 - Weight: 3.5 grams
- Thus it can be seen, by humming-

NEWLY MANUFACTURED 1/4 x 32 SPARK PLUGS



Now you can once again run your old ignition engines and join the Old Timer movement.

\$2.25 ea., plus 50¢ postage

IGNITION ENGINES

SUPER CYCLONE

\$40.00

ANDERSON SPITFIRE

\$50.00

(\$1.00 postage per engine)

COILS, \$5.50

CONDENSERS, \$1.00

List, 25¢ Dealer inquiries invited.
COMING SOON...New .29 ignition engine.

REMCO MFG. CO.

P.O. Box 22414, Denver, Colo. 80222

bird standards, a Peanut Scale model is very huge!

HANDY HINTS DEPARTMENT

Terry Nielson, of Houston, Texas, suggests trying a truly inexpensive adhesive for model building, made by mixing one ounce of gum arabic to a pint of water. He also reports that an old electric can-opener can be converted into a winder for rubber-powered models, by adapting a crank to the cutter shaft, and a hook to one of the reduction gear shafts. The electrical components may be discarded to reduce weight. The gearing on his can-opener permits choice of either a 5 to 1 or 68 to 1 ratio.

School teacher Jack Lueken tells us that one of his students is using an electric winder. With some sort of positive counter attached, this could be quite useful, since it permits one-man winding of small models. An alternative, of course, is a holding rig for the model, which leaves both hands free for the winding chore. A neat one has been designed by Mike Fulmer (see illustration), who reports that it is the answer for "stag" flying. He suggests painting it with fluorescent orange and white stripes for easy location. In our experience, however, that would be no prob-

NEW COX TEE DEE .049 AND .051 ENGINES IN STOCK!!



- KK-01** **\$13.50**
Tee Dee .049, fitted with left hand crankshaft and Kirn-Kraft front needle valve assembly.
- KK-02** **\$17.00**
Tee Dee .049, fitted with left hand crankshaft, pressurized backplate, opened up venturi and Kirn-Kraft front needle valve assembly.
- KK-03** **\$17.00**
Tee Dee .049, regular crankshaft (right hand) pressurized backplate, opened up venturi and Kirn-Kraft front needle valve assembly.
- KK-04** **\$17.00**
Tee Dee .051 (same features as KK-03).

Also in stock - individual replacement parts for Tee Dee .049/.051 engines.



TORKEY 1/2 A PROTO (PROFILE)

Custom made kit - balsa/hardwood. Tank and landing gear assembly completely finished! No drilling or soldering required! All necessary hardware included. **PRICE: \$10.50**

FRONT NEEDLE VALVE ASSEMBLY
For Tee Dee .049 or .051



\$2.50

FEATURES:

1. 128 threads per inch for finer adjustments.
2. Nylon seal over threads and needle valve body which keeps air from sucking down the thread area. Prevents "false" needle settings.

This custom needle valve assembly will help you get more consistent engine runs flight after flight.

PISTON/ROD RESET TOOL
For Tee Dee .049 or .051



\$2.95

BENEFITS:

1. Assures peak engine performance.
2. Extends engine life.
3. Eliminates the possibility of breaking crankshaft when engine is run at high RPM.

Tool made from hardened steel

Send check or money order. No C.O.D. available.
Mail order only

KIRN-KRAFT

P.O. BOX 224

SEND 10¢ FOR LIST OF OTHER 1/2A ITEMS

ANAHEIM, CALIF. 92805

lem if we were flying in the middle of a desert, the model would be sure to hit anything sticking up.

PARTING SHOT

The British AEROSPACE newspaper (copy sent to the hanger by J. D. Gillies, of Scotland) features a delightful cartoon strip called AIRBREAKS, which posed the question; "How does one attach the lifting surfaces of an ornithopter to the fuselage? ANSWER: "Wing nuts!"

C/L Continued from page 37

plastic and in kit form, but its performance will rival any balsa plane produced today. Many "experts" were of the opinion that 8 ounces of plastic weighs more than 8 ounces of balsa, so would not even try this plane.

The only thing bad about this kit was the string lines that were included. String lines and a heavy, fast plane spell line stretch and terrible control (see last month's column). If you were lucky enough to have a "below average" engine, the plane would perform fine on string lines. The solution to this potential problem was .008 braided lines, 35 to 40 feet long.

It was unfortunate that this particular plane "died" on the shelf. Not only was it fast to build (approx 2 hours), it was also very inexpensive. With proper promotion, this plane could still be a good deal today. We understand that Cox still has this particular model. If enough interest could be generated they just might update it and bring it out again.

SYNTHETIC OIL vs CASTOR OIL

oils work just fine in large engines, but not necessarily so in 1/2A speed fuels. If you use a polyoxide oil for the total lubricant, you may find it very difficult to establish a needle valve setting in warm weather. Trial-and-error has shown that this condition can be solved by using at least one-fourth castor oil (3 parts polyoxide and 1 part castor oil).

Here are two good formulas for 1/2A proto or 1/2A speed:

- 50% Nitromethane
- 15% Klotz
- 5% Castor Oil
- 30% Methanol
- OR
- 60% Nitromethane
- 14% Klotz
- 6% Castor Oil
- 20% Propylene Oxide

The mix that uses propylene oxide is faster but it may cost you a plug every good run. 'Tis the price you have to pay for the extra performance.

Pylon Continued from page 15

As stated in earlier issues, we expected to see a new design from Joe and Ed Foster along with Jack Stafford's "Rickey Rat," seriously challenge the Bob and Chick Smith "DARA" this year. The first two races of the season have gone to "Minnows" being flown by Kent Nogy and Whit Stockwell. This third race was taken by a "DARA" flown by Larry Leonard. However, we noted that the "El Bandido" designed by Ed Foster could probably be the "Dark Horse" of the season. Ed Foster was the victim of a mid-air early in the event, but his brother Joe clearly proved to many of us that this is some airplane. These two individuals really show a great deal of talent in the field of design as well as pilot skill. Watch the Foster "El Bandido"!!!! With this model in the hands of people like Joe and Ed, Ron Sheldon and Don Powell, they are going to be tough!

Engines still are the topic of most conversations concerning Pylon racers. The K&B Schneurles are still king, but the George Aldrich Super Tigres, along with super-grooming by Ron Sheldon, are gradually closing the gap. The Sheldon prepared Tigre in Joe Foster's plane really sings in the upper octaves. Our personal observation is that the K&B engines set up by Clarence Lee are consistently the ones to beat at this time!

The RAF engine appeared at Bakersfield with Mr. Raf (Jack Frye) and Ron Hager traveling all the way from Ohio to compete.

There is much improvement in the RAF engine, but they still have a long way to go. The engine has good design and much potential, but it will take a great deal of time to put the right combination together. Ron Neff, of Bakersfield, finished 5th in Standard Class to give the RAF its best showing to date.

This race will be remembered by many . . . especially all those lucky people to whom Bob Bleadon gave rides in his real P-51D. If Bob ran for President tomorrow, Jack Fabbri and Dee Frey would vote for him fifty times!!

The second race of the season was held in May at Mile Square Fountain Valley, Calif. The beautiful Minnow flown by Whit Stockwell trounced everyone pretty well, and he emerged overall winner. Kent Nogy was second, with Bob Smith third. The first day of racing was rather uneventful but the second was somewhat of a destruction derby. Chuck Smith, Jeff Bertken, Jim Rogers, Don Powell and about eight others bit the dust and sent everyone looking for

TWO NEW DUMAS MONOS FOR SHOW AND GO.



Deep Vee 60 —

A sleek new model with a deep vee hull designed to handle the roughest conditions... wind and waves. A great boat that closely duplicates the latest full-size off-shore racers. (Could be the beginning of a new racing class!) 38" long with die-cut poplar plywood frame, birch plywood bottom, sides and deck. Plenty of room for radio and fuel. For .40 and .60 engines... or larger!

Kit DV-60 \$39.95

SK-Daddle 60 —

Newest entry in a long line of ski boats that have an enviable record for winning. Designed by Steve Muck for RC competition. Has new innovation in the bottom design that has the hi performance boys buzzing... reduced wetted surface when she's at full bore, yet turns stable and tight. Top grade plywood throughout for rugged, easy construction. 36" long for .60 engines.

Kit SK-60 \$34.95



SK-Daddle 20 (Fiberglass) — 26" racing model in fiberglass for those who would rather race than build. For closed course racing with .19 engine.
Kit SK-20F \$49.95



SK-Daddle Jr. — 18" scale model of the Hallett Ski Boat for inexpensive RC racing with .049 engine... ideal for swimming pool racing with electric motor.
Kit SK-3 \$9.50



SK-Daddle 40 — "the one to beat" 32" record holder that features brand new bottom design for even greater speed with .40 engine.
Kit SK-40 \$29.95

With these two new models, the famous Dumas line of ski boats now offers you a full range of sizes and prices to choose from.

If you're a beginner, the hot little SK-Daddle Jr. will amaze you with how much building and running fun can be packed into an 18" boat with an .049 engine.

Graduate to one of his 26" to 38" record-holding brothers for engines from .15 to .60 or larger, and you'll be hooked for life.

See the complete line of kits, hardware and accessories at your hobby dealer's. Or send 25¢ to cover handling and postage for our new catalog of boats and planes.

**dumas
boats**

Dumas Products, Inc., 790 South Park Avenue, Tucson, Arizona 85719

IT'S HERE!

A SOLDERING IRON THAT WORKS "IN THE MIDDLE OF NOWHERE!"

Cordless, rechargeable soldering instrument that will become standard equipment in every modeler's tool inventory.

It's a necessity at the flying field, but you'll soon be using it regularly at home too. Freedom from that power cord really grows on you!

Tip heat over 700°F almost immediately after pushing the button! Don't be holding the tip when you turn it on! Built-in work light and pilot light. Remove tip and use iron as a flashlight in emergencies.

- MB7500 Complete with 110 volt charging base and fine tip. **\$19.95**
- MB 7565 Complete with 12 volt auto charger and fine tip. **\$18.95**
- MB 7585 Separate 12 volt auto charger. Fits cigarette lighter socket. **\$4.95**
- MB 7535 Regular tip - 5/32" diameter **\$2.00**
- MB 7545 Fine tip - 1/16" diameter **\$2.50**

All items sent 3rd Class postpaid. Add 10% for 1st Class. No COD's please. California residents add 5% Sales Tax.



MODEL BUILDER PRODUCTS

1900 E. Edinger Ave., Santa Ana, California 92705

hard hats and other protective devices. **Fokker D-VI** *Continued from page 11*

RESULTS

FORM 1 MILE SQUARE

May 19 & 20, 1973

1. Whit Stockwell—Minnow—K&B
2. Kent Nagy—Minnow—K&B
3. Bob Smith—DARA—K&B
4. Joe Foster—El Bandido—ST
5. Terry Prather—Minnow—ST
- Charlie Shaw—DARA—K&B

Standard Class

1. Lou Governale—DARA—K&B
2. Loren McCray—DARA—K&B
3. Bob Wilde—Minnow—K&B
4. Tony Brown—DARA—K&B
5. Howard Reed—Minnow—K&B
6. Henry Bartel—Cosmic Wind—K&B

The Standard Class was won by Lou Governale flying his scratch built DARA. Lou really put it all together with a good combination of flying and listening to his son Rick tell him when to "Bend it." Loren McCray and Tony Brown found the right groove and took second and fourth places with our "Ole Friend" Bob Wilde steaming in for third place with his best showing yet. **WHAT A RACING SEASON THIS IS GOING TO BE!!!!** So far three races, three different winners, and a lot of new faces starting to show up at the trophy table. **GOOD SHOW!!**

This cabane system is very simple and strong. It is also collapsible. (See illustration). The pair of inboard legs are of a simple triangular form but should be made very close to the same length since the wing is positioned by them. The long forward leg is made in two pieces, allowing them to be soldered to exact length upon installation. The rear cabane members are also soldered to exact length in the same fashion.

The upper wing is next. It follows the same construction sequence as did the lower wing; i.e. cut templates and rib materials, stack, shape, notch and mount on blocked up spliced balsa lower spars. New items in this structure are the dihedral upper rear spar, ailerons, and the cabane fastenings. I recommend that all spars have the dihedral spliced in. Aileron size, control horn location and hinge line are scale, but the horns are standard Goldberg. The cabane fastenings are screw-mounted Midwest aileron cranks. The location of the aileron servo is now determined and this will in turn determine the aileron pushrod arrangement at the wing center section. The section view of the wing at the aileron shows the inclined crank installation. The crank, mounting block,

and rod details are an individual choice.

My model had the servo in the fuselage with a link to a crank arm in the wing. The real airplane has a single cable aileron control system coming from the control stick, through the side of the body and entering the upper wing at the rear cabane attachments. If the servo is placed in the wing, the wires could be enclosed in a soda straw, thus keeping the installation neat.

Access to the innards is through the hatch in the body just under the top wing and through the lower wing cut out. The Williams Bros. Spandau machine guns are attached to the hatch and thus are out of the way as you work in this area.

The lower wing is positioned by a key system and internal rubber bands pull the wing forward and up. This internal rubber band trick is also used for the horizontal tail attachment.

With all the cabane fastenings, hatch mounts, and flying surface structures completed, we can finish the body. The cockpit, turtle deck, and the side fairings can be completed. Don't forget to build up the body frames out to the fabric surface with soft balsa. This is advisable for stiffening the body in torsion when covered, and aids in handling the model. In my model I tied the upper longerons together in the cockpit area with sheet balsa. The drawing shows double longerons.

A list of the several things yet to be done is useful at this stage and such a list follows; engine installation, basic weights location, cabane strut assembly installation, control rods, interplane struts, covering and finishing.

The engine is oriented for serviceability and for cooling. It would have been better to be upright in order to raise the engine weight. Any mount you choose will be fine. I made my own from a piece of 5/8 in. thick birch shelving, with down thrust of two degrees built in. Wood screws are used to attach both engine and mount in place.

Now a word about weights location. When a model rolls, it will do so about an axis determined by the weights of various elements of the model. These include wing(s), servos, fuel, battery, tail group, wheels, and engine. For inherently stable flight, the axis of this distribution should be higher at the nose than at the after part of the model. The effect is to slightly yaw the model to the side of the low wing which increases the lift on the forward wing while the yawed vertical responds to return the model to the direction of flight. Pattern models don't want this

stability . . . scale models mostly do. (*Interesting theory . . . any comments readers?*) The DVI gets this distribution by keeping the tail group, which is above the roll axis, very light and by placing internal weights high in front to counter the landing gear weight, which tends to lower the roll axis in front.

Skilled flyers may get by without considering stability as very important. The drawings show where I placed my weights.

Alignment of the cabane system and upper wing is a logical next step. Insert the inboard cabane into the wing fittings and prop up the wing, i.e., 'til the lower surface is parallel to the upper longeron. From the longeron to the wing lower surface you should have three inches (plus or minus 1/16 in.). Now solder the two-piece outboard forward cabane strut with both ends in their respective fastenings. Do the same operation for the rear cabane. To remove wing, simply slide off the bent ends. I use a small rubber band looped between the front and rear wing fittings for retention. I had originally planned to use 1/16 Du-Bro collars at the forward fittings only, but failed to provide enough clearance. You can make a recess in the wing if you want a neater installation.

The interplane struts of the model carry no load. They are made using one piece of 1/32 steel wire bent in an "N" and incorporating a spring loop at each end. The drawing shows the shape, but for drawing clarity the dihedral allowance is not shown. Measure and bend the wire. Make the wood fairing with 1/16 spruce, contour bind each end to the wire, bond, and cover with Silkspan. The balsa sockets in the wings must be flush to the covering to minimize tearing. The loop ends of the struts help in this regard.

The WWI scale model fan has benefitted greatly since the advent of the Williams Bros. scale guns. All that is needed is directions as to how many, and where and how mounted. For the rear gun mount, a transverse 1/16 wire rod is attached to the underside of the hatch balsa skin with balsa blocks. The wire is bonded in place and when the bond sets, twist the wire and break it loose. The wire can now be pushed from side to side. The guns now drop into a cutout in the hatch and the wire rods slip through the mounting holes provided in the guns. The forward mount must be made of thin aluminum . . . bent into a "U" shape and drilled to match the plastic protrusions provided at the forward gun mounts. These

BOEING 247



NEW! 1/72 SCALE MODEL KIT FOR THE WORLD'S FIRST REALLY MODERN AIRLINER. MAY BE COMPLETED AS EITHER COL. ROSCOE TURNER'S RACER OR A 1933 UNITED AIRLINER. FORERUNNER OF TODAY'S TRANSPORTS, THE BOEING 247 INCORPORATED SUCH ADVANCED FEATURES AS ALL-METAL CONSTRUCTION, RETRACTABLE LANDING GEAR, DE-ICERS, AND CONTROLLABLE PITCH PROPELLERS. SEVERAL OF THESE AIRCRAFT REMAIN OPERATIONAL TODAY.

KIT FEATURES: TWO TYPES OF WINDSHIELDS
LANDING GEAR MAY BE INSTALLED IN ANY OF THREE POSITIONS:
• RETRACTED • STRUTS EXTENDED • STRUTS COMPRESSED
• SOFT LANDING GEAR TIRES
• CLEAR PLASTIC DISPLAY STAND
• DECALS FOR BOTH RACING AND AIRLINER VERSIONS
• TURNER'S LONG-RANGE FUEL TANKS
• TRANSPORT PASSENGER SEATS

PRICE: \$4.95



SEND 25c FOR COMPLETE ILLUSTRATED CATALOG

DEPARTMENT MB • 181 B STREET
SAN MARCOS, CALIFORNIA, 92069

brackets should be screw-mounted to a block bonded into the hatch.

At this point a thorough check of all flying surface alignment should be done. Use the body vertical centerline as a reference. This then makes the vertical sternpost on the centerline. The body upper longerons are parallel to the body horizontal centerline. Measure to see that each wing tip is the same distance from the sternpost and that the root sections of the two wings are parallel to the body upper longerons. The horizontal and vertical tail surfaces are checked in similar fashion. Any corrections to be made should be done before the covering is applied.

Covering is the most satisfying step of building any model. The shape becomes complete and the structure is firmed and you feel almost finished. The model was covered with silk and clear butyrate doped prior to adding any color. Some new model covering fabrics could be used, such as Coverite, but they are heavy. Plastic covering is out for the scale fan, but Monokote can be dulled by spray painting . . . I recommend silk.

Color selection affects the model appearance more than any other single item. I wanted to do a hexagon camou-

flage job and found it fairly easy to do. My only regret is that the camouflage works too well. The lines of the model are broken up when viewed against almost any background . . . this is a difficulty when taking color photos. The underside of the model is pale blue and views from below show off the lines very well. If I refinish the model, I intend to use dark green upper surfaces, similar to the contemporary over-painted Fokker DVIII, pale blue lower surfaces, and white rudder. All crosses have a white outline.

For those who wish to finish in hexagon, the following ideas are suggested. The size is as depicted and the colors are best taken from the "Munson Pocket Encyclopedia 1914-1919". There are patterns of either four or five colors. Work out a pattern, noting that most figures are six-sided with an occasional five-sided figure. Make a template of about five of the figures and then practice laying out your pattern using the template. When you can get a surface to look like the pattern has been machine printed on material, then you are ready to do the model. The pattern is applied to the airplane in a regular fashion since the printed fabric was applied with the warp of the cloth spanwise. The first

S/B

SANTA BARBARA ONE DESIGN. More than five hundred sold — and #10 can still beat #500! Length 70 in., mast 72 in., sail area 1100 sq. in., displacement 28 lb. Prefinished fiberglass hull, deck, cabin and keel \$165.00



SOLING-M. Scaled from the exciting new Olympic-class three-man keel boat. Length 50 in., mast 60 in., sail area 800 sq. in., displacement 18 lb. For American Model Yachting Association 50/800 "M" class racing. Prefinished fiberglass hull and deck, machined cast-iron keel \$125.00

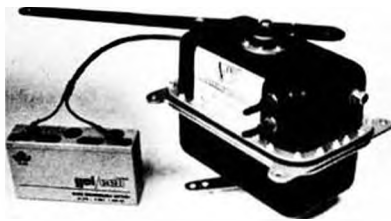
BOTH KITS include finished Dacron® sails, spruce spar blanks, stainless rigging, brass fittings, and die-cast aluminum rudder. For two- or three-channel r/c operation with the Vortex sail control unit.



SEE YOUR HOBBY DEALER!



210 East Ortega Street
Santa Barbara CA 93101
Telephone (805) 963-1636



SAIL CONTROL UNIT with gel/cell® battery and charger \$75.00

color coat should be of the lightest of the chosen colors. The subsequent colors are applied with a small brush held in a steady hand. Don't rush it. It took about twenty hours to put the pattern on the model.

The crosses are hand-painted on. I like the narrow crosses shown, although the real aircraft had narrow or broad crosses shown in my photos of the actual craft.

Flying is best done in the calm of the day with the customary taxi tests preceding, in order to try throttle, rudder and tail attitude while still on the ground.

The model, built in Seattle, was first flown December 1968 at Langley Field, Virginia by my good friend, Tom Strom. The day was cold and windy but other circumstances decreed that flight take place. The third flight that day was made down wind (not by choice) and into the rough, with very minor damage.

The model is now here in Seattle, and is still complete, but it has only been flown about ten times.

It does fly well and it is a smart looking ship with the added features of being unusual plus being an active combat craft of World War I. ●

F/F Continued from page 28
Secretary USAL
S. Giov. Bosco 21,
Abbiatragrasso (Milano) 20091
Italy.

Enclose an international Money Order with sufficient postage added to cover whatever special handling you may wish.

"WHATEVER HAPPENED TO VEE DIHEDRAL?" dept. Shows how people get turned on by minor things, I guess, but I was looking at a picture of a Nordic glider in flight the other day, and suddenly came to the realization that a lot of the lift of the wing was being cancelled by the polyhedral break half-way out.

It stands to reason that, if the lift is greatest on the top of the wings where the pressure drop is greatest, and that the angle of the joint at the polyhedral break jams this lower-pressure air back together thus cancelling this lift; and that lift is derived from the bottom of the wings by the impact and high pressure packing of the air molecules, but that the polyhedral break gives the little "lift bugs" an alternative route by allowing flow spanwise (*pause for breath*), then the elimination of the mid-

panel break would increase the lift without adding area to the wing.

As my first experiment in this new design field I took an old set of Dragmaster plans and built a new airplane over them, increasing the span to 86 inches, reducing the chord to 5 inches, and, of course, eliminating the polyhedral break. Dihedral at the tips is about five inches.

I had heard that vee-dihedral gliders were very hard to tow, so expected trouble and was pleasantly surprised when the ship went straight up from the release on the first trimming flight. Haven't been able to get any kind of "dead-air" times to brag about yet, what with one obligation and another, but am highly encouraged.

The second model built to test this wild new idea, of eliminating polyhedral, was a Sterling Citabria rubber scale ship. Here I used deeply-undercambered wing ribs for better glide, and six strands of 1/4 inch Sig rubber 15 inches long for motive power. This model gave me some problems in adjusting, but I think it was because of the short tail moment with all that power that got me into trouble rather than the vee dihedral, (1½ inches each tip.) It now flies like a gung-ho competition model.

The third ship started life as a Coupe, with 220 inches of wing, slanted outboard tips, and three inches of dihedral on a 40 inch span. This is just plain too much wing for the coupe motor to haul up, although it will max from about fifty feet in the slightest lift.

I am currently building a longer fuselage to accommodate a six strand motor about thirty inches long, to put in the Unlimited Class. I plan to use the same coupe prop, and keep the weight of the machine down by using less power and a lower-pitch prop to yank it high enough to take advantage of whatever lift is around.

I don't know whether power models would benefit by using vee dihedral rather than polyhedral because of their higher flying speeds and greater climb/glide airspeed ratio, but maybe an FAI power ship which had polyhedral during the climb phase, but then lowered its tips during the glide portion to vee dihedral to increase wing area . . . Hmmm. (*Shades of McGillivray's Folder. wcn*)

The big swing is to Titebond glue, rather than nitrate or butyrate-based glues. Stronger, less effected by changes in the weather, lighter since less is needed, etc. To use, dilute to about one part water to two parts glue in a

SOARCRAFT Kestrel 19

Proven — Highest Performance Model Sailplane currently available



1st Place Winner
National & Regional Contests
Thermal, Speed & Scale
25 Trophies in '72

Span 134.5 in.
Area 852 sq. in.
Length 49.5 in.
Weight 50 oz. min.
Wing Loading 8.5 oz. — 10 oz./sq. ft.

Available only from

Windspiel Models
Quality R/C Sailplanes

3704 Montgomery Drive
Santa Rosa, CA 95405
Phone (707) 544-2334

separate container, then use a small brush similar to that used by the plastic modelers for trimming their creations. Apply a light coat of the solution to both surfaces being joined, then fit or clamp together; a strong, light joint in just a few minutes.

* * * * *

The National Free Flight Society (NFFS) has announced its third annual selection of the Ten Best Models of the Year. Committees made the selections based on popularity, success in competition, advancement of the state of the art, beauty, simplicity, functionality, impact on the sport (features copied by others), novelty, and "breeding" a logical development of the design instead of a lucky "One-Off" creation.

In the U.S.A., these were the winning designs:

AMA Gas . . . Small Models . . . "Mini-Pearl", 1/2A-A by Bill Chenault, Dallas, Texas.

AMA Gas . . . Large Models . . . "Satellite", ABCD, by Bill Hunter, Arleta, Calif.

AMA Outdoor Rubber . . . Unlimited "Twin-Fin", Bob White, Monrovia, Calif.

Indoor Rubber Endurance . . . F 1d . . . "Time Machine", Pete Andrews Bogota, New Jersey.

Outdoor/Indoor Hand Launch Glider . . . Outdoor "Bo Weevil", Don Chancey, Richardson, Texas.

Awards for these designs will be presented at the Oshkosh Nationals, as part of the N.F.F.S. 6th Annual Symposium on August 9th.

In the International Category, these

were the winners:

F 1a, Nordic Glider . . . Russian Group Award, (Lepp, Markov), Circle Towhook Design.

F 1b, Wakefield . . . "Charisma", Frank Parmeter, Houston, Texas.

F 1c Power, "Veterano", FAI Power Ray Monks, Warwickshire, Engl.

The International Awards will be presented as a part of the World Championships at Wiener-Neustadt, Austria.

In addition, the NFFS granted awards for special classes to two designs, the Mattel "Superstar", by the Mattel Corp., Hawthorne, Calif., and to the 1939 "Korda Wakefield", by Dick Korda, Cleveland, Ohio.

Dave Linstrum, Public Relations Director of the N.F.F.S., says that the winners will be three-viewed with appropriate comments by the designers, in the Symposium Report, copies of which will be available after the Nationals by sending \$4.50 if a member of the Society of a foreign modeler, or at \$5.50 to others, plus .50 for postage. Order it, or reprints of earlier issues, by writing NFFS Plans and Publications, Box 322, Dallas, Oregon, 97338, USA. A full-page report on NFFS Activities debuts in this issue of Model Builder.

* * *

The "Over the Hill Gang," alias "Team Godfather," alias the Max Men, held their annual over the week-end of June 16-17 at Elsinore under ideal weather conditions . . . Thermals were spotty in the morning hours both days, cutting down on the amount of successful "Piggy-Backing" and lowering the times in some events. A ship which found lift and got high enough would encounter a

wind shear and be drifted back to the field to dethermalize in the flying area while its owner was frustratingly looking for it off to the east.

Closing shots at random . . . Mucho fun to be had in the 020 Replica event, which is becoming more and more popular outside of "Old Timer" Contests. The trick is to make these little beasts, (150-160 square inch wings) behave when they are so over-powered beyond the original's design. One problem; they are awfully hard to see when they get hooked in a Taft "Boomer".

Why doesn't some enterprising company manufacture fuel-proof sun-tan lotion? He'd have the modeler market sewed up. ●

R/C Report . . . Continued from page 13 should make it survive the many "dings" sport planes are subjected to. The price is quite low and if you can find one of the kits you will be most pleasantly surprised by the quality, the price, and the flying. Dave Robelen is the designer of the plane and has, I am told, even entered it in some Class A pattern contests and actually placed second or third with it. Try it, you'll like it . . . as they say.

Here is a challenge for you sharp finish men. If you can let me know your methods of finishing a foam (polystyrene) plane that really works, I'll be glad to print it in this column . . . and you will achieve everlasting fame. Here is the problem: I bought one of Midwest's Chipmunk kits . . . all foam. Some magazine (guess which) built it up and flew it "raw" and loved it. So I got one too . . . right off I knew I was in trouble. If you use molded poly-foam

☆ **ENJOYMENT IS** ☆
R/C SAILING

FOR THE BEGINNER
SNIPER TYPE
\$16.95 ppd *

Length 25 ³/₄ inches
Beam 8 ¹/₄ inches
Ballast Included



TAHOE 600

Suitable for AMYA
36/600 class

\$31.95 ppd *

Length 36 inches
Beam 9 ¹/₂ inches
Sail Area 600 sq in

KITS FEATURE:

- Preformed plastic hull, deck and components for simple 2 evening assembly.
 - Sails fabricated from Nylon Spinnaker Sailcloth
 - Complete hardware package
 - Step by step instructions include R/C details.
- TAHOE 600 BALLAST PKG AVAILABLE \$3.50 ppd
SAIL CONTROL UNIT (up to 36 in models) \$22.95 Complete
SAIL CONTROL CONVERSION KIT USING YOUR ROTARY OUTPUT SERVO MEC 4ANICS \$10.95 ppd

VICTOR MODEL PRODUCTS

Box 2168 Dept. A, Downey, Calif. 90242

* Calif. Res. Add 5% Tax Dealer Inquiries Invited

wings and fuselage and don't protect it from fuel, the oil seeps in between the molded bubbles and makes for a real sticky plane that no amount of cleaning will fix. Not only that, the foam is not the easiest to finish.

I tried some Sears Acrylic Enamel in a spray can on a defective wing I obtained to experiment on, and it worked fine . . . didn't attack the foam, but the molded foam pellets still showed through and a slick finish was not obtainable . . . I tried the Sears primer made to use under the above mentioned product and it attacked the foam. That's out. So I tried Testors Pla . . . it doesn't attack the foam and paints it well, but I still can't use filler to get that good finish. Remember, that we want to keep the weight down.

Then I tried polyurethane floor varnish . . . really works fine . . . seals up good and dries overnight . . . so then I decided maybe I could dope over that, put on a light coat of Aerogloss balsa filler coat and it ate through the polyurethane and attacked the foam!

The easy-does-it method of Hobby-poxy finish was tried and I squeegeed (how do you spell that?) (*T H A T, dummy!*) some of the epoxy on my test foam and then when it set up I sanded

Mag. 20¢

Marlow
Kits and Accessories
for Creative
Modeling
At your local dealer

MARLOW ENGINEERING
6810 Vineland
North Hollywood, Ca. 91605

it (I didn't use cloth underneath it in order to keep the weight down), and it gives a good surface, but is somewhat "soft" due to the non-hard nature of the poly-foam.

Someone suggested taking Titebond or Elmers white glue and cutting it down with water and putting on silkspan and then doping (?) from that point. At any rate, I'm stuck. Can any of you who have had successful experience with any finishing method of working with foam help your fellow modelers out? Remember, what ever you use must be available most anywhere . . . not some strange paint made only in your city and available in two hardware stores near your house.

With the increasing prices of foreign made engines it is well to remember the fine quality American made engines such as Fox and Veco/K&B. Duke Fox tells me that a new run of his very popular Eagle .60's is in the works, and they will have an improved muffler mount. I've mentioned this particular engine before and those of you who use it will back me up when I say it is a fine engine and will give superior service and long life.

Duke's real pride and joy is his .78. He says that it is especially good for the sport airplane that runs a bit heavy . . . and for those big scale jobs. It will swing a 12/7 or 12/8 very well and even an 11/8 or 11/9 is good for pattern ships, although the 11/8 might be a bit too small. He recommends Missile Mist as best for his engines, and others, too, because it has plenty of lubrication . . . lots of power and is quite tolerant to needle valve settings. In fact, he recommends Missile Mist for most engines, and says that it will hold a setting that might, with other fuels, begin rich and then run lean. Duke also has a new batch of the .78's in the works and probably by the time this gets in print both the

CLOUDBUSTER RACE WINGS



RUBBER SCALE PLANS FOR SIX (6) FLIGHT-PROVEN, RARE & UNUSUAL RACING PLANES: CROSBY, FLOYD BEAN, TWO FOLKERTS, SMIRNOFF BEARCAT, and CHAMBERMAID.

Complete set, postpaid, only \$4.00

order from:

CLOUDBUSTER VENTURE

P.O. Box 2921, Livonia, Mich. 48154

improved .60 Eagle and the .78 should be on dealer's shelves.

Your comments and suggestions for this column are always appreciated. I always try to answer all letters, so if you have a pet gimmick or photos or what-have-you that might be of interest to your fellow modelers, let's hear from you. My address is: 2400 West End Avenue, Nashville, Tennessee 37203

See you next month!

Counter Continued from page 6

fuel requirements (3 to 1 gasoline and oil), clean running habits, and progress being made in rapid shielding, ignition engines could make a strong comeback in sport model flying.

* * *

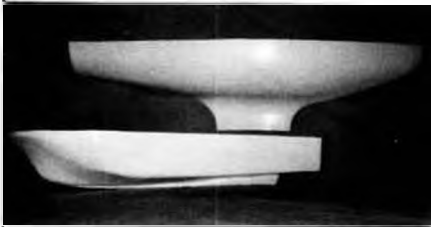
Royal Products, Denver, Colorado, is marketing an excellent Spitfire kit for R/C Standoff or Close-up Scale. With a span of 64 1/2 inches, the scale is 1-3/4 inches to the foot. The kit is all balsa construction, and includes a spun aluminum cowl and complete hardware package, takes .60 to .80 engines and is priced at \$69.95.

Royal also has an interesting detailed landing gear set (main gear only) which has functional elbow joints and shock absorbers. Of all steel construction, they may be retracted manually for display or improved storage purposes (not designed for in-air retraction). A matching nose gear is detailed and shock absorbing, but not retractable. Prices are \$19.95 a pair and \$9.95 each, respectively.

* * *

More in the category of a product preview, Williams Brothers is developing a Classic Era scale-like R/C airplane for

MODEL FIBERGLASS HULLS
Create your own CUSTOM-BUILT craft



36 inch cruiser hull \$27.95, 48 inch yacht hull \$35.95. Built-in supports for engine/servo and deck. Virtually unbreakable. Basic white or color. Send stamped addressed envelope for details. No C.O.D. Add \$1.50 shipping. New Jersey residents add 5% tax. Fiberite Co., P.O. Box 61 Waldwick, N.J. 07463.

engines in the .40 range. The ship is designed to be flown as either a low wing or biplane. Floats are also being developed . . . to be used singly (as on the proposed model) or in pairs, as the modeler chooses.

By the time this is published, the plane will have a name as the result of a naming contest which is taking place during the MACS show in Anaheim, California the last weekend in June.

We'll have more info on all of this at a later date.

Kraft Systems has added another product to its accessory line . . . polypropylene hinges. These units are molded in one piece, necked down along the hinge line, and have two holes per leaf to improve holding strength when epoxied into slots. The one-piece type hinge, in contrast to the currently popular two-piece piano-hinge style, will withstand high vibration, dampen flutter, and won't lock up from epoxy, glue, or dirt. Best part of all is the price . . . 20 hinges for 95 cents!

Perry Automotive, 581 N. Twin Oaks Valley Road, San Marcos, Calif. 92069, whose carburetor is pretty well known by glow engine users, is now offering a high quality fuel filter. The polypropylene element is permanently housed in a sealed aluminum fitting, and is cleaned by reverse flushing. Price is 95 cents.

Dave Platt Models, whose scale R/C Spitfire kit is anxiously awaited by

FIBERGLASS GLIDER KITS

ASW-15 1/8 SCALE / \$35.00
DIAMANT 1/6 SCALE / \$35.00
HP-14 2 1/4 SCALE / \$45.00
Kits include fuse, canopy, plans & ribs

send check or money order to
EARL WOLSLEGER & ASSOC.
1024 n. parker, orange, ca. 92667
ca. res. add 5% sales tax

many modelers, has released a teaser to hold us over in the meantime. This is a beautiful wall painting, suitable for framing, of the 1943 Spitfire MK.IX as flown by Canadian ace Johnny Johnson of 416 R.C.A.F. Sqdn. The full color painting reproduction is a real beauty, measures 18 by 30 inches, and is available at \$3.95 from Dave Platt Models, 1300C W. McNab Road, Fort Lauderdale, Florida 33309.

K & B Manufacturing, is now offering the popular low price Standard Stallion .35 in an equally low priced R/C version for only \$19.95. This should be the ideal engine for those getting just into the R/C phase of modeling, and is suitable for many medium size airplanes. The throttle control system incorporates both carburetor and exhaust baffle, which should give a good power range and dependable idle.

Boats by Fisher, 10604 17th S.W., Seattle, Wash. 98146, (206) 246-4731, now offers Ed Fisher's sport and competition ski boat "Lil' Northwind." This is an R/C boat with 26 inch fiberglass hull, which is capable of speeds in excess of 30 mph. The bare hull weighs 14 ounces, cockpit sides and installed in the mold to avoid warps in the bottom. Kit does not include hardware, but with the beginner in mind, the complete plans and instructions show how to complete the boat using easily available parts. Price is \$39.95 F.O.B. Seattle. ●

**MANY FLYING SITES OPEN UP
WITH INSURANCE PROTECTION**

Hi-Start

**COMPLETE ASSEMBLY,
INCLUDING:**

- 100' - 5/16" O.D. Surgical Tubing
- 400' - Heavy Duty (126 lb. test) Nylon Twine
- Stake, rings, swivels and reel
- \$25 POSTPAID**
- READY TO DELIVER
- Check or Money Order
- DEALER INQUIRIES INVITED
- RON KOPP**

8010 W. Waterford Avenue
Milwaukee, Wisc.

**Have Fun--Fly the Proven System!
Pulse Proportional Rudder-Only**



PULSE COMMANDER R/O SYSTEMS

Completely wired and tested, with transmitter, receiver, actuator, NICAD BATTERY airborne pack and CHARGER, switch and connectors. Transmitter battery not furnished.

10G 15	Baby System '72	\$69.95
10G 15T	Baby Twin System '72	\$72.95
10G 16	Standard System '72	\$71.95
10G 17	Stomper System '72	\$74.95

26,995. 27 045. 27 095. 27 145. 27 195
Please Specify Frequency

We have airplane kits designed especially for pulse, as well as accessories and items from other manufacturers in our

PULSE HANDBOOK-CATALOG
Only \$1.00

Completely updated, contains data on pulse: How Pulse Works, Installation, How to Fly, and much more.

Price is \$1.00 via BULK Third Class Mail. For faster delivery add 50¢ for FIRST CLASS.

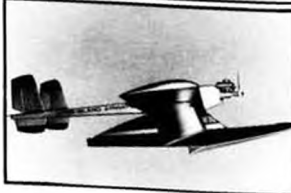
Ace Radio Control, Inc.
BOX MB
Higginsville, Mo. 64037

The hit of the Toledo Show

THE ISLANDER MK II

A bit of old nostalgia — water flying is easy with these expertly designed aircraft. The answer to fun flying.

\$39.95



THE MALLARD

For the sport flyer or novice — a true triphibian (water, land, snow). Extremely stable . . . simple to build . . . superb water performance.

\$39.95

SPAN 50" AREA 437 SQ. IN. ENG. 19-25 WT. 3¼ LB. 3 CHANNEL — sturdy air-frame construction mounted on a polyethylene hull — see your dealer or write direct.

the GEE BEE line

143 E. Main St., Chicopee, Massachusetts, 01020



WALT MOONEY PRESENTS A FOLIO OF WELL TESTED DESIGNS INCLUDING 13 PEANUT SCALE PLANS, PLUS 2 BONUS PLANS FOR OTHER TYPES. 15 IN ALL

ALSO FEATURED ARE CONSTRUCTION ARTICLES (2) AND A PAGE OF PHOTOS SHOWING THE ACTUAL MODELS

SEND \$5.00 (POSTPAID) TO: WALT MOONEY 2912 CABRILLO MESA SAN DIEGO, CALIFORNIA 92123

Prod. in Use Continued from page 23 with the fast-completion image of the kit, to merely finish the glider in natural grain. Three coats of sanding sealer were applied, smoothed after each coat with the same piece of 400 wet-or-dry (by the last coat, the back of the paper is as smooth as the working side). Finally, we paste-waxed the whole thing.

For a radio, we literally "stuck" in an RS system. One of the many plus points about R/C soaring is the fact that the radio equipment manufacturers don't get up tight if you install their servos with double-stick foam tape . . . in fact, not even if you use double stick carpet tape (no foam)! To complete the installation, the receiver and battery pack were wrapped in foam (yep, scraps of under-padding rescued from the new living room carpet installation!), and stuffed into the nose. We didn't use the airborne switch . . . it's just too easy to reach in the open cockpit and shove the connectors together.

The RS radio has several interesting features, and "small" is one of them. The receiver is the smallest multi-channel digital proportional unit on the market (see this month's ad). To really appreciate it, you had to be fooling around with R/C 10 to 15 years ago. You

could put half a dozen RS receivers inside of one Bramco 8-channel (that corresponds to 4 control functions as we know them now) case and they'd still rattle around!

The transmitter box is as small as humanizing will allow. It could be smaller, as far as what goes on inside is concerned, but it wouldn't be practical for operation by the average human's hands. Actually, if you open up the back, it looks as though they forgot to put in half of the components! And one famous theory seems to apply very well here . . . the less parts you need to make something work, the less chance you have of something going wrong.

RS, as well as several other radio equipment manufacturers, uses the D&R servos, as developed and manufactured by Dick Rehling. These units are powerful, tightly centering, instantly sensitive to control signals, and are light and compact. Getting back to our rather chintzy installation; in experimenting with surface movement, we found that if the rudder ran up against the elevator before the servo had gone its full travel, the Nyrod simply levered the servo off the side of the fuselage . . . carpet tape and all. This was partly assisted by the fact that we were even

too lazy to cover the bare wood with any dope or resin prior to sticking the servos to it . . . A good old paper wedge jammed down between the servos now maintains adequate pressure against the double-stick tape.

Came the time to test glide the assemblage. Since it was about 2 AM and we still carry traces of being a typical modeler, off we went to the front yard. The lack of angular difference between the wing and stab had us worried, but trusting Dave implicitly, we lined up a glide path between the lawn sprinkler pipes, twitched the controls, and heaved . . . The nose of the Bowlus almost removed our big toe.

. . . Back at the "Workbench", we quickly eyeball-cut a V-shaped shim which put about a 1/4 inch of incidence in the wing . . . It's now a permanent installation. Also, we glued back on a piece of the rudder which was broken off as it dragged through the grass. The bottom rudder was then trimmed short so that it was protected by the forward bottom fin.

The next glide (at 2:35 AM) was fine . . . right between the sprinklers, thanks to R/C.

Several days later we had a chance to really fly the Bowlus from the nearby slope in Laguna Niguel. With a final apprehensive glance at the near-flat, V dihedral (After all, we couldn't trust Dave any more following that incidence business!), we threw the Baby Bowlus into its maiden flight. The ship flew quite well, working its way back and forth on the slope until it was pretty well overhead. One thing was obvious though; for the less experienced modeler, and for more relaxed flying by the old hand, something had to be done about the constant threat of tip stalls.

Our first thought was to chop the wings off about 12 to 15 inches from the tip and put in polyhedral . . . but this didn't seem like the right way to treat even a Stand-Way-Off Scale glider, so instead, we decided on washout . . . a pretty standard precaution among R/C sailplaners.

After several futile attempts to steam washout into the fairly thick sheet wings, we finally opted to cut "ailerons" out of the tips and glue them each with about 3/16 inch of permanent "up". The operation is performed by using all of a 12 inch metal ruler, juggling its position until a straight cut can be made, from the bottom, almost through to the top. Next, crack the ailerons upward and then pin them in position, using a straight edge to check equality. A bead of glue is then simply run into the open slot. Voila! Washout!

**FRANNY'S CHROME
MODEL ENGINE SPECIALISTS**



**Hard Chrome, Hop-up, Fuels,
Engines, Parts. List 25¢**

513 Vesta Place Reading, Pa 19605

The Baby Bowlus is a pleasant change from the usual sleek canopied glider and always brings lots of attention. It can be put together quickly, and with moderate care, will perform nicely (with the recommended modifications).

RS Systems, distant relative of the famous Bonner radios of the 1960's, has been hanging in there for quite a few years, always on the fringes of notoriety. It has been quietly and continuously improving, becoming noted for its reliability and for its prompt factory service. We expect to see it established as one of the few major R/C equipment manufacturers within the next year. ●

Workbench . . . Continued from page 5
tion's aim, spurred on by AMA Exec. Dir. John Worth's address to its meeting at Glenview NAS last year, is to increase its membership. We have offered to help by giving the NFFS a page in MB to make contact with non-members throughout the country. It starts this month.

Getting back to that comment about image, we'd like to see the NFFS make more contact with the "outside world." Some events should be developed for small-field modeling . . . events that don't depend on duration, but rather on precision and accuracy . . . being able to perform programmed maneuvers, spot landings, etc. By having nearby events of this type, the uniformed public would get exposure to free-flight, the youngster could see the possibility of getting into it even though he doesn't have transportation out to the "Boonies", and more modelers would join NFFS to get involved in the ultimate sport of thermal hunting.

There could even be intermediate events specifying the use of regular competition F/F ships, i.e., set the motor run and D.T. accordingly and then figure where you should release in order to make a spot landing after a minimum flight of . . . say 20 seconds. Do the same thing with an A/I from a 50 foot

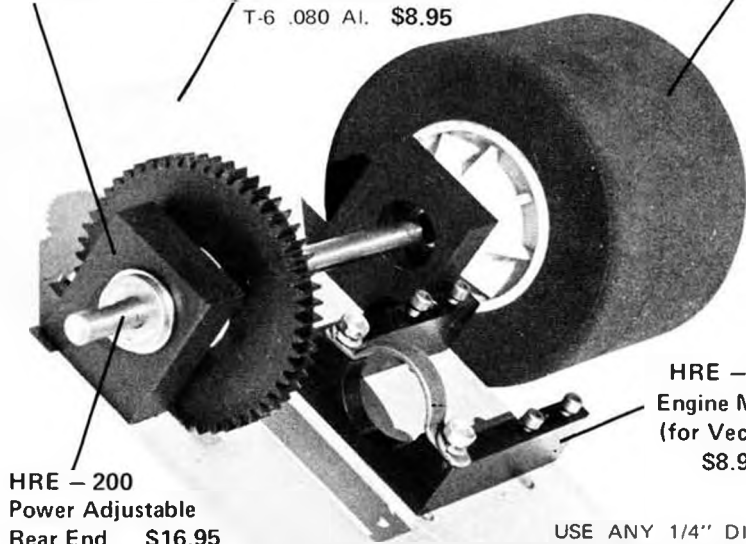
HRE INC.

**CUSTOM R/C
CAR PARTS**

HRE - 210 Bearing Blocks
(CAN DOUBLE AS WING
TUBE MOUNTS)

HRE - 001 Chassis
T-6 .080 Al. \$8.95

THORP, TAURUS OR
ASSOCIATED WHEELS



HRE - 200
Power Adjustable
Rear End \$16.95

INCLUDES: MACHINED BEARING
BLOCKS, (4) POWER ADJUSTMENT
SPACERS, AND BALL BEARINGS.

HRE - 019
Engine Mount
(for Veco 19)
\$8.95

USE ANY 1/4" DIA.
AXLE, AND TAURUS,
ASSOCIATED, OR MRP
GEARS.

HRE Inc., 17751 Skypark Circle, Suite D, Irvine, California 92707

line.

The main idea is to move free-flight back to town . . . let a few people get a look at those birds . . . stop flying long enough to tell a curious spectator a few things about it all. Be a ham. He'll believe a lot more than your F/F buddy who knows you haven't maxed that 1/2A bird in your last 20 attempts!

WHO HE?

This month we add a new name to the characters (?) in the continuing saga "The Model Builder Magazine's Struggle for Fame and Fortune." Based on the first sentence of what follows, it appears that an introduction is necessary:

"I guess I should introduce myself, rather than letting someone else do it for me . . . (see what we mean? wcn). First, my first name is JEAN Andrews. I was named after a French-Canadian uncle. I'm ". . . Over 21," married, have three girls.

"My modeling goes back to pre-World War II days, with the carving of solid balsa kits. I got serious along about 1946, and competed in the 1947 and 1948 Western Opens, and the 1948 Olathe Nationals, flying free flight. My fondest memories of this era include the last contest at the Panorama City free flight site, in the central San Fernando Valley . . . before the developer closed

down the site and built Van Nuys . . . and Hornet-powered Zippers winding into the cornfield just north of the old Western and Rosecrans site.

"Shortly after 1948 I discovered that girls weren't soft boys, which put a seven-year kink in my modeling activities. I flew some F/F and U/C in the Air Force, but then got interested in motorcycles, and modeling again suffered.

"I started building most recently again in 1966, and built mostly non-power free-flight, with some power free-flight and U-control to break up the building sessions.

"I have been flying airplanes and helicopters for a living for about the last eight years. I am a helicopter flight instructor, and hold commercial ratings for single and multi-engine airplanes with instruments. I have logged over fifteen hundred hours of helicopter flight time, and close to ten thousand fixed wing hours, most of the latter as an aerial traffic reporter for radio station K E Z Y, Orange County's Number One Station, (plug, plug!).

"I have had a few construction and "How to" articles printed in competing magazines (correction Jean. We have no competition! wcn), and frankly have been conned into helping Bill with the hopes he will let me play with his radio-



● **SATELLITE "1000"** ●

Class B-C-D Free Flight Kit PK-1000
1000 SQ. IN. of CONSISTENT WINS
130 SAW-CUT & NOTCHED PARTS
COMPLETE PLANS, including bill of materials for straight wood.

\$24.00 + \$2.00 Postage

● **"HOT STUFF" SUPER ADHESIVE** ●
A MUST FOR COMPETITIVE MODELERS
No. HS-1 Cures in 10 seconds. NO MIXING.

1 OZ. \$8.00 + 50¢ Postage

● **CLEAR - SUPERLIGHT - MYLAR** ●
with complete instructions

M-25: 1/4 mil. (Small gas and rubber)
50 sq. ft. \$5.00 + \$1.00 postage.

M-50: 1/2 mil. (1/2A - A - U.R. - Wake)
50 sq. ft. \$7.50 + \$1.00 postage.

M-1 : 1 mil. (B - C - D - FAI - R/C - U/C
combat)
50 sq. ft. \$10.00 + \$1.00 postage.

California residents add 5% sales tax.

Orders shipped by air on day received.

SATELLITE CITY

9486 Sandusky Avenue
Arleta, California 91331

BILL HUNTER

213-899-2301

VINTAGE R-C PLANS

9 FT. J-3 Cub
PLANS.....\$10.95

Plastic Engine
CONV.....\$ 7.00

Edo Floats
PLANS.....\$ 4.00

73' CATALOG... 25¢
OVER 50 Plans !!



9 FT. PIPER J-3 CUB ON FLOATS

Dealers & Distributors WRITE!

SID MORGAN 13157 Ormond, Belleville, Mich. 48111, U.S.A.

Good things come in many packages. We make over 160 various model accessories for Radio Control, Free Flight and U-Control.

Tatone Products are at all dealers. If no hobby shop is convenient, send 25¢ for illustrated catalog.

TATONE PRODUCTS
1209 GENEVA AVE.
SAN FRANCISCO, CA. 94102

ACCURATE SCALE MODEL CONSTRUCTION PLAN SETS for the modeling experts to adapt to R/C, C/L, or F/F:

GEE BEE R 1 2"-1", 50" span (see 4 73 AAM cover) 55 sq. ft. dwgt.	\$14.00
GEE BEE R 1 1.9/2"-1", C/L winner	\$5.00
GEE BEE Z 2"-1", 47" span racer	\$9.00
HALL RACER: 1/2"-1", 13" span Peanut Scale	\$2.00
CULVER CADET (1940) 1"-1", 27" span	\$4.00
MONOCOUE 110 CLIP WING: 2"-1", span 46 7/16" (shown below)	\$8.00

BEAUTIFUL ATTENTION GETTING AIRCRAFT FROM THE GOLDEN ERA OF AVIATION!!

MONOCOUE 110 CLIP WING
2"-1" model shown



VERN CLEMENTS' CLASSICS
P.O. BOX 608
CALDWELL, IDAHO 83605

All Postpaid

controlled models in the future."

(Now you know why this issue is late . . . Jean and I sit around talking about model airplanes all the time! wcn).

LSF TOURNAMENT

The LSF 1973 R/C Soaring Tournament will take place on August 25 and 26 at Oxnard Air Force Base, California. Tasks will be Precision Time and One-Mile Goal Distance.

LSF President LeGray announces that a new system will be introduced. It is called the Open Task Flight Program. Basically, this means that you will be permitted to decide what task you will attempt any time within the first minute of any of your flights. It adds an interesting gamble to the sport. You can opt for the Short Precision task if the lift is poor, or go for distance if it looks good. Of course, once you've done one task, you HAVE to take another one on subsequent flights.

Reregistration will be required on limited frequency availability, with priority to advanced level LSF members. Applications should be in the mail shortly to all members and aspirants.

Tournament will be hosted by the 17 Western Soaring Council Clubs and sponsors are industry leaders involved and/or committed to soaring. (Us too!)

ELECTRIC POWERED RPV

Bob and Roland Boucher, owners of Astro Flight, have sent us 3-view drawings and photos of their twin 1/4 HP Astro 25 powered flying wing RPV aircraft which has exceeded its original design goals. Designed and built for Northrop Corp., the ship was catapulted into the air on the morning of May 1, 1973, and remained aloft for more than an hour, covering a total distance of over 50 miles. The electric motors turned 8-8 Top Flight props and could only be heard when directly overhead. These same motors, with nickle-cadmium power packs, are available to modelers through the company's hobby business.

NEW WORLD RECORD

Mark Smith, while on location in Hawaii, where scenes for the coming movie on Jonathan Livingston Seagull were being shot, took the opportunity to use a great, slope soaring site and on June 23, established (now being applied for) a new closed course R/C glider distance record of 284.4 miles. Using a standard (except for all sheeted wing) Windfree, Mark flew for 13 hours and 11 minutes to set the record.

A stock Orbit Compact radio system was used for the flight, though a 'C' size pack was carried in the model and

an external power supply was plugged into the transmitter. The flight was concluded as a result of both pilot officials and flagwaver fatigue!

SOME MORE ON SPORT SCALE

There is one particular point that we overlooked in last month's editorial on Sport Scale. Specific dissatisfaction has been expressed by modelers who had to compete with AMA scale caliber aircraft which have been entered in Sport Scale. An extreme case in point was the Southwestern R/C Championships in Phoenix, Arizona, January 1973, where known "close up" scale winners were pitted against models which could only be considered as "standoff" types.

In our opinion, the fault was not, for instance, with Maxey Hester, who entered and won with his World Championship Zlin, but rather with the rules which allowed the close-up scale and scale operations to count so much in his winning score. To try to draw the line between what models should be allowed to enter Sport Scale and what models should be in Close-Up Scale is to effectively pre-judge the model! Had the rules provided a proper relationship between static and flying points, there would not have been any dissatisfaction.

Now obviously, you can't write a set

of rules that prevents the best man from winning! But, the rules can be such that the also-rans will be satisfied that the best man DESERVED his win. Let's doodle with some examples, using our proposed scoring as published in last month's Workbench: Ten points max for each of 10 flying maneuvers. (No scale operations! This is supposed to be a scale event with the emphasis on flying). Plus 10 points max for overall scale flight characteristics, and, 10 points max each for Accuracy of Outline, Craftsmanship and Finish, Color and Markings, and Original Design (non-kit model) . . . a total of 110 max flying points and 40 max static points.

Modeler A shows up with an AMA Scale caliber original design, Boeing F4B-4. Even from 30 feet away you can see corrugated tail surfaces, exhaust stains, scale engine, etc., etc. Static score 38 out of 40 max . . . Being more of a modeler than a flier, A manages to get the Boeing down in one piece with a flight point total of 50, averaging between 4 and 5 points per maneuver. Total score 88.

Modeler B enters a Sig Yak on which he has taken some extra care in building, finish, and paint job . . . and he's a pretty good club flier. Static points average 7, for a total of 21 (not original right?) And his flight maneuvers are pretty sharp, averaging 6½. Total score 92.5.

Contestant C has been in the top 20 at the NATS Pattern event but also enjoys flying scale airplanes. His much-used Top Flite P-51 shows signs of its many flights, even at Stand-Off judging distance, so his static points only total 16. The ten flight maneuvers are clicked off with a precision that has everyone stopping to watch. The judges are sharp, however, some of those maneuvers were OK for a pattern ship, but a real Mustang would probably have dismantled itself trying to do that Figure M! He got 80 points for the maneuvers, but only 4 for scale like flight. Still, the

CLASSIFIED ADS

Non-commercial: Rate is 25 cents per word with a minimum of \$3.00 worth.
Commercial: Rate is 40 cents per word with a minimum of \$5.00 worth. No mail-order discount house ads knowingly accepted.
 All ads are payable in advance and may be for any consecutive insertion period specified. Name and address free. Send ad and payment to: The MODEL BUILDER, Classified Ads, 1900 E. Edinger Ave., Santa Ana, California 92705

RS THREE CHANNEL, closed gimbal, two mini-servos, factory checked. 75.640 MHz. Cost \$219.95, take \$150.00. I can't fly single stick; can you? D. Thornburg, 917 Princeton SE, Albuquerque, NM. 87106

"TOW/CHUTE" Designed for R/C Gliders. Controlled Fall . . . Strong and Ultralight . . . Stays closed during tow. \$8.00 postpaid. J. L. White, 19372 Worchester Lane, Huntington Beach, California 92646

Three Old Timers for CO₂: Mini-Ruler, Mini-Sunduster, and Buzzer'd Bombshell. Micro-X stripwood, Peck-Polymers printwood, and spoked wheels by FH Wheels; \$7.75 each, postpaid. Buzzer Model Airplane Co., 52 Newbury Rd., Lakewood, N. J. 08701

PLANS - Beautiful **offset printed** plans. All parts, all views shown. This month featuring the Fairchild 22 and Bluebird Racer by G. Wanner Co. Also WW-I Friedrichshafen Bomber. Many others from kits & magazines of the '30s. Send \$1.00 for sample plan and catalog. J.W. Fitzgibbon, P.O. Box 13, Braintree, Mass. 02184

RARE HUGHES SEAPLANE, 3 - 8" x 10" Photo views & list of hundreds . . . \$3.00 Honeywell Photo, 17235 Tennyson, Granada Hills, California 91344

EIGHTEEN PEANUT SCALE PLANS \$13.95 Send self addressed stamped envelope for list. MODERNISTIC MODELS, Box 6932, Burbank, California 91510

total is 100.

Contestant D set out to win the event. He's a fair flier, but also a great builder and designer. Not only that, he knows there isn't a flight judge in the world that can't be psyched . . . even just a little bit. His original design, Grumman F-3F "Gulf Hawk" is extra large, but light, in order that it will fly close to scale speed. The retract gear, even though not worth any specific points, will do the "Psyche Bit" by operating when it is supposed to . . . during takeoff and landing. And finally, the bright orange paint job, with white pin-striped blue trim is the finishing touch to a thoroughly mind boggling accomplishment.

Starting out with a static score of 32 (not quite as sharp as the F4B-4), D accomplished his psyche job combined with a nice takeoff and landing for 9 points each, struggled through loops, rolls, spins, Cuban 8, Stall Turn, Immelman, plus a raunchy Four Point Roll and a fairly decent Traffic Pattern for a score of 70. Total of 102 points . . . and the winner!

Flyers such as Maxey Hester or Walt Moucha could probably win in this fictional contest . . . But why not? Their

ships wouldn't gain any more static points than modelers A and D, but being better flyers, they could put together some bigger totals. On the other hand, if flyer C had D's Gulf Hawk???

We've taken a lot of space to make a point. In summary; (1) we must keep the R/C Sport Scale rules relatively uncomplicated, (2) the rules should not pre-judge any model's eligibility to enter (provided, of course, that it is a scale model), (3) and the objective must not be forgotten . . . "To promote the use of scale models in R/C flying competition."

Index to Advertisers	
Ace Radio Control, Inc	59
Vern Clements' Classics	62
Cloudbuster Venture	58
Dodgson Designs	49
Dumas Products, Inc.	53
Fiberite Co.	59
Franny's Chrome	61
Gee Bee Line	60
Carl Goldberg Models, Inc.	2nd Cover
W. C. Hannan	50
HRE Inc.	61
K & B Mfg.	48
Kirn-Kraft	52
Ron Kopp	59
Kraft Systems, Inc.	1
Marlow Engineering	58
Model Builder Products	54
M & S Ltd.	50
Walt Mooney (Peanuts)	60
Model Rectifier Corp. (MRC)	4th Cover
Sid Morgan (Vintage Plans)	62
REMCO Mfg. Co.	51
Royal Products Corp.	3rd Cover
RS Systems	45
Satellite City	62
Sig Mfg. Co.	1
Sterling Models, Inc.	46, 47
Su-Pr-Line	51
Tatone Products	62
Victor Model Products	58
Vortex Model Engineering	56
Williams Brothers	55
Windspiel Models	57
Earl Wolsleger	59

MOVING? SEND NOTIFICATION FIRST!

OLD ADDRESS (Please Print)	NAME _____			
	ADDRESS _____			
	CITY _____ STATE _____ ZIP _____			
NEW ADDRESS (Please Print)	NAME _____			
	ADDRESS _____			
	CITY _____ STATE _____ ZIP _____			

Change of address notices must be received one month before date of issue that new address takes effect. Send old address with new; old label preferred. Post Office will not forward copies unless you pay extra postage. Duplicate issues cannot be sent.

The MODEL BUILDER, 1900 E. Edinger Ave., Santa Ana, Ca 92705

FULL-SIZE PLANS
(with instructions)
SERVICE

No. 8731 FOKKER D-VI \$4.00
WW-I biplane fighter at 2"=1' scale for R/C and .40 engines. By Philip C. Foster.

No. 873-OT 1931 RUBBER MODEL \$2.25
Record setting 1931 fuselage rubber job. Span 38". New plans by Phil Bernhardt.

No. 7731 L.I.A.H.O. \$2.50
Trike geared pusher R/C sport plane for Cox .049. Different! By Bob Janiger.

No. 7732 SQUARE CAT \$2.50
Easy building profile carrier C/L for .36 engines. No gimmicks. By John James.

No. 773-OT LANZO 8' GAS MODEL \$4.50
Chet Lanzo's famous "Record Breaker." Two large plan sheets. By Phil Bernhardt.

No. 6731 WACO YKS-6 \$3.50
Winner of 1972 Nationals F/F Scale Gas event. Span 33-1/4". By Bill Warner.

No. 6732 DRAGGIN' FLY \$3.50
Lightweight R/C glider for thermal soaring. Wingspan 7 feet. By Duane Hyer.

No. 673-OT ALBATROSS \$3.75
Class C gas ship designed by George Reich. Redrawn by Phil Bernhardt.

No. 6733 HUNTINGTON H-12 \$1.50
Rubber scale model of first US home-built. Span 19". By Walt Mooney.

No. 5731 BANTEE \$3.00
A .19 powered mini-pattern ship for 2 or 3 channels. Span 48". By John Chapis.

No. 5732 WOODWIND \$2.50
A/2 glider with sturdy, warp-proof, all-sheet wing. Span 78". By John Krouse.

No. 5733 TEA KETTLE \$1.50
Twin-boom pusher for the Brown CO2 engine. Span 15". By Daniel Walton.

No. 573-OT-1 AERBO .020 \$2.00
Replica of 1941 Class A Nats winner. Span 30". Redesign by Phil Bernhardt.

No. 4731 BRIEGLER BG-12 \$3.00
Easily built 100" scale sailplane for slope or thermal soaring. By Chris Christen.

No. 4732 ESPIRITU DE SAN LUIS \$1.75
Single or 2-channel semi-scale using Sig 45" foam wing. By Dave Thornburg.

No. 4733 PEA POD \$3.25
A 36" long R/C sailboat easily made of 1/8" Luan mahogany. Clever sail control. Full size patterns. By Tom Protheroe.

No. 3731 CORSAIR "F4U/C" \$2.50
Profile scale C/L stunter for .40 engines. Jig-built wing. By Jack Sheeks.

No. 3732 SATAN MK III \$3.50
High performance, 520 sq. in. Class A free flight. By Bob Beecroft.

No. 1731 SPROUSE GOOSE \$4.00
EAA type R/C sport biplane, mostly spruce, for 60 engines. By Bill Northrop

No. 1732 SPECTRAL \$2.25
Single channel R/C soarer, 57" span, weighs 8 oz. Easily built. Andy McAfee

No. 12721 DON QUIXOTE \$3.00
An 85" span R/C glider of classic lines. Easy to build. By Dave Thornburg

No. 12722 TOAD \$3.00
One-design pylon racer for 40 engines. Also for sport flying. By R/C Bees

No. 12723 FORTY-NINER \$1.50
Great little all sheet balsa F/F sport rubber model. Span 24" By Dave Thornburg

No. 11721 TORKY \$1.50
Half-A Profile Proto U-Control speed model. Great for Juniors. By Dale Kirn

No. 11722 SEAGULL \$4.50
R/C flying boat-amphibian for 29 to 45 engines. Span 27" By Neil Whitman

No. 11723 SKYRAIDER AD-4B \$1.50
Rubber powered, 27-1/2 inch free-flight scale. Great flyer. By Walt Mooney

No. 10721 STEPHENS AKRO \$4.00
R/C Standoff scale of popular aerobatic ship, for .35-40 eng. By Brad Shepherd

No. 10722 MINI - FAI \$2.00
High performing .010 powered miniature F/F. Only 24" span. Loren Williams

No. 9721 COLEEN-12 \$3.00
Graceful 8 ft. V-tail soarer has slope or thermal wing plans. By Randy Warner

No. 9722 BABY BOOMER \$1.50
Twin-boom sport free flight pusher for .020 power. By Art Reiners

No. 9723 LITTLE TOOT \$3.50
Semi-scale R/C biplane for 40 engines. Great performer! By Denny Elder

No. 8721 BONZO, R/C \$3.25
Semi-scale model of Whitman racer, for Form II, FAI, Open. By Fred Steffen

No. 8722 COUNTERFEIT, A/1 \$3.00
High performance competition A/1 Nordic flying wing glider. By Bob Provart

No. 8723 TAYLORCRAFT, F/F \$1.50
Rubber powered, 24-inch scale seaplane. An excellent flyer. By Walt Mooney

No. 8724 SHOESTRING, R/C \$3.00
Easily built Quarter Midget racer, fits 10% thickness rule. By Brad Shepherd

No. 7721 FAIRCHILD 51
One inch scale Classic for R/C, also F/F gas or rubber. By Hurst Bowers

No. 7722 SAM - 5 \$2.50
Top-notch competition Nordic A/2. Full wing plan. A winner. By Ron Evans

No. 7723 COMANCHE "C" \$3.25
Quick and easy to build, 58" span stand-off scale, 40 power. By Jim Sunday

No. 7724 TRAVELAIR '2000' \$4.00
Two inch full scale Classic R/C biplane. Proven flier, 60 power. By Bill Northrop

No. 6721 WAKEFIELD \$2.50
Highest placing U.S. entry in 1971 World Championships. By Bob White

No. 6722 MONGSTER \$3.50
Two inch scale quarter midget EAA type biplane pylon racer. By Ed Nobora

No. 6723 CALIFORNIA COASTER \$3.50
All sheet balsa R/C soarer featuring a 9 foot Jedelsky wing. By Mat Tennison

No. 5721 SEAHORSE II \$3.75
Excellent trainer, designed for land or sea, 19 to 35 power. By George Wilson

No. 5722 HUMMING BIRD \$3.00
Radio controlled F/F Scale early English lightplane. .049. By Walt Mooney

No. 5723 WHETSTONE \$1.75
Half-A Combat ship to sharpen your reflexes for contests. By Steve Fauble

No. 3721 YANKEE GULL \$3.75
Expandable R/C soaring glider with 8'-4" to 12'-0" wing span. By Le Gray

No. 3722 MISS COSMIC WIND \$2.75
Contest winning Quarter Midget racer. Fast, easy building. By Fred Reese

No. 3723 SIEBEL Si 201 \$1.50
All sheet balsa profile freeflight scale for .020 power. By Jack Headley

No. 2721 MINNOW \$2.50
Control-line Profile Goodyear racer, "Cosmic Wind." By John Penhallow

No. 2722 FOKKER E-III \$3.75
WWI R/C scale for 60 engines. Rudder, elevator, and throttle. By Berni Huber

No. 2723 E-Z BOY \$2.75
Half-A competition free-flight for '72 rules and all modelers. By Al Vela

No. 1721 SHOCER \$3.50
Hot Class A/B Free Flight contender for 1972 Rules. By Mel Schmidt

No. 1722 PUSS MOTH \$3.00
Chet Lanzo's famous rubber F/F scale Puss Moth returns! By Hal Cover

No. 1723 WHITE TRASH \$3.00
A proven, trophy winning R/C sailplane with 7 and 10 ft. span. By Rick Walters

No. 12711 CURTISS-WRIGHT JR. \$3.50
Two inch scale model of famous pusher light plane. R/C By Ralph Fidance

No. 12712 TWIN TRAINER \$3.00
Sport R/C model for two 30 to .50 engines. By Bill Northrop

No. 11711 NANCY \$2.75
Scale-like, 96" span R/C glider featuring easy construction. By Jack Elam

No. 11712 BI-PRENTICE \$2.75
Training type R/C biplane for fun flying. Uses .29-.50 engines. By Bill Northrop

No. 9711 BEANPATCH \$3.50
An EAA scale-like model for sport R/C 45 power. By Bob Upton

No. 9712 FAIRCHILD 22 \$2.25
Scale old-timer for single channel radio or freeflight .020 power. By Tom Laurie

.....
Price includes Third Class postage and reprint of building instructions. Add 35 cents PER PLAN for First Class postage. Add 50 cents for orders outside of USA. CALIFORNIA RESIDENTS ADD 5% TAX.

**SEND TO: THE MODEL BUILDER
PLANS SERVICE
12552 DEL REY DR.
SANTA ANA, CALIFORNIA
92705**



MRC Enya .29 & .35

MODEL RECTIFIER CORPORATION
2500 WOODBRIDGE AVENUE
EDISON, NEW JERSEY 08817



10% Higher Means a lot

Both the MRC-Enya .29 and .35 now boast a 10% increase in power.

And, that's usable power that will give you that little edge in performance that can make the difference. The .35 can now handle most models designed for .40's . . . the .29 will provide that little extra zing.

This is built-in power, too. Intake porting has been redesigned in both engines to provide better "breathing" and increased idle reliability without sacrificing Enya's renowned easy starting and handling characteristics. Throttles and venturi inserts have

also been redesigned for easier maintenance and replacement.

If you're looking for a .29 or a .35 with more power than the usual, look at the *new* Enyas. We've no doubt that you'll be impressed.

And you should be impressed, too, when you realize that for years now Enya engines have been considered the world's most advanced and this country's most in-demand engines. And still, MRC-Enya strives to make the best better. That is the mark of a champion. The mark of craftsmen who know and care about

When it's POWER!

their product and the state of their art. These are the craftsmen who have indeed given more, power to the people. 10% more power with the new Enyas. Look for them at your hobby dealers.