The Model Builder

JUNE 1972

65 cents

volume 2, number 8

CARL GOLDBERG

MODELS THAT ARE REALLY GREAT TO FLY!

SKYLANE 62

Semi-Scale Beauty in a Great Flying Model!

Tough, Roomy Cabin and Front End, For 2 to 4 Channel Proportional. Steerable Nose Gear. Span 62". Weight 4½ - 5 lbs. . . . For .35 to .45 Engines. **$36.95**

FEATURES:
- See-through cabin, with die-cut plywood cabin sides
- Shaped leading edges plus sheeting
- Cleanly die-cut parts that fit
- Clark Y wing section, hardwood struts
- Steerable nose gear, formed main gear

½A SKYLANE

For Single or 2 Channel, Pulse or Digital. Span 42". Weight 22 oz. For .049 to .10 Engines. - **$9.95**

Falcon 56 shown

SKYLARK 56 $22.95

1-Piece Full-Length Sides

Now With 1-Piece Full-Length Sides. Takes 2 to 4 Channel Proportional. Span 56". Weight 3½-4½ lbs. For .15-.19-.35 Engines.

FEATURES:
- Semi-symmetrical wing section
- Coil-sprung nose gear . . . formed main gear
- Shaped and notched leading and trailing edges
- Cleanly die-cut ribs, fuse sides, formers, etc.
- New simple "Symmet-TRU" wing construction

JR. SKYLARK

For Single or 2 Channel, Pulse or Digital. Span 37". Weight 18 oz. For .049 Engines. - **$8.95**

Shoestring $29.95

The Goodyear Racer With Enough Area and Stability So **You** Can Fly It! For 4 Channel Proportional. Span 54"; Area 540 sq. in.; Weight 4½-5 lbs. For .19-.40 Engines.

FEATURES:
- Shaped leading edges plus sheeting
- Symmet-TRU wing construction
- Full-length sides, sheeted trailing edges
- Cleanly die-cut ribs, formers, etc.
- Formed spring aluminum landing gear
- Semi-symmetrical wing section.

RANGER 42 - $19.95

The Versatile Almost-Ready-To-Fly Fun Model. Takes Single to 4 Channel Proportional. Also Free Flight. Span 42"; Weight 26 oz. For .049-.10 Engines.

THE FLYING FALCONS

More Falcons have been built and flown in the past 10 years than any other R/C. For values and features in a functional, rugged airplane, your best bet is a Falcon. Every design element engineered for simplicity and fast-building.

FEATURES:
- All Deluxe, with top quality fittings
- Coil-sprung nose gear . . . formed main gear
- Shaped and notched leading and trailing edges
- Cleanly die-cut ribs, fuse sides, formers, etc.
- New simple "Symmet-TRU" wing construction

FALCON 56 $19.95

The Medium-Size Trainer. Takes Single to 4 Channel Proportional. Rudder-Only or Multi-Training. Span 56". For .15-.19-.35 Engines.

SR. FALCON $36.95

The Standard Big Trainer. For 4 Channel Proportional. Span 69". For .35 to .60 Engines.

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The Small Trainer. For Single or 2 Channel, Pulse or Digital. Span 37". For .049 Engines.

All Carl Goldberg Models Come With Full Size Plans, Illustrated step by step, and Folder on How to Set Up and Operate R/C Models.

LOOK WHAT A MODELER SAYS!

"Having just built and flown my Sr. Falcon, I want to thank you. This kit is my first multi-radio model. I am most proud of it. I had an experienced man lift that Falcon off the runway. After trimming the model, he helped me fly it. It was the most thrilling moment of twenty-five years of modeling for me. Those first flights of my Falcon were beautiful. I have a long way to go to be an accomplished flyer. But with the help of your kit I am off to a good start. It's one fine airplane. Thank you again."

Dr. Cecil L. Willey
Wilmington, Calif.

AVAILABLE IN CANADA

P.S. For best service, see your dealer for items you want. If not available, write direct; add 35¢ per item (75¢ outside U.S.). Minimum order $1.

CARL GOLDBERG MODELS INC.
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Carl Goldberg Models Inc.
2547 W. Cermak Rd., Chicago, Ill. 60608

I am sending 20¢ for 8 pg. Illustrated Catalog with "Recommendations in Starting in R/C," Basic Explanation of R/C Equipment and Radio Control Definitions.

Name _____

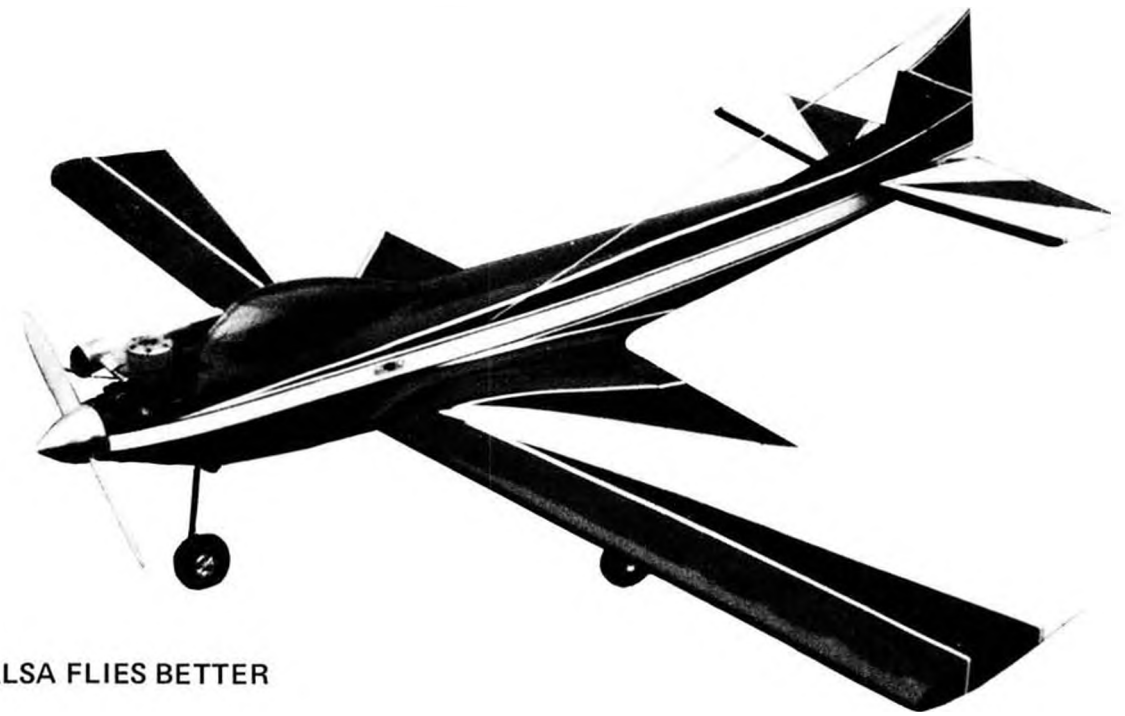
Address _____

City _____

State _____ Zip _____

El Camino

Designed by
ED. BARANOWSKI



BALSA FLIES BETTER

The EL CAMINO is capable of all A.M.A. and F.A.I. maneuvers. It features a tapered progressive airfoil wing with full span strip ailerons. The kit is of highest quality, all parts are accurately machined, no die cutting is used. An outstanding feature is the indexed construction which makes it easy, fast and accurate to assemble. Kit includes hardware.

SPECIFICATIONS

- Wing Span 58"
- Wing Area 625 Sq. In.
- 61 Engines
- Flying Weight 6 lbs.

KIT $49.95
WING KIT $19.95

DEALER & DISTRIBUTOR
INQUIRIES INVITED

Kitted by
J & C ENTERPRISES
1110-D Claudina Place
Anaheim, California 92805
(714) 533 - 3341

The MODEL BUILDER

JUNE 1972

volume 2, number 8

Subscriptions $6.50 per year, $11.50 two years. Single copies 65 cents. Add $1.50 for postage per year outside of U.S. and Canada (Except APO)

Published Monthly by The MODEL BUILDER Magazine, 12552 Del Rey Dr., Santa Ana, Calif. 92705 Phone (714) 544-1321

Second Class postage paid at Santa Ana, Ca.

CONTENTS

FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: Jim Kelly, age 13, launches his "Sundance" at the 1972 SCAT annual or Juniors only. He won the 1/2A event with this 45 inch span, 330 sq. in. area, TD .049 powered product of 4-K Models (Four Kellys, that is!!). Photo by George Bahrman

U S NAVY PHOTO

Chicago AMA Nationals, 1966. Gipsy Moth placed 4th in R/C Scale. Someday we'll rebuild fuselage that was destroyed in the move to California. Wings and tail are still intact.

from Bill Northrop's workbench . . .

1973?

● Who doesn't know by now that the AMA Nationals are back on for 1972, with Navy sponsorship for the last of 25 consecutive years, at Glenview Naval Air Station, July 24 through 30 . . . except possibly George Wallace and James Hoffa who are both quite busy with other things?

Just one comment regarding NEXT year, and *please* overlook the fact that we're now a California taxpayer.

Indications are that next year's site may be determined chiefly on the basis of bids submitted by various clubs and organizations around the country.

We think the selection of a site *area* should not be left up to chance.

The last California AMA Nationals was 1967. By this time, many Junior contestants in 1967 are now OPEN, never having had the opportunity to compete as a Senior.

Checking the results from previous Nats you will find that better than 80 percent of the contestants came from within a one day's drive of the contest site. The rotation plan of the past was great. Everyone could get a shot at The Big One at least once or twice every two years. With the Navy economy freeze on the traveling road show stopped in Chicago two years ago, following Willow Grove, Penna., in 1969, and Olathe, Kansas in 1968.

The fact that Oshkosh and Huntsville are even *considered* prior to 1974 or 1975, much less an all-comers bidding competition, is quite a blow to the many Nats starved AMA members of the Southwestern United States.

In our opinion, it would be better to point at Southern California and say "You're IT for 1973" and let us get ON with it . . . knowing for sure that the hard work of planning is for real, not just to throw in a grab bag to see who comes out the "winner."

* * *

BY THE WAY

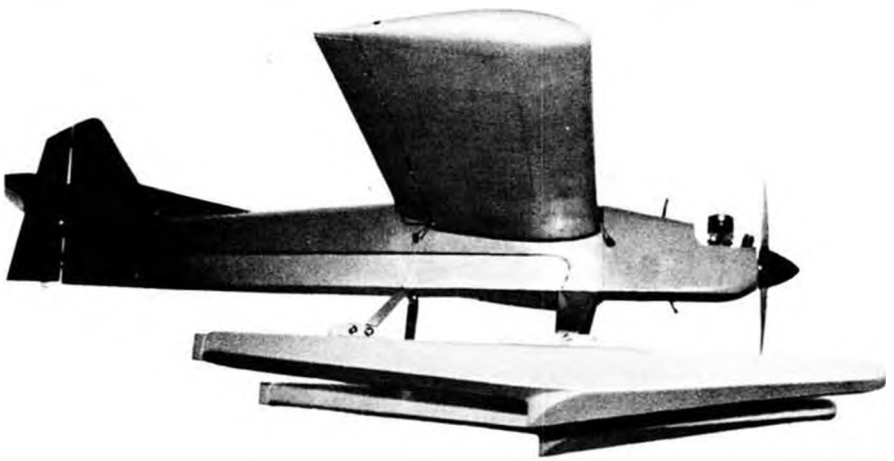
Couldn't help noticing the following comment in Dave Linstrum's VTO column in the May issue of M.A.N. (couldn't miss it with so many people calling our attention to it):

"Who says Northrop's 'The MODEL BUILDER' is the only place to read about West Coast activity? VTO always covers this newsbeat."

Well, Dave, maybe my rag isn't the only place to read about West Coast activity, but it may *still* be the only place to read *accurate* news about West Coast activity. To wit: Sepulveda Basin is NOT closed to Free Flight. See the cover and Mel Schmidt's Free Flight column in this issue.

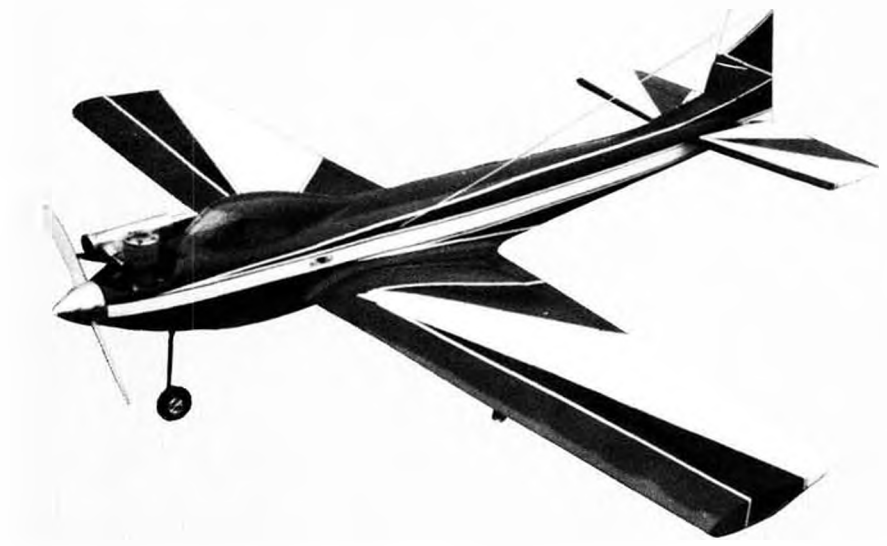
Who's your spy, Dave? Fire him!

While we're on the subject of Free

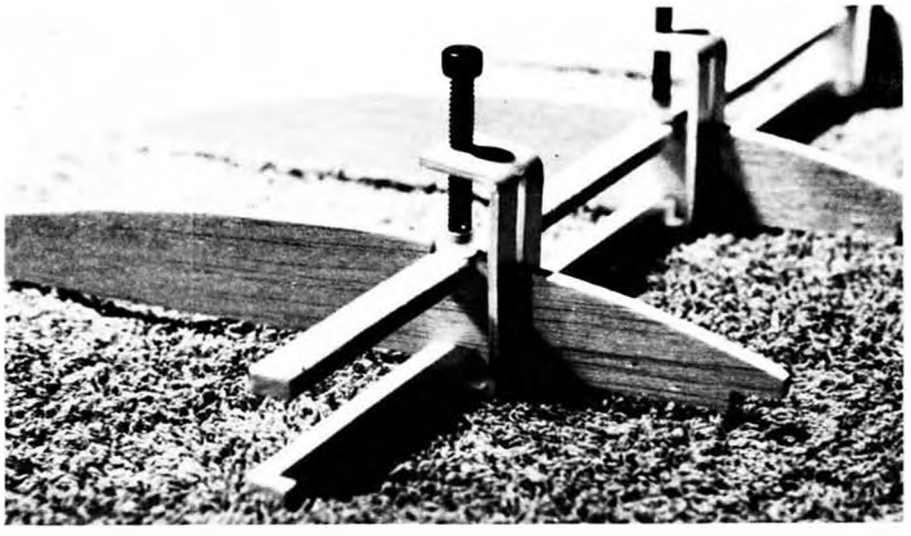


New Mark IV floats by Gee Bee are blow molded plastic, 33 inches long, $19.95. Smaller sizes to come later. Ship is 5-1/2 lb. original by Don Foster. Span is 56, area 560, power is ST 40.

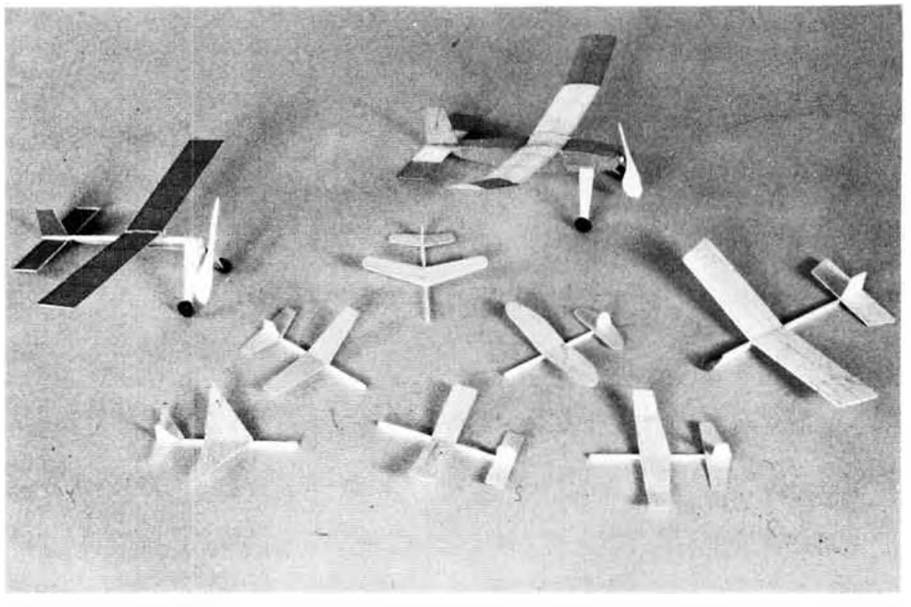
Another shot of Gee Bee floats in action. Ship is a Goldberg Skylane 62. No grass to cut!!



The EL CAMINO by J & C Enterprises is an all machine cut balsa kit from California. Construction feature is indexing notches in spars and T.E. Wing has double tapered progressive airfoil.



Interesting little model clamp by Rose Industries. Slotted design allows it to be slipped over ribs for clamping spars. This is main purpose, but they should come in handy for many glueing jobs.



Some of the instructional and sport free flight kits available from Marlow Engineering. Company also carries a line of rubber model accessories, including 9 and 16 to 1 winders.

Flight, we'd like to explain the facts of life to a few well meaning, but misinformed modelers who have written to us, complaining about the over abundance of R/C material in the other publications and hoping we're going to avoid this unfavorable tendency.

Take your blinders off, guys! Sit down with a piece of paper and a recent copy of M.A.N., AAM, or FM and make a list of how many ads are strictly R/C, strictly F/F, strictly C/L, or general, (such as dope, Monokote, props, wood, etc). As you mark down each one, give it a 1, 2, 3, or 4 depending on whether the ad is approximately 1/4, 1/2, 2/3, or 1 page. When you're all finished, add up the score.

Now then, advertising is what pays the freight. Without advertising, the magazine cannot exist. Are you beginning to get the picture? How long do you think *any* of us could exist on Free Flight manufacturer's advertising? For that matter, throw in C/L.

Whether some free-flighters like it or not, R/C manufacturers, dealers, and modelers make it possible for you to pick up nationally circulated model magazines and read columns and construction articles about the granddad of modeling. That word "free" has more meaning than you may realize.

THINGS TO DO

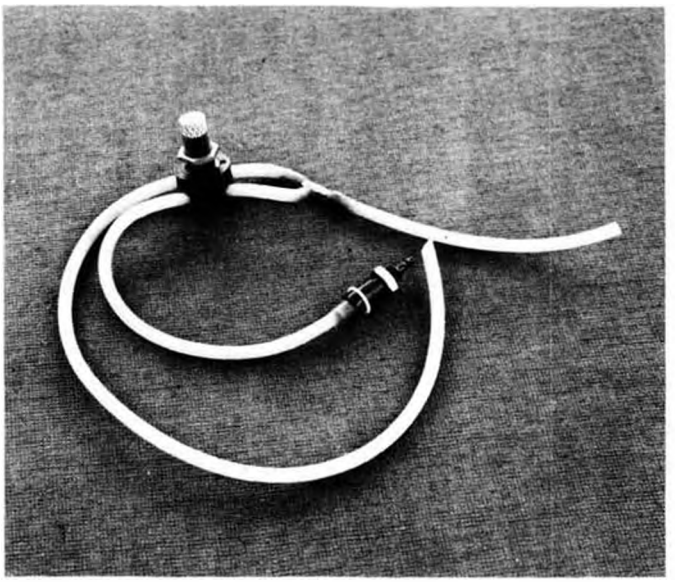
The tenth annual Wright Brothers Memorial Radio Control Championships takes place at Wright-Patterson AFB, June 17 and 18, 1972, Dayton, Ohio. Events include Class CE, CN, B Jr-Sr-Open, A Jr-Sr, A Open, Scale, Form I, FAI Pylon (Mufflers), and Sport Pylon (AMA rules). Contact Don Lowe, 3491 Clar-Von Dr., Dayton, Ohio 45430.

* * *

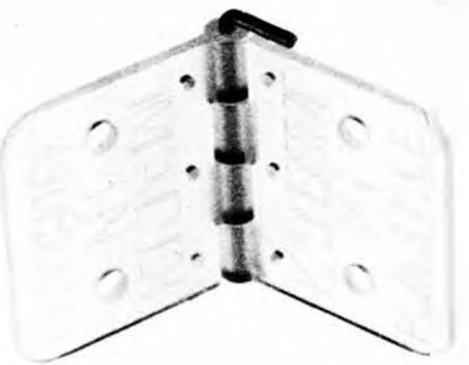
On your way home from the ice cream parlor next August 25-28, why not drop in on the Indoor Model World Championships and the Pylon Racing International Championships being held concurrently in Cranfield, Bedfordshire, England? They should both be jolly good affairs.

If your ice cream parlor doesn't happen to be near Cranfield, how about Mile Square, Fountain Valley, Ca. The league of Silent Flight, LSF, will be holding their 1972 Tournament on Aug. 26 and 27 at this location. Off-field headquarters will be the Sheraton Beach Inn, Huntington Beach, Ca., a ten minute drive from the field, right on the Pacific shore.

For further info, write LSF, P.O.Box 2606, Mission Station, Santa Clara, Ca., 95051 and include 16 cents in stamps.



Neat fuel plumbing installation is possible with this unit by Sonic Tool Co. Valve shuts off line to engine while you fill the tank.



New Roy Klett hinge being marketed by Carl Goldberg features very smooth, slop-free operation. Leaves are thin, pin is removable.

Speaking of soaring, the Third Annual R/C Soaring Nationals are still scheduled for July 23, 24, 25, at Miller Meadow, Chicago. This announcement came from C.D. Dan Pruss (Mr. Nyrod) Rt. 2, Plainfield, Ill., 60544, prior to the reinstatement of the Navy-Nats. The word has been "Go" all along. Maybe Dan had a premonition . . .

Actually, the Soaring Nationals has pretty much proved that it can stand alone as a major national soaring event, and the AMA Nationals being on or off would undoubtedly only have slight effect.

The Third Annual $1,500 Model Aeronautics Scholarship Contest, sponsored by the Boeing Management Association will be held June 24 and 25 at the Boeing Space Center, Kent, Wash. Contest is open to any boy or girl 18 or younger, and features as first prize a $1,500 scholarship award good in any accredited college of the winners choice in the U.S. or Canada.

Events scheduled are 18 free-flight control line and specialty categories, including two indoor events, rocket, R/C, and design craftsmanship.

Complete information can be obtained by writing to:

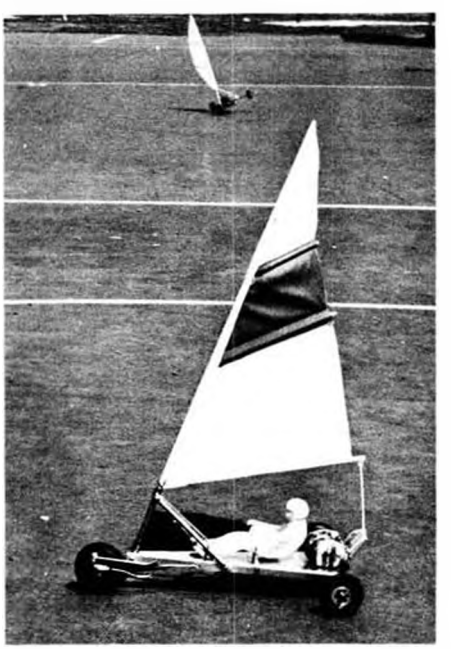
Boeing Management Association
P.O.Box 3707
Seattle, Washington 98124
Attn: Ted Johnston
Organization 4-1830
Mail Stop 79-44

OVER THE COUNTER

The first kit from J & C Enterprises (formerly J & E), 1110-D Claudina Place, Anaheim, Calif., 92805, is the EL CAMINO, a 60 powered pattern competition airplane, capable of performing all AMA and FAI maneuvers. The design is of conventional layout, but features a double tapered progressive airfoil wing with full span strip ailerons. Span is 58 inches, area 625 squares, weight 6 pounds.

Of special interest in this all balsa kit is the quality and accuracy of the machine cut parts. The full length fuselage sides, control surfaces, notched spars and trailing edges are all machine cut . . . no die cutting is used. Indexing of parts adds further to accuracy during

Bob White about to chomp off a piece of DT fuse for his Wakefield ship which is a construction feature this month (page 32). Note brackets fastened to tailgate for holding ship while winding.



Water ho! Isn't that what you say aboard a land sailer? See text for more details on this.

New heat gun for shrinking plastic films, fast drying dope, curing epoxy, etc. by Polytex. Three position switch, adjustable air supply.

Molded, marbleized, high-impact styrene plaques by Williams Bros. are handy for display of models, trophies, even WB engines!

construction. Hardware and small parts are bagged off separately. Kit retails for $49.95 . . . wing kit alone, $19.95. Dealer and distributor inquiries are invited.

* * *

It was bound to happen! Top Flite has had so many requests that it is now making a conversion kit for the popular P-51B Mustang to make it into a P-51D. The $6.95 kit includes all wood parts required for the conversion, including a new turtleback block, dorsal fin, and appropriate bubble canopy. Instructions are also included. Our May cover P-51D was built from a Top Flite kit by modeler Ted Wilbur prior to the release of the conversion.

While on the subject of Top Flite, its bosses, Mike Schlesinger and Sid Axelrod, discovered from talking with hundreds of modelers at the Toledo trade show that not many realized that the clear Super Monokote is paintable. The mixup probably comes from the general knowledge that the colored Monokotes are *not* paintable. However, pass the word, clear Monokote *can* be painted with most anything because of a special coating, though epoxy/urethane types provide the best bond. Matte finish may be obtained by spraying on a light coat of polyurethane clear satin varnish.

* * *

If you don't want to risk that highly detailed scale Williams Bros. Wright J-5 Whirlwind on the nose of a flying model, maybe you'd rather just display it on a plaque. Well, it just so happens that Williams Bros. is now producing the MODEL MOUNT, a two piece universal display unit selling for $1.95. Consisting of two injection-molded parts of marbleized high-impact styrene, the mounts may be used, assembled, as wall plaques, or book ends, or separately as display and trophy bases.

* * *

Sonic Tool Co., 9 Salem Drive, W. Whippany, N.J., 07981, offers the AIRBORNE clean fuel system. The unit consists of a selector valve, a combination fill fitting and filter, and connecting tubing.

In use, turning the selector valve to one extreme closes the line from tank to engine and opens the line from tank to fill/filter fitting. The other extreme position shuts off the fill-to-tank line and opens the line from tank to engine. In the central position, the tank is sealed off from filler *and* engine. The system permits a more or less permanent fuel line installation and guarantees clean fuel to the engine. Price is $3.95.

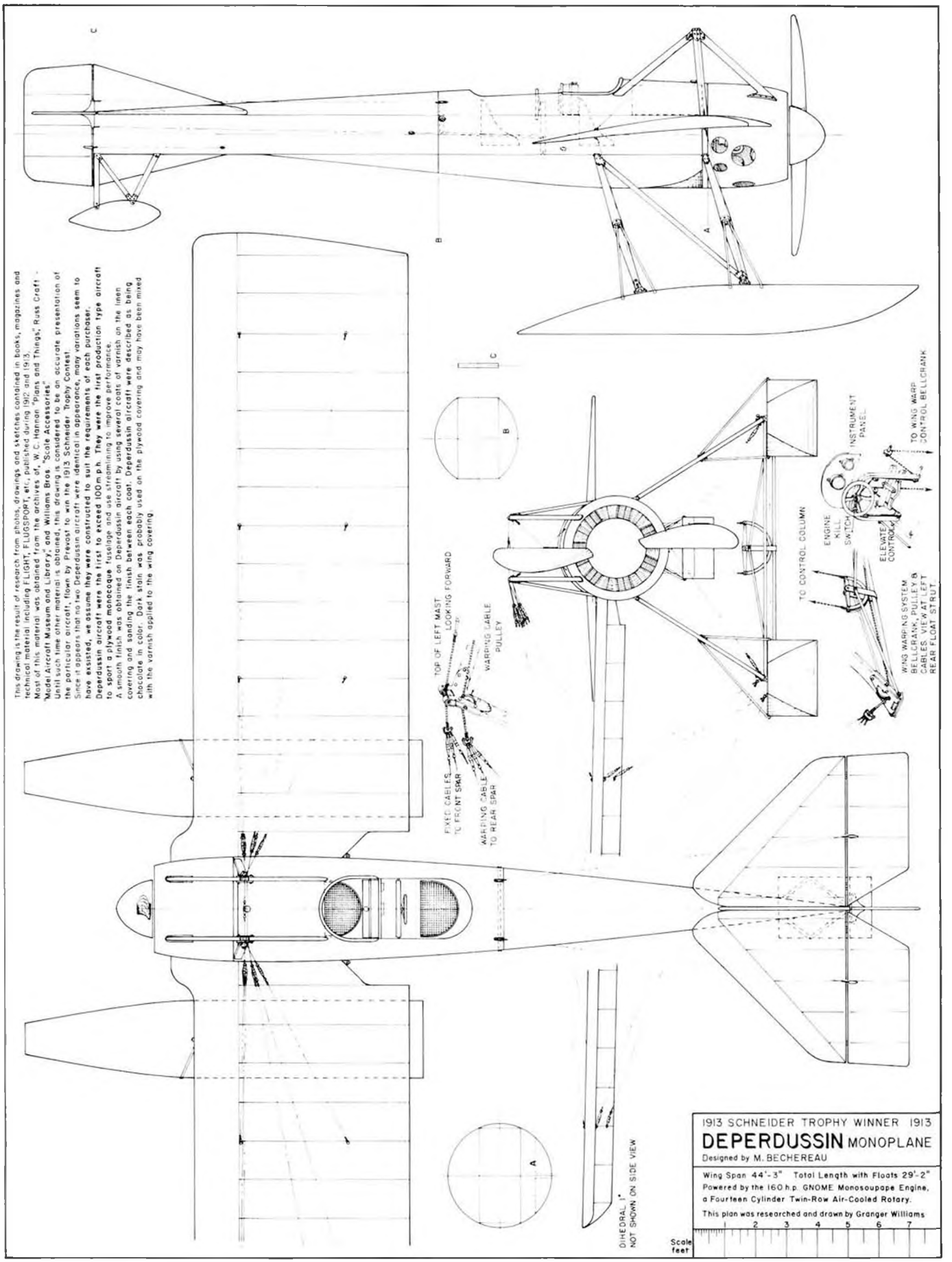
* * *

Fibre Foam Products, 6370 E. 22nd St., Tucson, Arizona, 85710, is packaging a polyester resin plastic filler for model use. Main features are flexibility and ease of sanding. It's an ideal all-purpose filler as well, excellent for repairs and building up of fillets. Best of all, it is ready for sanding and finishing only 10 or 15 minutes after application.

Continued on page 54

Cute little English Dart Pup built by John Preston from Aeromodeller plans. Galloping Ghost system, Cox Golden Bee, 43 inch span.

This 1-1/2 inch scale Aeronca Champ also built by John Preston. OS 15, Controlaire radio. Designed from Paul Matt 3-views.


This drawing is the result of research from photos, drawings and sketches contained in books, magazines and technical material including FLIGHT, FLUGSPORT, etc. published during 1912 and 1913.
Most of this material was obtained from the archives of W. C. Harrison "Plans and Things," Russ Craft - "Model Aircraft Museum and Library," and Williams Bros. "Scale Accessories".
Until such time other material is obtained, this drawing is considered to be an accurate presentation of the particular aircraft, flown by Prevost to win the 1913 Schneider Trophy Contest.
Since it appears that no two Deperdussin aircraft were identical in appearance, many variations seem to have existed, we assume they were constructed to suit the requirements of each purchaser.
Deperdussin aircraft were the first to exceed 100 m p h. They were the first production type aircraft to sport a plywood monocoque fuselage and use streamlining to improve performance.
A smooth finish was obtained on Deperdussin aircraft by using several coats of varnish on the linen covering and sanding the finish between each coat. Deperdussin aircraft were described as being chocolate in color. Dark stain was probably used on the plywood covering and may have been mixed with the varnish applied to the wing covering.
TOP OF LEFT MAST LOOKING FORWARD
WARPING CABLE PULLEY
FIXED CABLES TO FRONT SPAR
WARPING CABLE TO REAR SPAR
TO CONTROL COLUMN
ENGINE KILL SWITCH
INSTRUMENT PANEL
TO WING WARP CONTROL BELLCRANK
ELEVATOR CONTROL
WING WARPING SYSTEM BELLCRANK, PULLEY & CABLES VIEW AT LEFT REAR FLOAT STRUT
DIHEDRAL 1° NOT SHOWN ON SIDE VIEW
1913 SCHNEIDER TROPHY WINNER 1913
DEPERDUSSIN MONOPLANE
Designed by M. BECHEREAU
Wing Span 44'-3" Total Length with Floats 29'-2"
Powered by the 160 h.p. GNOME Monosoupape Engine, a Fourteen Cylinder Twin-Row Air-Cooled Rotary.
This plan was researched and drawn by Granger Williams
Scale feet
1 2 3 4 5 6 7

THAT LITTLE MONGSTER!

Even if you don't intend to fly it, you should build this little jewel for your best girl friend's charm bracelet. Model is of a winning full size biplane racer, and it has inherited all of the abilities of it's big brother. Designer is current Quarter Midget Champion. **By Ed Nobora**

● Did you ever get turned on by a wing spar? That may . . . *does* sound kind of silly, but that's what happened to this editor upon opening the plans that Ed Nobora sent us of his semi-scale quarter midget Mongster.

The first thing we noticed on the plan was a little 14 inch stick of 1/16 inch balsa jokingly labled "front spar, 4 req'd!" As we continued looking it was discovered that the joke was on us. Here was a little bracelet charm sized airplane . . . not for novelty, but a Gung-Ho, all-out racing biplane that could hold its own in the rapid Quarter Midget Pylon racing traffic.

If you'll permit a relative old-timer a moment of reflection: Upon looking at this diminutive little R/C bipe, we had to stop and think back on the tremendous progress R/C has made in just 18 years. Back in those superregen, gas tube, relay-switching days, the whole idea of a 28-1/2 inch R/C airplane would have been considered as unlikely as a Buck Rogers or Flash Gordon adventure (Remember though, the artists depicted gals wearing short shorts and boots. They were w ay ahead of the fashion designers).

So much for that. Let's get back to the present. The Mongster is a model of Californian Dallas Christian's biplane racer. The big (?) one has been a consistant winner and was National Champion in 1969.

For those who wish to fight the degeneration to P-51's, Ballerinas and Midget Mustangs, without having to sacrifice chances of winning a race, the Mongster is an excellent choice. Paradoxically, Ed Nobora kept his as a back-up plane during 1971, never racing it. When he finally put it up for a timed run, it was only tenths of a second slower than his championship P-51, (now kitted by J & J Industries), the ship he had been flying all season.

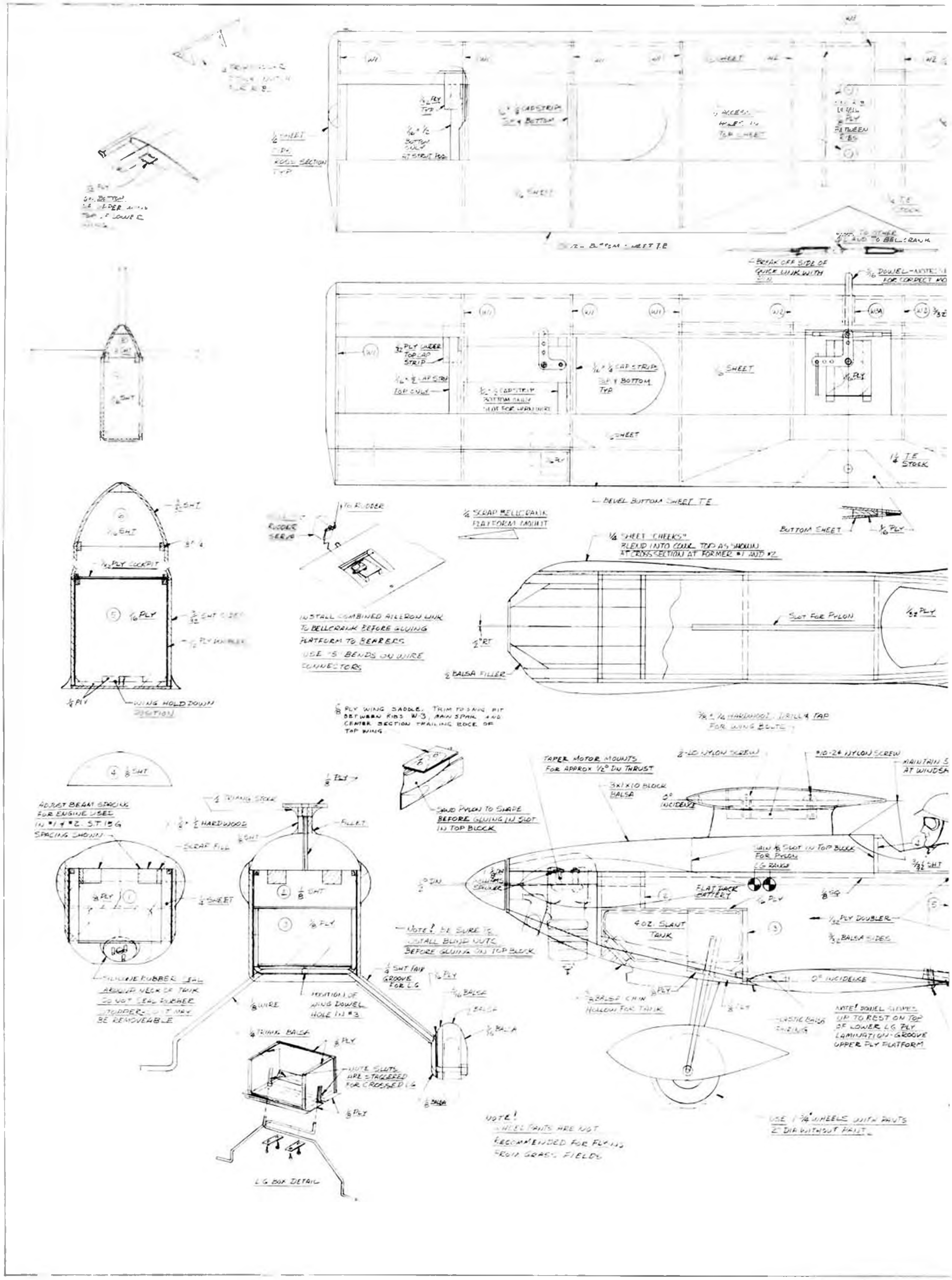
The wing thickness on the Mongster meets either of the two current rules requirements, being both 10% *and* 5/8 inch thick. Scale is 2 inches to the foot! Yes, the full size one will clear a 15 foot wide fence opening with 2-1/2 inches to spare at each tip!

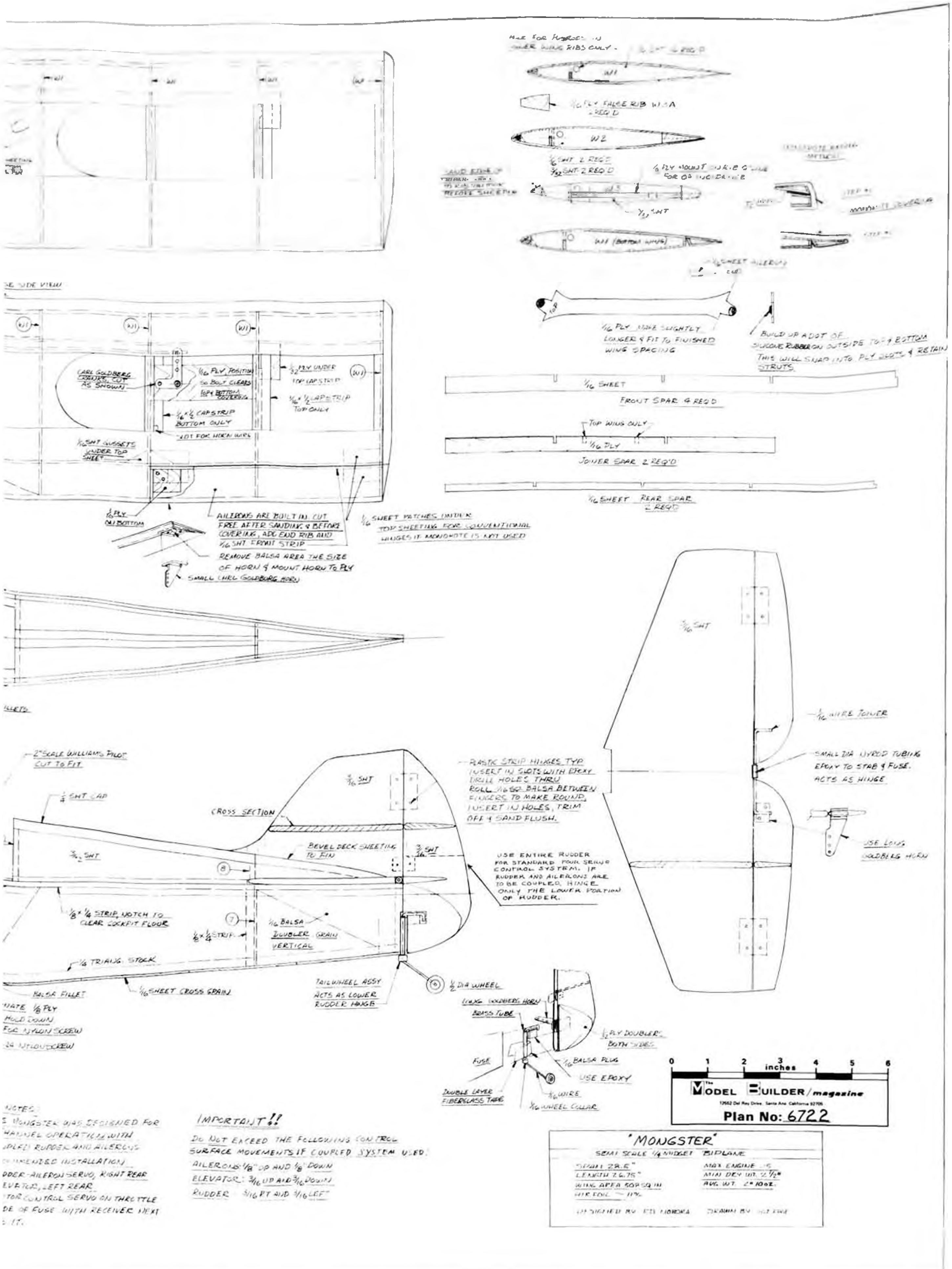
If you're all hopped up and ready to build, try it mentally first. That is, go through the construction step by step in your mind, making note of steps that take precedence over others so you won't build youself into a corner.

In selecting balsa, stick pretty much to medium soft or contest grade. Let the plywood take care of the stress areas. The minimum allowed weight is 2-1/2 pounds, so your target is one ounce over that!

Plan your tank location carefully. As

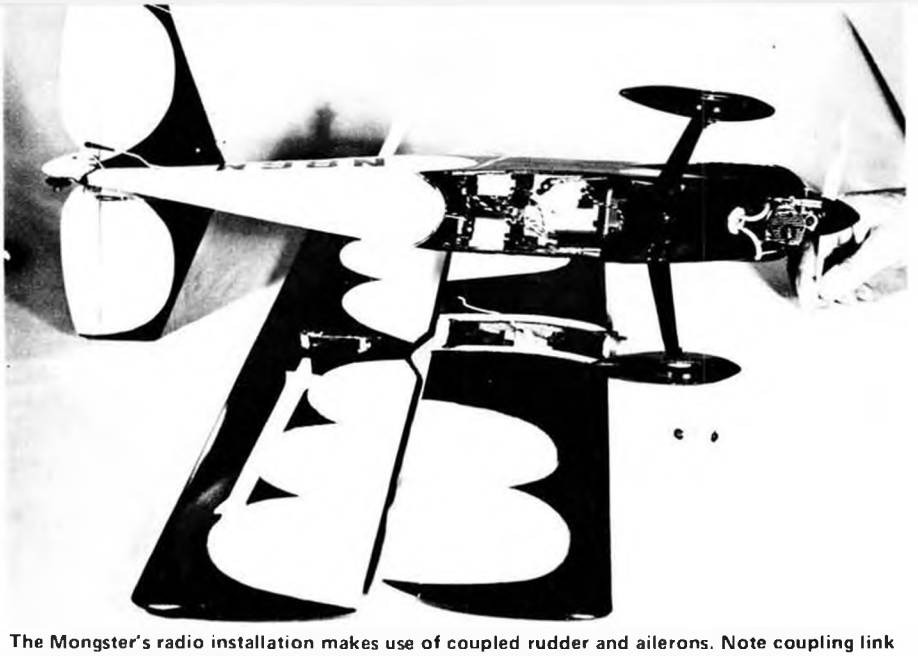
Whether you're interested in Quarter Midget racing or not, if you dig biplanes, this little jewel should grab you. No station wagon needed to go flying, the span is only 28-1/2 inches.


1/16 SHEET
1/16 PLY
3/32 PLY UPPER TOP CAP STRIP
1/16 x 1/8 CAP STRIP TOP & BOTTOM TYP
1/16 SHEET
1/4 T.E. STOCK
BEVEL BOTTOM SHEET T.E.
1/4 SCRAP BELLCRANK PLATFORM MOUNT
TO RUDDER
INSTALL COMBINED AILERON LINK TO BELLCRANK BEFORE GLUING PLATFORM TO BEARERS
USE "S" BENDS ON WIRE CONNECTORS
1/4 SHEET "CHEEKS" BLEND INTO COWL TOP AS SHOWN AT CROSS SECTION AT FORMER #1 AND #2
SLOT FOR PYLON
1/2 BALSA FILLER
BOTTOM SHEET
1/16 PLY
1/32 PLY COCKPIT
1/16 PLY
WING HOLD DOWN POSITION
1/8 PLY WING SADDLE. TRIM TO SNUG FIT BETWEEN RIBS W-3, MAIN SPAR AND CENTER SECTION TRAILING EDGE OF TOP WING.
SAND PYLON TO SHAPE BEFORE GLUING IN SLOT IN TOP BLOCK
TAPER MOTOR MOUNTS FOR APPROX 1/2° DN THRUST
3x1x10 BLOCK BALSA
#10-24 NYLON SCREW
ADJUST BEAM SPACING FOR ENGINE USED
1/4 SHEET
1/8 WIRE
SILICONE RUBBER SEAL AROUND NECK OF TANK
FLAT PACK BATTERY
4 OZ. SLANT TANK
1/32 PLY DOUBLER
3/32 BALSA SIDES
0° INCIDENCE
NOTE! BE SURE TO INSTALL BLIND NUTS BEFORE GLUING ON TOP BLOCK
1/4 TRIANG BALSA
NOTE SLOTS ARE STAGGERED FOR CROSSED L.G.
L.G. BOX DETAIL
NOTE! WHEEL PANTS ARE NOT RECOMMENDED FOR FLYING FROM GRASS FIELDS
USE 1-3/4" WHEELS WITH PANTS 2" DIA WITHOUT PANTS
NOTE! DOWEL SLOPES UP TO REST ON TOP OF LOWER L.G. PLY LAMINATION-GROOVE UPPER PLY PLATFORM



FULL SIZE PLANS AVAILABLE—SEE PAGE 56

The Mongster's designer, Ed Nobora, dressed for Ohio winter flying. Ed current QM champ.



The Mongster's radio installation makes use of coupled rudder and ailerons. Note coupling link attached to aileron bellcrank. Arrangement saves space and weight. Wing struts plug in.

shown on the plans, it's a little low for an engine that is not on pressure. The original uses a Fox .15 with the needle valve spray bar filed for more intake area and a pressure fitting in the center of the backplate. This combination has provided a dependable low idle . . . very important in meeting the rules requirements.

Somewhat reminiscent of the old Curtiss Schnieder Cup racing biplanes, the top wing of the Mongster sits on a central pylon rather than being supported by cabane struts. The outer struts are more for looks than anything else (on the model) and merely plug into slots. A dot of silicone rubber on each tab keeps them in place, yet they are removable.

The edges of the tail surfaces should not just be sanded round, but rather, dig up some more elbow grease and taper them to as streamline a shape as possible. Remember, a few minutes extra work here and there, may save you some winning seconds around the pylons!

Wings and tail on the original models were with Monokote. The fuselage was finished with silk and dope.

To save weight, mechanical coupling of rudder and aileron were employed in the Mongster, though with small servos, this is not necessary. If a separate rudder servo is used, hinge the whole rudder. If coupled rudder and aileron are used, only the bottom half of the rudder needs to be hinged. Do not exceed the recommended control surface movements.

In flight trimming, start with the zero surface settings and engine offsets shown on the plans. If the ship balloons under power but has a flat glide, add downthrust to the engine. If ballooning continues, shim up the trailing edge of the top wing at the rear nylon hold-down bolt.

When trimmed out properly, the Mongster is a solid airplane to fly, with no bad habits. Dead-stick glide is not exactly floating, but it is steady and the ship will mush in without falling off into a snap roll. Ground handling is excellent, with no tendency to ground loop on take off.

So . . . Double your wings and
Double your fun
Build a Mongster
And finish Number One!

Any questions? Write to Ed Nobora, 6265 Chase Drive, Mentor, Ohio 44060●

Mongster's name is yellow Monokote on red Monokote background. Pylon strut simplifies top wing mounting. Pilot is 2 inch scale Williams Bros., engine is Fox 15 modified, on pressure.

This shot shows how spray bar was filed down to enlarge air intake. Sullivan slant tank handy.

The FAA said keep 'em under 400 feet, but this is ridiculous!! QM's rounding No. 2 at Mile Square monthly races. More turn out each time....

PHOTOS BY FRED REESE

PYLON/4

By Fred Reese

● This month I would like to discuss some of the myths of quarter midget racing. First and most important, quarter midget racing is not for the beginner, To talk of people graduating from rudder only to racing is absurd, and a threat to its existance. In order to race any type of R/C aircraft the pilot must be competant. He may be a beginner to racing, but he must be an experienced R/C flyer. Most people who are able to fly pattern type airplanes would not have any trouble flying quarter midgets. Quarter midget speeds are faster than most pattern ship, yet are only one-half that of Formula I even though our egos tell us they are moving much faster. *(Relative size adds to the deception, too. Ed.)*

Secondly, wings which are thinner than 10 percent are not necessarily faster than the 10 percent wings or put another way, 10 percent wings can be as fast or faster than very thin wings. The difference is generally the engine and the pilot, not how thick or thin the wing is. Depending on the selection of airfoils between the root and the tip, a thin wing can have very good or very bad stall characteristics. The same is true for a 10 percent wing. Actually, I believe that entirely too much emphasis has been placed on this one aspect, as there are other factors that are more important if we are to maintain the simplicity of the event.

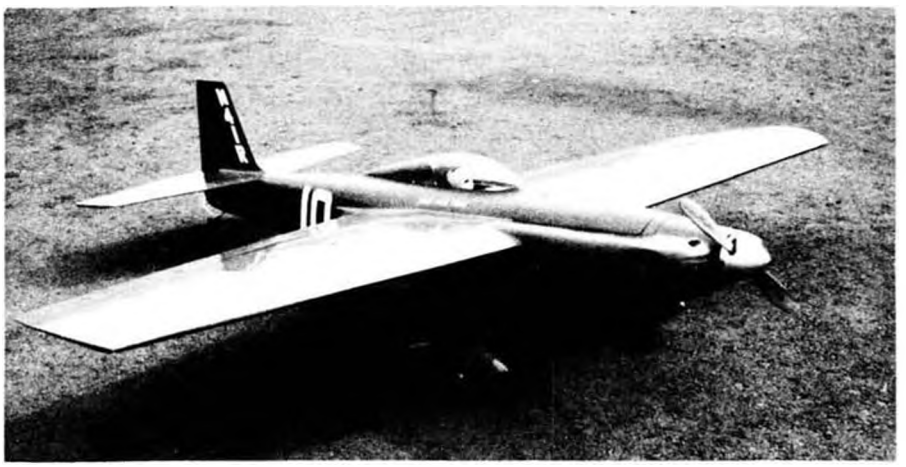
The winners. Joe Zdankiewics (top left) 3rd, Jack Stafford (top right) 1st, Don Barton (btm left) 4th, and Frank Szekula (btm right) 2nd. Jack is only Form I flyer in group. QM's got 'em out!!

This brings me to my next point; keeping the event simple and making it available to all the "Sunday" flyers. Instead of calling them beginners, I will refer to them as newcomers to racing. From my observations, newcomers become experts in about three races and usually they are hooked after the first race, win or lose. Racing is fun and the newcomer can't wait to take on all the other experts. The OS, Enya and Fox powered Doublers and Cassutts can still race with the Tigre powered fiberglass bombs. Larry Kosta of San Diego finished sixth out of twenty-nine with his OS powered Cassutt at the last Mile Square race.

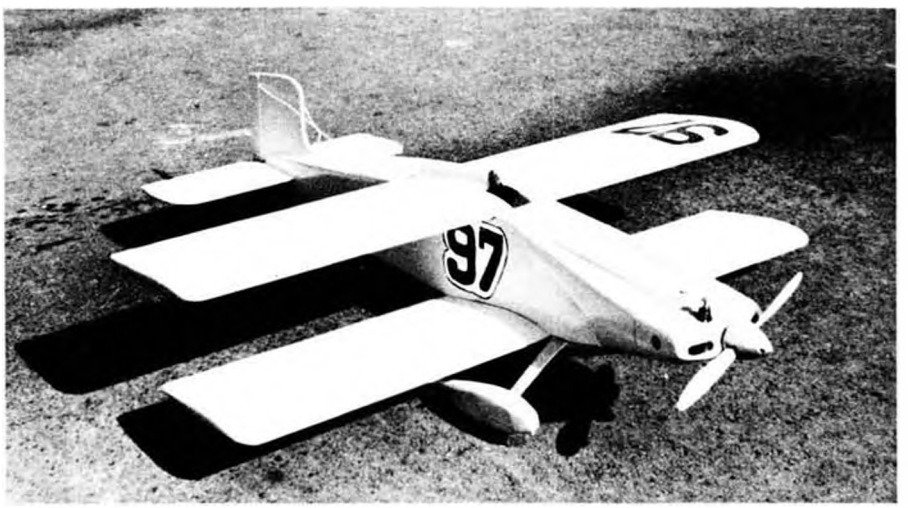
What I am saying is that there is really only one way to keep this event within reach of the newcomers. Keep the engines stock with the manufacturer's original carburetor, maintain the ten second idle rule before each heat and reduce the flight score for deadstick landings. And as long as all the competitors are using stock props and the same host-provided fuel, the newcomer can compete with the hotshots anywhere in the U.S.

Last month we printed a QM reader survey concerning some of the proposed wing and engine rules. If you haven't

Don Panek's beautiful Howard "Mike", 44 inch span. Ship is fairly competitive, but unfortunately, trend is going toward narrow choice of P-51s and Goodyear designs. They're faster.



Pylon/4 columnist Fred Reese's "El Bandito." Ship is powered by ST .15.



Another of Fred's ships, the "Hot Canary." ST .15, 28 inch span, 336 sq. in. area. Maybe there should be a biplane category as in full size racing. Maybe these and non-Goodyears combined.

yet sent your reply, do so now. If you didn't see the survey, send us your thoughts on the subject anyway. It is important, for in order to be fair, the AMA needs the majority views of the flyers before it can make a move toward establishing a set of official rules. For the purpose of satisfying insurance requirements at AMA sanctioned events, some interim guidelines have been set up which only outline the class and the course safety requirements but do not rule on those questions that have not been decided. The AMA will require the same spacing between the pylon course and the spectator-pit area as in the other AMA sanctioned pylon racing events. Most clubs are flying three pylon courses because of the safety advantage to the flyers and the judges. The AMA will not agree to allow the pilots to stand in the line of flight on a two pylon system, so the pilots will be required to stand at least 150 feet from the line between the two pylons. This will make the course more difficult to fly. It is expected that most clubs will prefer the 3 pylon layout.

In L.A., we have been experimenting with different length courses, varying the length from 330 to 400 feet, using a three pylon system with the pilots standing near pylons No. 2 and 3.The griping from the pilots gets louder as the course gets longer. They do not like more than 300 feet between themselves and the No. 1 pylon. At our last race the distance was 290 feet and there wasn't a single gripe, so apparently the course was comfortable. The total distance between Nos. 1 and 2 was 350 feet and the No. 3 pylon was offset 50 feet by 50 feet (see sketch). Ten laps around the course was exactly 1-3/8 miles and race times averaged about two minutes.

RACE REPORT

On April 9th at Mile Square, the Northrop Modelers hosted the Los Angeles, Orange County and San Diego QM group. This group has grown in six months from eight to twenty-nine entries. As Big John Elliott, QMRC President says, "I think we have a tiger by the tail". Five rounds of four-plane heats were run off in about five hours. The airplanes were idled for ten seconds prior to each heat and if the plane moved at all, it was out of the heat. The rules must be enforced if this thing is going to work and happily I didn't hear any complaints. This is the way the flyers want it.

Jack Stafford won the day with a perfect score, flying his OS powered P-51D. The plane is clean and light and uses the outer portion of his Formula I Minnow wing with an undercambered tip.

RESULTS

Jack Stafford	P-51	OS .15	1
Frank Szekula	Francis P-51	ST .15	2
Joe Zdankiewicz	Francis P-51	ST .15	3
Don Barton	RCM Shoestring	Fox .15	4
Carl Weyl	RCM Shoestring	OS .15	5
Larry Kosta	RCM Cassutt	OS .15	6

Write MB for Quarter Midget contacts in your area. In L.A. we are racing monthly, contact Ken Holden, QMRC Sec., at 714-979-1978 for racing dates and locations. ●

BEFORE: The stock Williams Bros. pilot used as a pattern for molding a lighter plastic one.

DURING: Lighter pilot with a fresh coat of spackle. Note eyebrows and mustache added.

AFTER: The finished, home-brew pilot looks a bit like Teddy Roosevelt. "Chaaaaaarge!!"

FREE FLIGHT ... SPORT & SCALE

PHOTOS BY FERNANDO RAMOS

By Fernando Ramos

Well, we've customized everything else, why not the pilot? Our scale editor tells how it's done. Hmmmm. . .wonder if that kid up the street has one of those Vacu-Forms?

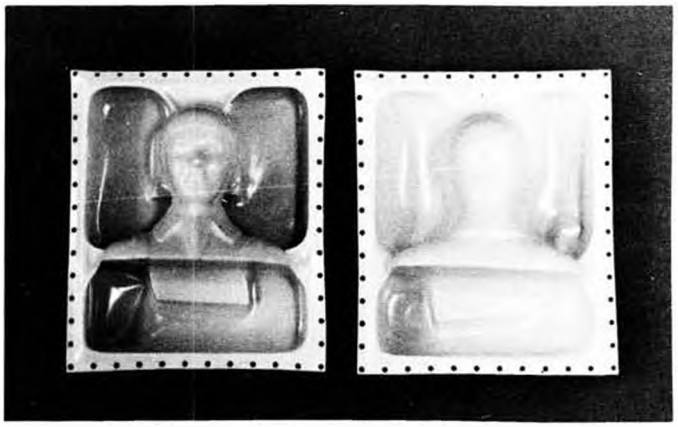
● Until recently, the thought of putting a pilot in the cockpit of any of my models simply did not occur to me. One reason, no doubt, was when I got far enough with a model to put in a pilot, the model was ready for flying. Needless to say, flying had first priority. Since biplanes are my favorite and most bipes that I would ever build are open cockpit, it stands to reason there should be some kind of pilot at the controls. *(In our opinion, every AMA scale category should* require *that a "pilot" be at the controls of any airplane in flight. The pilot need not be judged for fidelity, and could even be a simple profile item especially in Peanut and Indoor scale, but it should be to approximate scale and of logical appearance. Ed.)*

Granted, there are only a few pilots that can be purchased and there are fewer modelers who can start from scratch and make their own. The purpose of this "How To" is to show that with a little effort, one can individualize a Williams Bros. or other brand pilot into looking hand-carved. I personally prefer this "sculptured" look rather than the typical smooth appearance of plastic.

The first step is a matter of preference. That is, I choose to vacuum form a William Bros. pilot because of the weight factor. The WB pilot weighed 5.5 grams and the vacuum formed pilot weighed in at 2.2 grams, so every little bit helps. If that weight difference is not important, you can skip this first step. (If you have been trying to locate a Mattel Vacuum Form for this and other projects, but have had no luck at all, just ask your own or the neighbor's kids to check for you at their school. You will be amazed at how many are stuck in closets and garages, not used since the day after the Christmas they were received. The prices are usually unbelievably low also. Incidentally, the plastic sheets used for the vacuum form are still available by order through the Sears catalog.

After cementing the two vacuum formed halves together, I then brush several coats of Dowman's ready mix spackling paste all over the form, letting each coat dry before going on to the next.

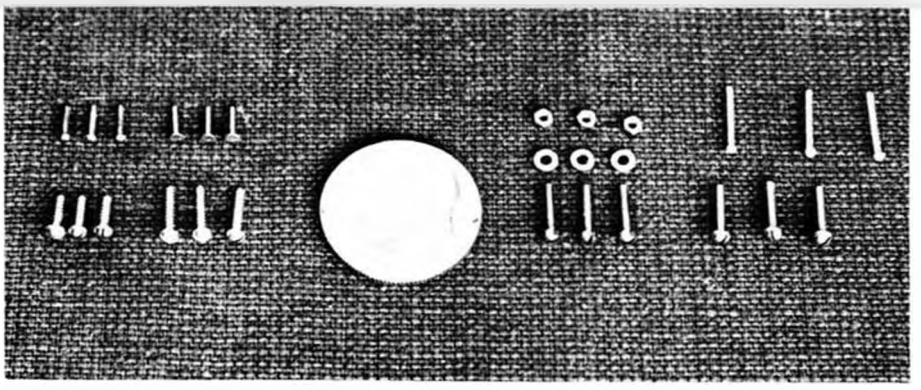
While those coats of spackle are drying. I want to make a few comments regarding this Dowman's product. First, it differs from most spackling compounds in that it is vinyl reinforced, making it an excellent wood filler for nicks and gouges as well as for filleting. It sands as easily as the balsa itself. One recommendation; transfer the spackle from the can in which it is sold to a glass jar that has a good seal in the lid. Due to the high water content, rust begins to form in the can which soon ruins the spackle. Also by keeping it in the jar it will not dry out. My supply is at least



Two halves of pilot as it comes out of Mattel Vacu-Form machine. Plastic sheets still available from Sears.

Dowman's spackling compound being brushed on the form. It's also a great filler material for nicks and gouges. Is vinyl reinforced.

Pilot is now ready for the wash treatment that will give him a complexion. A little pale now.



Series of rivets, wood screws, machine screws, flat heads, round heads, nuts and washers available from Sig Mfg. Co. Screws are 00-90 size! All the stuff is great for accurate scale detailing.

8 months old and is just as soft and clean as the day I bought it.

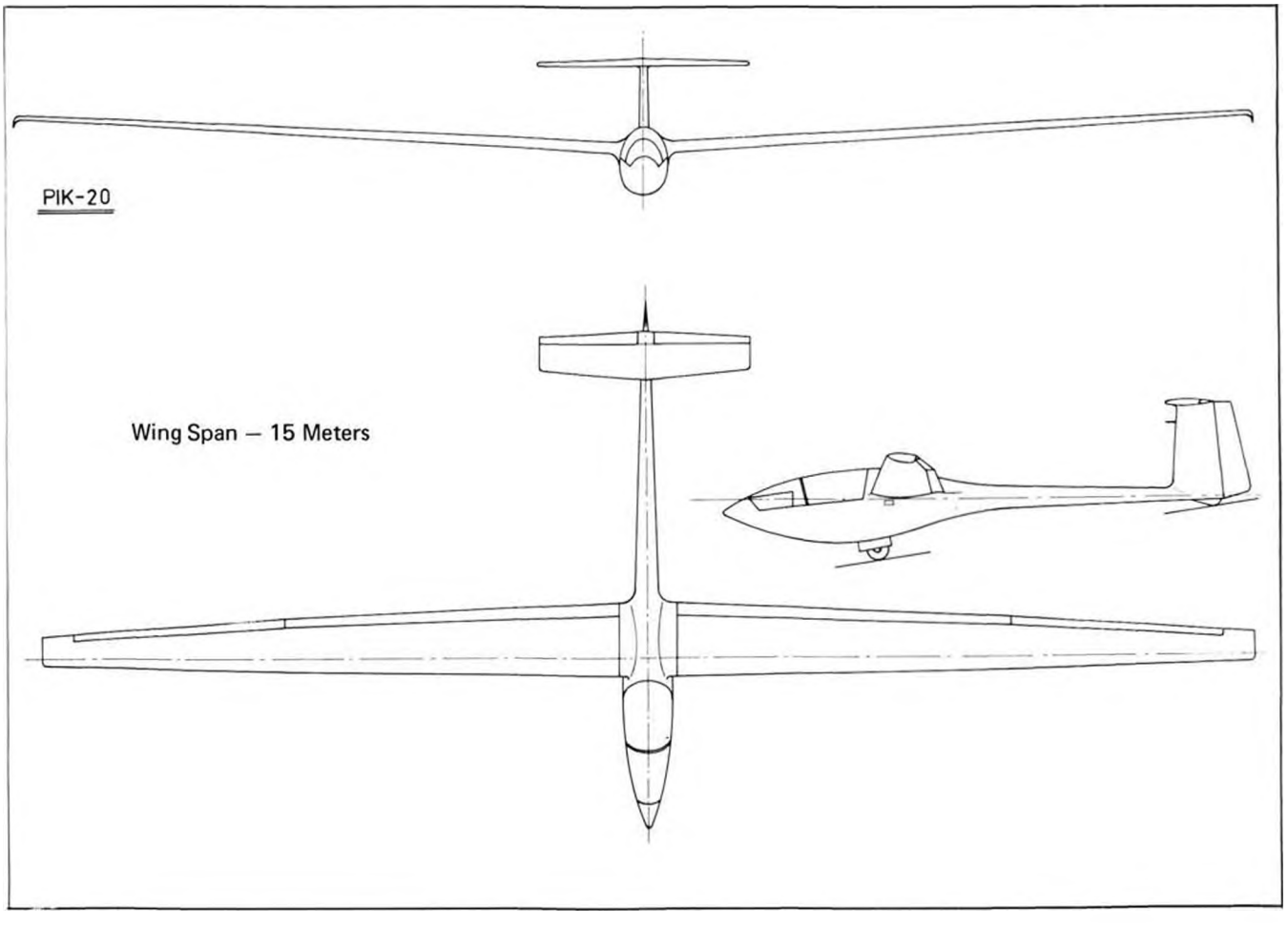
Now, back to the business of "piloting." You can see that after the spackle has dried, the pilot takes on a papier mache look. Now take an X-acto knife or equivalent and carve in features that you prefer. If you need to, you can take a spatula with a small blunt tip and add spackle to suit the situation, such as a mustache, a large wart, or whatever.

Once your carving is completed, all that remains is the painting, and any other details you may want to add. Again, I prefer to use Floquil Model Railroad paints for this job. They come in a vast variety of colors. When you finish this last little task, and the paint is *thoroughly* dry, there's a little trick which will convert the appearance of your pilot to a masterpiece! Take some wash thinner, (wash thinner is that accumulation of paint pigments and thinner you get when you clean out your paint brushes), shaking the bottle first so that you can stir up some of those pigments off the bottom, and brush on one even coat. The results of this last step will give your handiwork a professional touch as well as giving your pilot that wind-beaten look. All you have to do is to mount him in your latest creation! *(If your plane happens to be an iratic flyer, apply a green wash. Ed.)*

Some of you may prefer to use "Green-Stuff" or an acrylic putty (the latter manufactured by DuPont) to accomplish the same thing, but I think you will find that these two materials are much denser than spackle and you won't get that sculptured look, plus the fact you cannot brush them on.

The final weight of the painted pilot, ready-to-go, was 5.2 grams; which was still less than the original.

I personally feel that the full figure pilots, which are a vacuum form type, and are available through World Engines, would look mighty sharp if done by the method previously described. Even Steve Canyon and G.I. Joe would take on a different look. ●



PHOTOS BY MAT TENNISON

The California Coaster drifts by on final approach. Similarity to White Trash is apparent, though stab is further aft. All sheet balsa construction.

the California Coaster

by Mat Tennison

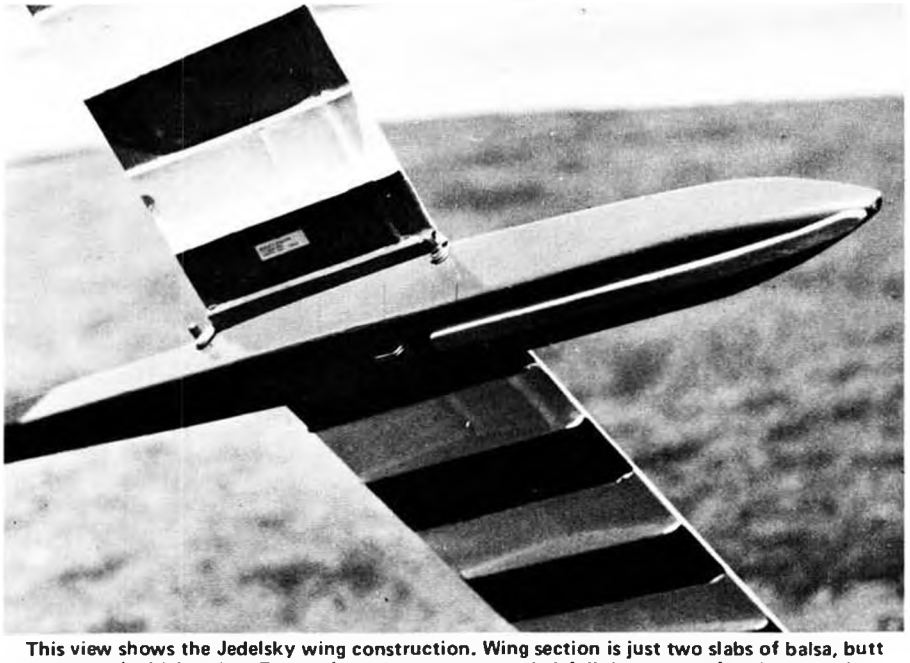
Have you been looking for a fast way to get into R/C soaring? Other than out and out theft, you couldn't acquire a top performance glider any faster than to build this all balsa floater.

● *The first time we spotted the California Coaster was during the North-South (California) Soaring Tournament in Bakersfield (reported by Bob Hahn in the March/April issue of M.B.). At first sight, when the plane happened to be some 3 or 400 feet in the air, we thought it was Rick Walters' popular White Trash (Jan. '72 M.B.) . . . The general configuration is quite similar . . . pencil-thin fuselage, polyhedral wing, fairly high aspect ratio, etc. And not only did it* look *the same, there was obvious similarity in its performance . . . a thermal hanger that could hold a tight, flat circular pattern . . . able to take advantage of the smallest "up bubble."*

Once on the ground (and in the 100 point rectangle, incidentally) we knew for sure that this was a trash, er, plane of quite different breeding. The peculiar 2-1/2 inch wide color stripes from leading to trailing edge, which we had noticed on the total underside of the wing, now made sense. A 9 foot, "Jedelsky" style, single surface, sheet balsa wing yet, with the exposed ribs acting as color dividers!

Immediately we switched hats from contestant/spectator to editor - looking - for - construction - article - material. The perfect answer for the modeler who is short on building time and long on wanting a high performance R/C sailplane. With all sheet flying surfaces, a simple box fuselage and clean, functional lines, the California Coaster is right on! *With materials on hand, a week's work should do it . . . depending on your building speed and finishing methods.*

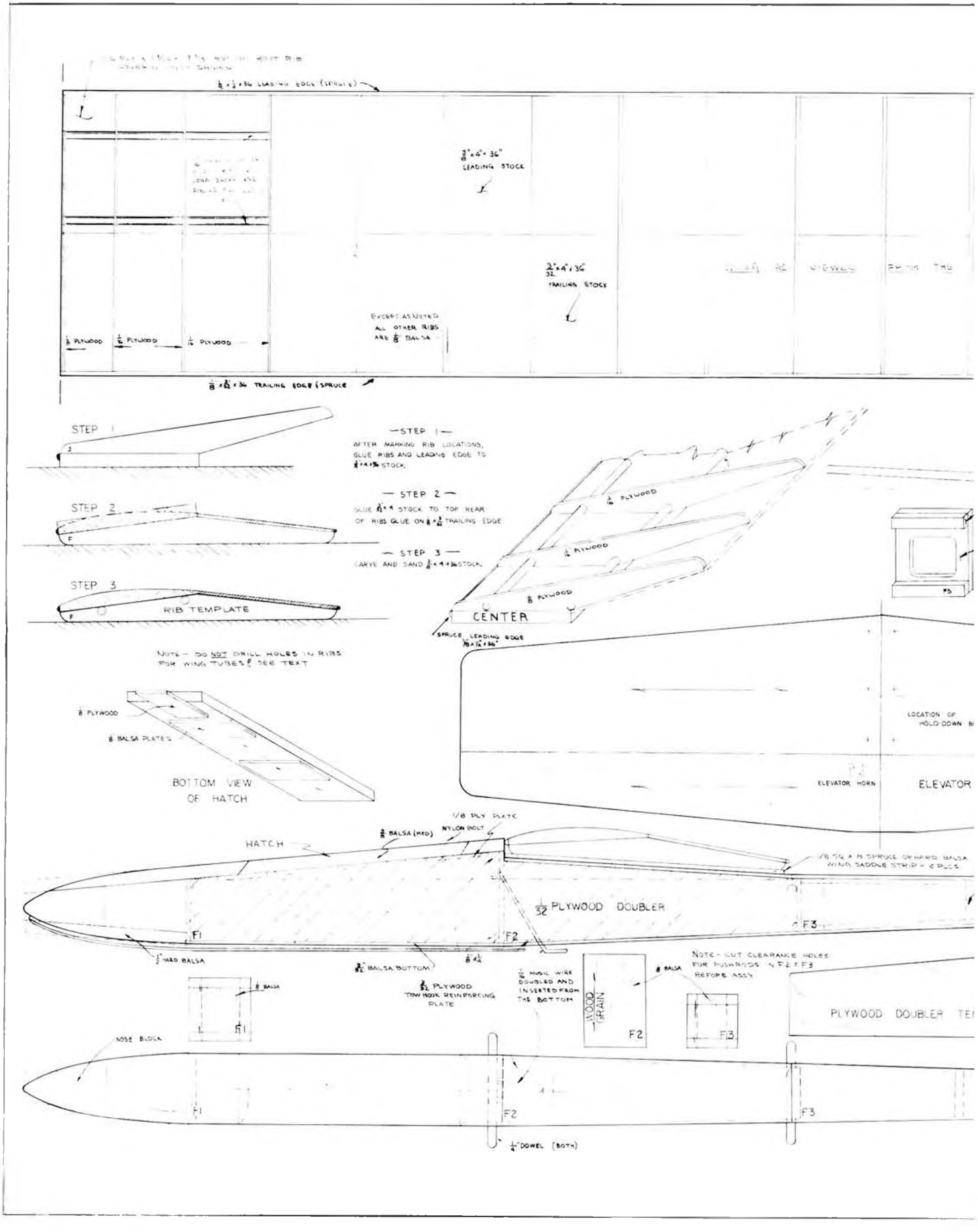
Don't read this construction article . . . unless you're willing to risk getting hooked. 'Course, if you do, we just happen *to have full size plans. Bill Northrop.* ● ●

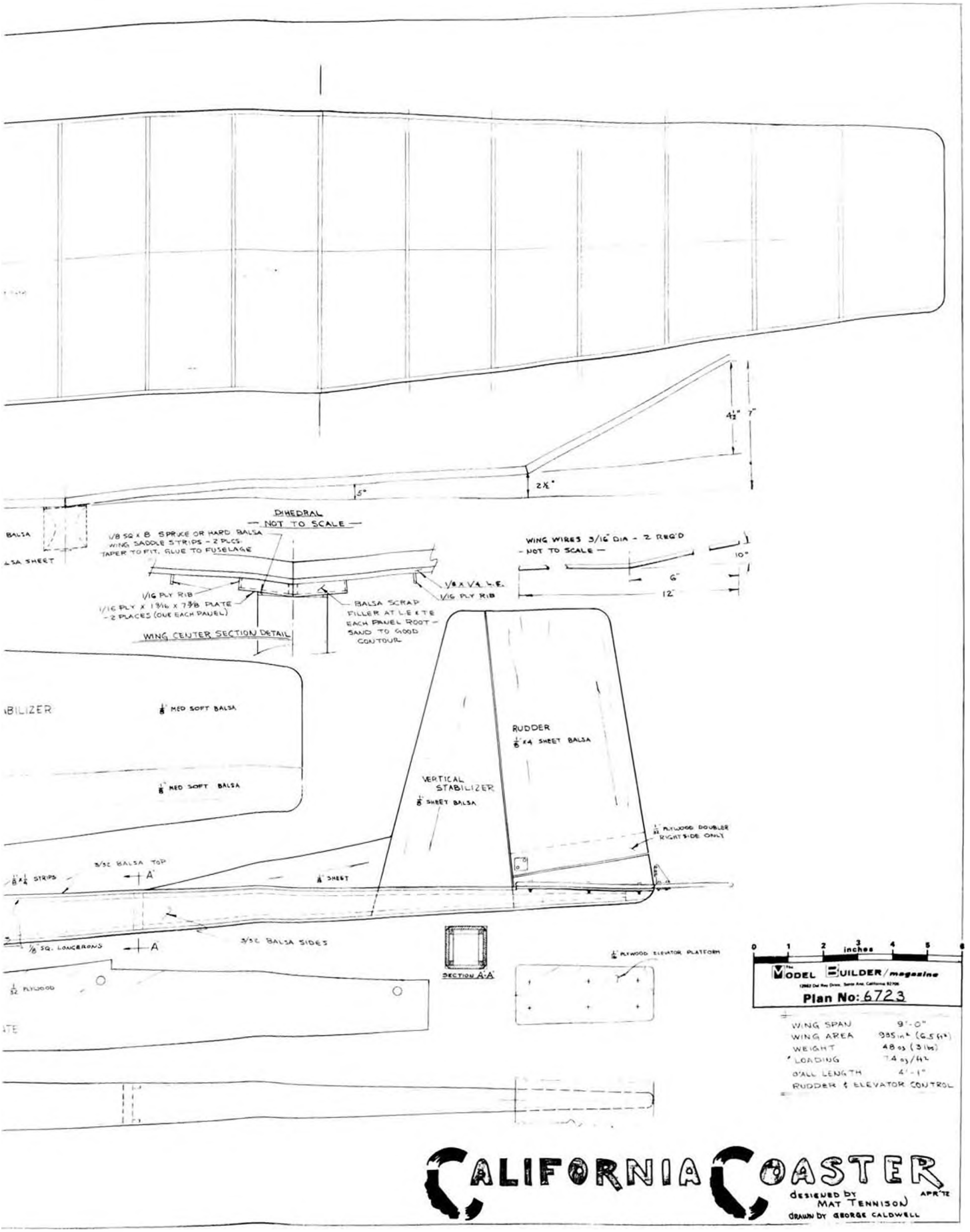


This view shows the Jedelsky wing construction. Wing section is just two slabs of balsa, butt joined at the high point. Top surface ends up as curved airfoil, bottom surface is triangular.

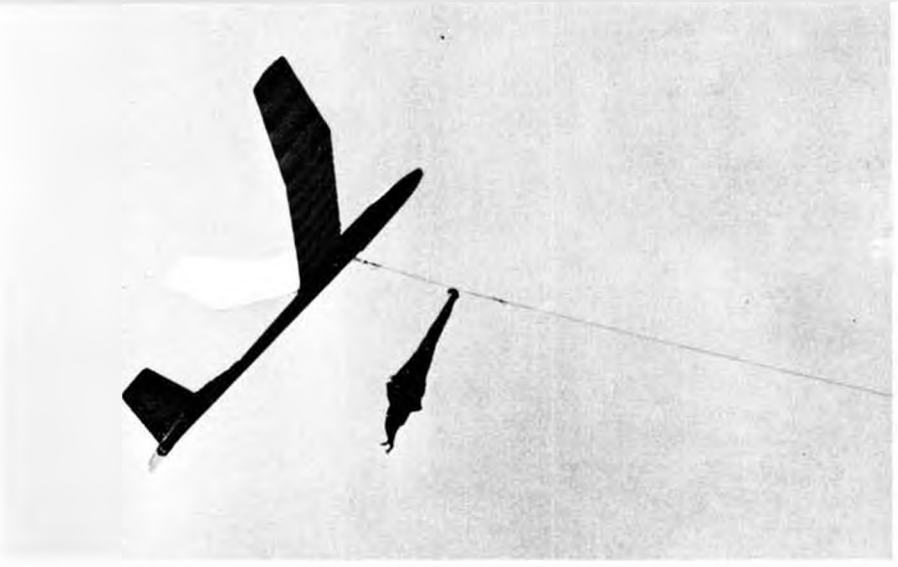
If you've never built a Jedelsky type wing, you'll find it an interesting new experience in model construction, so save it for later and let's get on with the more mundane business of creating the fuselage.

Experience points out that the nose of a sailplane takes the most punishment. That, and providing protection for the valuable bunch of electronics that will be housed in the nose, are good reasons for lining the interior of the fuselage sides with 1/32 inch plywood as far back as the rear wing dowel. Contact cement is the best adhesive for this job. Make sure of two things during this operation: One, that you make a left and a right hand side. (If you forget, and build two left sides and somebody


LEADING STOCK
TRAILING STOCK
EXCEPT AS NOTED ALL OTHER RIBS ARE 1/8" BALSA
1/8 PLYWOOD
1/4 PLYWOOD
1/4 PLYWOOD
STEP 1
STEP 2
STEP 3
RIB TEMPLATE
— STEP 1 —
AFTER MARKING RIB LOCATIONS, GLUE RIBS AND LEADING EDGE TO 1/4 x 1 1/2 STOCK.
— STEP 2 —
GLUE 1/4 x 1 STOCK TO TOP REAR OF RIBS GLUE ON 1/8 x 2 1/2 TRAILING EDGE
— STEP 3 —
CARVE AND SAND 1/8 x 4 x 36 STOCK.
1/4 PLYWOOD
1/4 PLYWOOD
1/8 PLYWOOD
CENTER
SPRUCE LEADING EDGE 1/8 x 1 1/4 x 36"
F3
NOTE - DO NOT DRILL HOLES IN RIBS FOR WING TUBES, SEE TEXT
1/8 PLYWOOD
1/8 BALSA PLATES
BOTTOM VIEW OF HATCH
LOCATION OF HOLD-DOWN B
ELEVATOR HORN
ELEVATOR
1/8 PLY PLATE
1/8 BALSA (MED)
NYLON BOLT
HATCH
1/8 SQ. x N. SPRUCE OR HARD BALSA WING SADDLE STRIP - 2 PCS.
1/32 PLYWOOD DOUBLER
F1
F2
F3
1/8" HARD BALSA
3/32 BALSA BOTTOM
1/8 1/4
1/8 PLYWOOD TOW HOOK REINFORCING PLATE
1/16 MUSIC WIRE DOUBLED AND INSERTED FROM THE BOTTOM
1/8 BALSA
NOTE - CUT CLEARANCE HOLES FOR PUSHRODS IN F2 & F3 BEFORE ASSY
WOOD GRAIN
F2
F3
PLYWOOD DOUBLER TE
1/8 BALSA
F1
NOSE BLOCK
F1
F2
F3
1/4" DOWEL (BOTH)



FULL SIZE PLANS AVAILABLE—SEE PAGE 56



The Coaster grabs air as the electric winch provides the pull. Ship always gets the maximum possible altitude in a launch. Climb angle indicates plenty of strength in wings for towing.

Rudder appears to be transparent. Super-Poxy finish has that much gloss! It's also very light.

sees them, you'll have to build *two* Coasters in order to hide your stupidity!). Two, that you align the doublers very carefully when making contact. The way they meet is the way they stay!

Next, for added strength and to give you enough meat to round off the corners, glue 1/8 inch square longerons from the ply doubler on back to the tail post. These also provide extra gluing surface for the 3/32 inch top and bottom sheeting. Incidentally, the fuselage sides are designed to be cut from one piece of 3/32 x 4 x 48 inch sheet stock.

The 3/32 inch plywood piece which is contact cemented to the floor of the cabin under the forward wing dowel, is for the tow hook, and is most important. The tow hook is doubled 1/16 inch music wire, bent and passed through a hole drilled in the cabin floor, one inch behind the wing leading edge. Epoxy in place to prevent wobble.

The nose block is built up from 1/2 inch hard balsa pieces and its size and shape is designed to hold a square shaped battery pack wrapped in 1/4 inch plastic foam. Of course, the idea is to get the equipment weight as far forward as possible to avoid carrying dead ballast. The original California Coaster required no additional balancing weight. Bundle the receiver in plastic foam and stuff it in right behind the battery pack. Two KPS-10 servos were taped to the fuselage sides, as far forward as possible. This puts everything in the front compartment, leaving only the 1/4 inch square balsa push rods to go back to the tail. Carl Goldberg's bicycle spoke and nylon clevises make the hook up from the servos to the short nylon control horns on the tail.

A few improvements have been made in the plans that are not on the plane in the photos. For example, the original had the elevator push rod exiting on the left side to a bottom mounted elevator horn. The plans show the elevator horn on top. It's better this way unless you like to untangle bits of weed and grass from it after every landing.

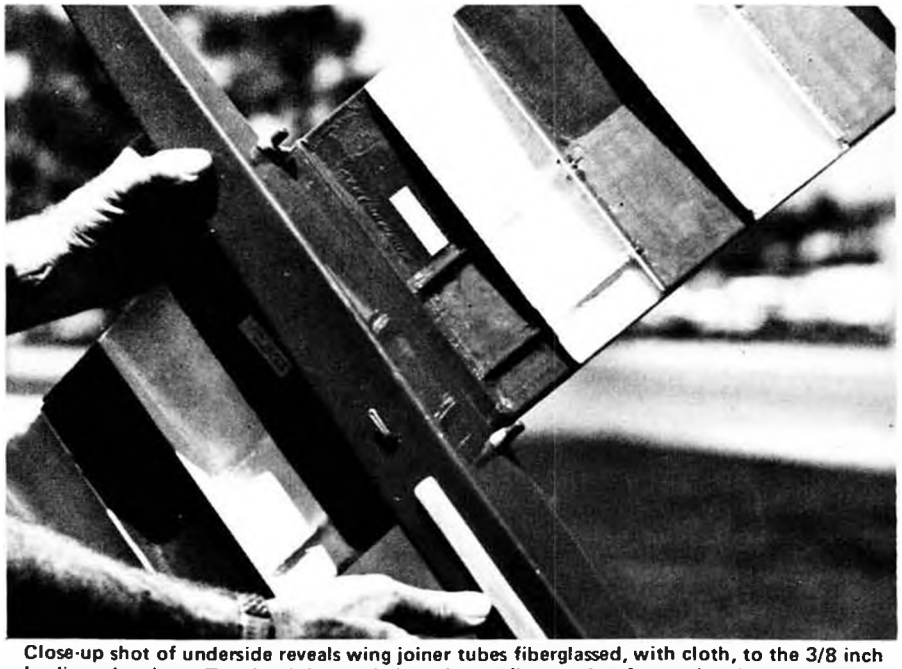
The 1/16 inch plywood elevator platform is glued on the fuselage with 1/8 inch positive incidence. This causes the fuselage to fly "tail high" and more nearly in line with the true flight path. The horizontal stabilizer bolts onto this platform with six 2/56 brass machine screws. The nuts are epoxied to the under side of the platform. This allows the horizontal stabilizer to be removed for packing in small cars and/or on long trips.

The elevator and horizontal stabilizer are both covered with Super Monokote so I could use my favorite hinge system. Monokote hinges are most easily made by cutting two strips about as long as the surface to be hinged and about one inch wide. Turn them "sticky sides" together, and carefully overlap about 1/8 inch. Now seal them to each other with the tip of your iron. From this strip, cut off hinges about one inch wide and iron them on in the best U-control, cloth hinge tradition. Use at least six sets of three hinges each for the elevator and three sets for the rudder.

The fin runs through the top sheeting down to the bottom of the fuselage. The triangular dorsal piece adds strength to the rather skinny fuselage forward of the rudder.

Note how the hinge line of the rudder is slightly swept forward. It helps to maximize the movable area and reduce the fixed area. Don't forget the doubler at the bottom of the rudder. One-thirty second inch plywood on the horn side only, stiffens this "barn

Continued on page 49



Close-up shot of underside reveals wing joiner tubes fiberglassed, with cloth, to the 3/8 inch leading edge sheet. Tow hook is epoxied to ply sub-floor and to front wing dowel. Ace skid.

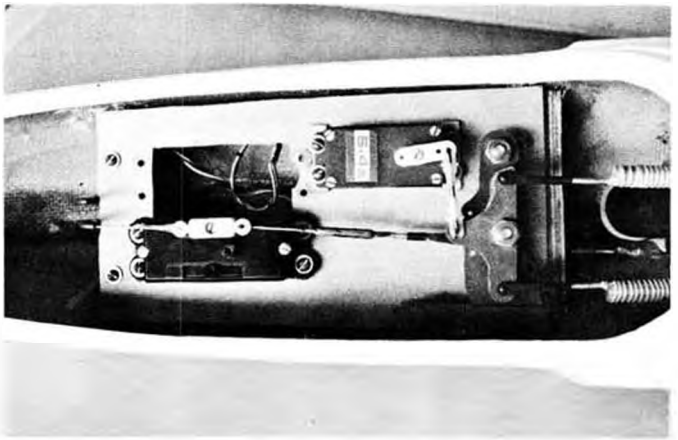


Figure 4: Servo control set-up on John Donelson's V-tail Cirrus. This method believed better than sliding rudder servo type.

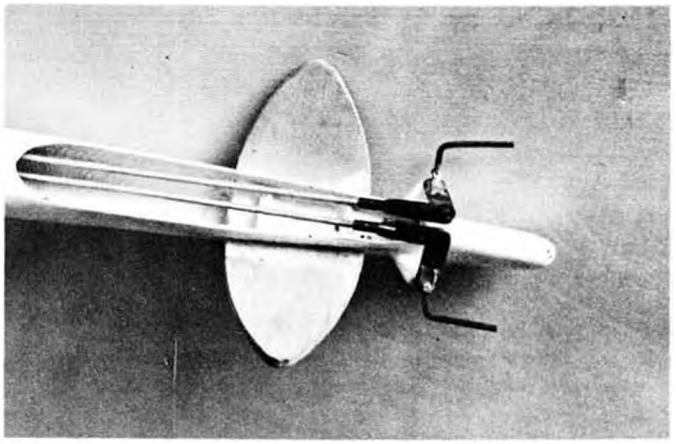


Figure 6: Knock-off stab arrangement on V-tail Cirrus. Torque arms fit into slots in the ends of "ruddervators."

R/C SOARING

By Le Gray

Before handing the gavel over to John Donelson, our Soaring editor presented us with this title. We refuse to accept any blame for the consequences: "TAILS OF VIENNA WOODS . . . . AND OTHER MATERIALS"

● I'm a 'tail-man', myself. Other sailplane enthusiasts may have a penchant for wings . . . or perhaps be partial to fuselages . . . or the 3-D contours of the modern sailplane's cockpit/canopy area. But tails seem to provide a personality to a sailplane . . . to be the unique characteristic which is the readily identifying feature, either on the ground or up doing its thing.

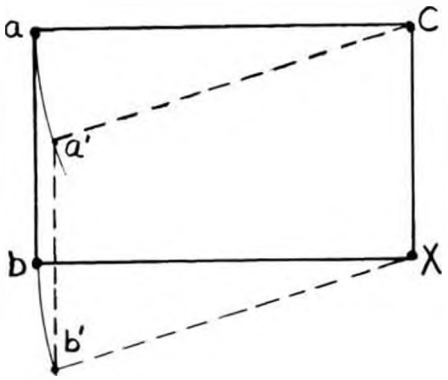
Okay, so tails are tails. What does all this have to do with R/C soaring and R/C sailplanes? Perhaps little except to say that a scale sailplane enthusiast has a never ending selection of beautifully configured prototypes to model. In this array, there are four basic empennage arrangements; the conventional or semi-conventional, the "Chicken T", the "T", and the "V". The first three are fairly simple insofar as actuation mechanisms are concerned. But the "V" . . . that's something else.

If you notice such things, you may recall that many V-tailed designs incorporate linkages, hook-ups and moving servo mounts that would warm the heart cockles of the wildest-eyed inventor. But then, who likes cold cockles? A few . . . a very few . . . systems for actuation have been well engineered. These are usually the product of a true craftsman and serious modeler . . . a guy like John Donelson.

John can trade credentials with most anyone and come out on top, so suffice it to say that John (a) is a serious R/C sailplane enthusiast, (b) builds flying . . . not display . . . scale models, (c) often flys scale models in open competition . . . successfully, and (d) has taken home more R/C sailplane flying scale hardware than any of the other kids. In his off, non R/C sailplane flying hours, John spends much of his time deep in the theory and design of bigger and better jet airliners. But that's only a hobby, R/C sailplanes are the real world.

What this all adds up to is that John is a thorough and particular man, and if you're interested even a little in building a V-tailed sailplane, you could do just a whole lot worse than watch how John does it.

Many soaring modelers seem to steer away from V-tail sailplanes because of the problem of a suitable arrangement



for differentially moving the tail surfaces. This is a shame because a large percentage of full scale sailplanes feature V-tails and V-tail model sailplanes fly every bit as well as conventional sailplanes. The mechanisms that I have seen to differentially move the V-tail surfaces generally fall into two categories, both with drawbacks. The first, and most common, is that of sliding the "rudder" servo. This type has two disadvantages; first it must be very friction free to prevent binding, and secondly the elevator servo must absorb all of the load of the servo in the event of a hard landing. The latter can cause gear damage to the elevator servo. The second type of mechanism generally features some sort of bellcrank mechanism which is either difficult to build or has some interaction between the control movements.

The mechanism which is described here has been used for the past 6 years for V-tail movement and can also be used for differential elevons for flying wings. It is well tested and eliminates most of the disadvantages mentioned. I think you will also find it quite simple to build and set up, especially with the small servos being used in current radio equipment.

The mechanism works on the principle of a variable parallelogram. In Figure 1 point X is fixed. When the rectangle is moved to the position of a parallelogram, line a'b' is parallel to line a b. This is what allows separate

rudder/elevator control with no interaction.

Figure 2 shows how to apply this principle to a working mechanism. This is a simplified arrangement which has evolved and can be built out of Micarta or fiberglas sheet in a matter of an hour. You purists will note that with some amount of rudder throw there is a very small amount of interaction when elevator motion is applied. The original configuration shown in Figure 3 had an additional bellcrank at point X which completely eliminated the interaction. I never could tell the difference between the two in actual flying and the arrangement shown in Figure 3 was discarded long ago in favor of the more simple arrangement shown in Figure 2. The arrangement shown in Figure 2 can be built slop and friction-free with very little effort.

Also shown is how to increase or decrease the rudder and elevator throw. A couple of other points should be made. First, be sure and widen the elevator arm at the slide. This will prevent the elevator arm from tilting. Secondly, shim up the height of the rudder servo so it is the same height as the rudder bellcrank. These two measures will assure a slop-free, low-friction system with no dead band.

The whole mechanism can be mounted on a single piece of plywood and bolted to a couple of pieces of hardwood mounted in the fuselage. Figure 4 (photo) shows this arrangement installed in a V-tail Cirrus. This mechanism is also quite durable; only once have I ever broken one and that was from a 200 ft. death dive resulting from a mid-air collision.

The method for connecting the control horns to the tail is not original as I got the basic idea from a Walt Good sketch for a knock-off Kurwi dihedralled horizontal tail. Both halves are removable via a V-tongue (1/8 inch plywood), and the elevators slide out of the control horn for knock off capability. Figures 5 and 6 (photo) show the general arrangement.

Continued on page 44

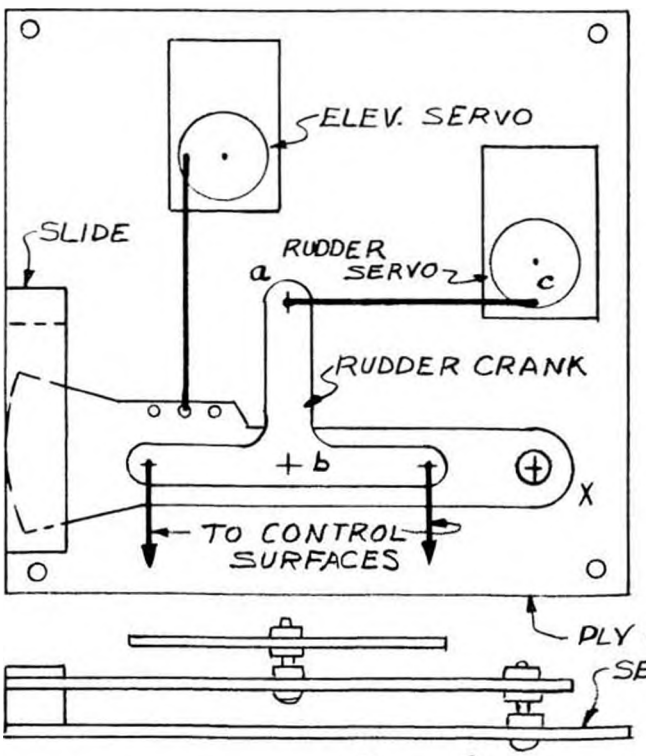


FIG. 2

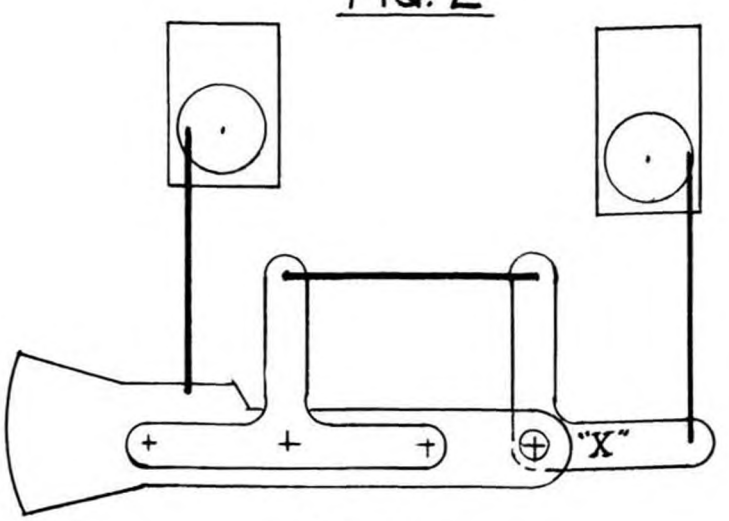
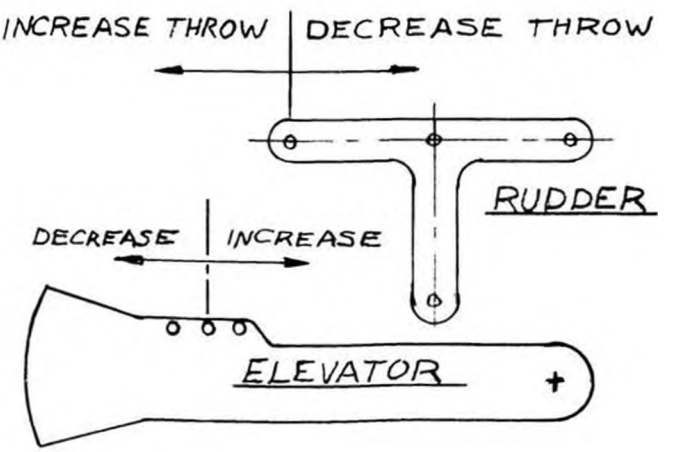


FIG. 3



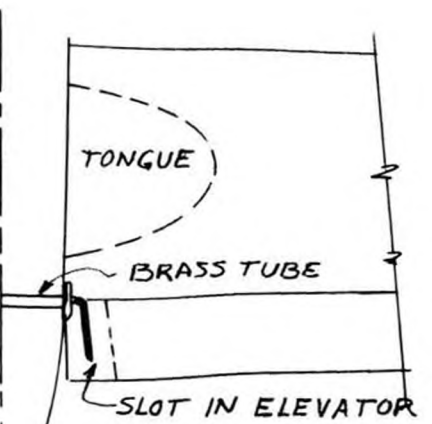
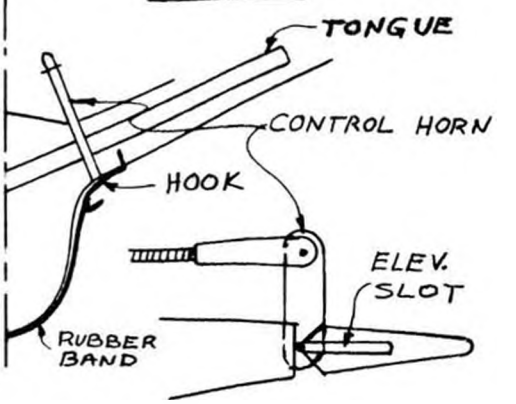
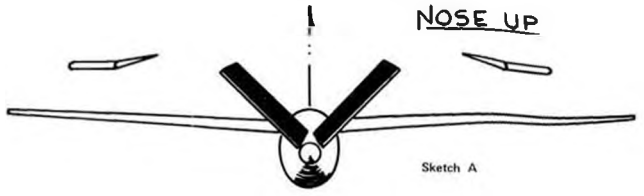
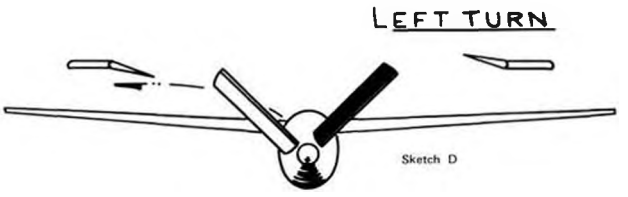
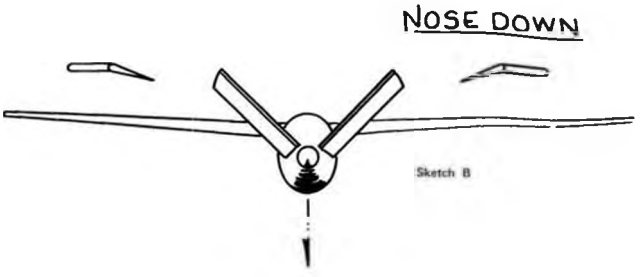


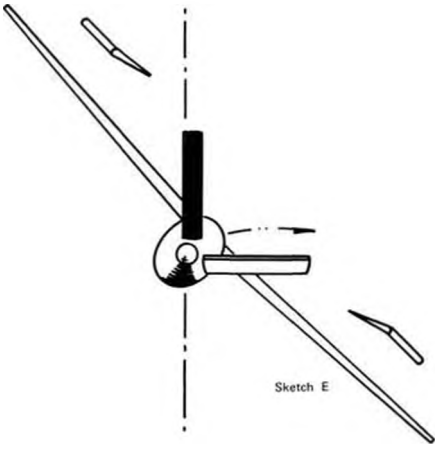
FIG. 5

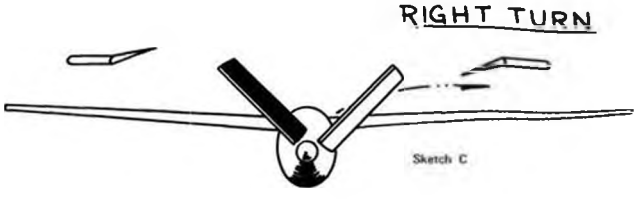


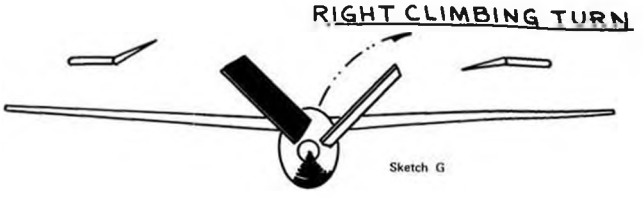


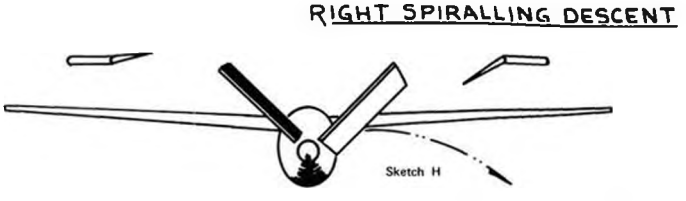


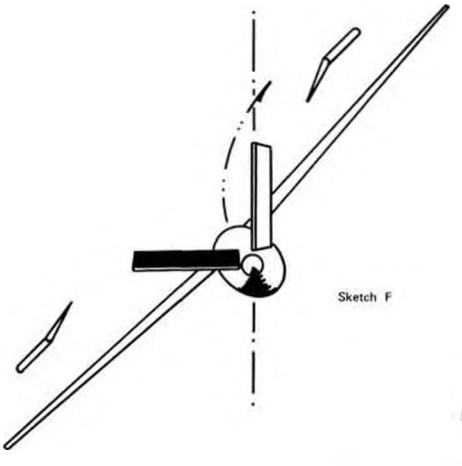












Sketches by Le Gray

WHICH WAY DO THE V-TAIL GO, GEORGE?

By Le Gray

Now, which way does what move to direct the sailplane where? It can be confusing. One sure way to check for proper control hook-up is to fly. There's a 50/50 chance of being correct. On the other hand, there's a 50/50 chance of being wrong. Let's improve the odds.

The V-tail configuration incorporates the functions of both the horizontal stabilizer/elevator for pitch control, and the vertical fin/rudder for yaw or directional control. But V-tail or not, the functions are really separate and distinct. You use 2 servos, don't ya?

And can best be visualized when considered independently.

First, take the pitch function. Not much different from the conventional setup. "Up" elevator . . . where the trailing edge of the movable surface is higher than the hinge line, or on all-flying surfaces, higher than the leading edge . . . gives a nose-up reaction by pushing the aft end down. Just like regular. And "Down" elevator . . . trailing edge of the movable surface lower than the hingeline, etc . . . is going to point the nose toward the ground.

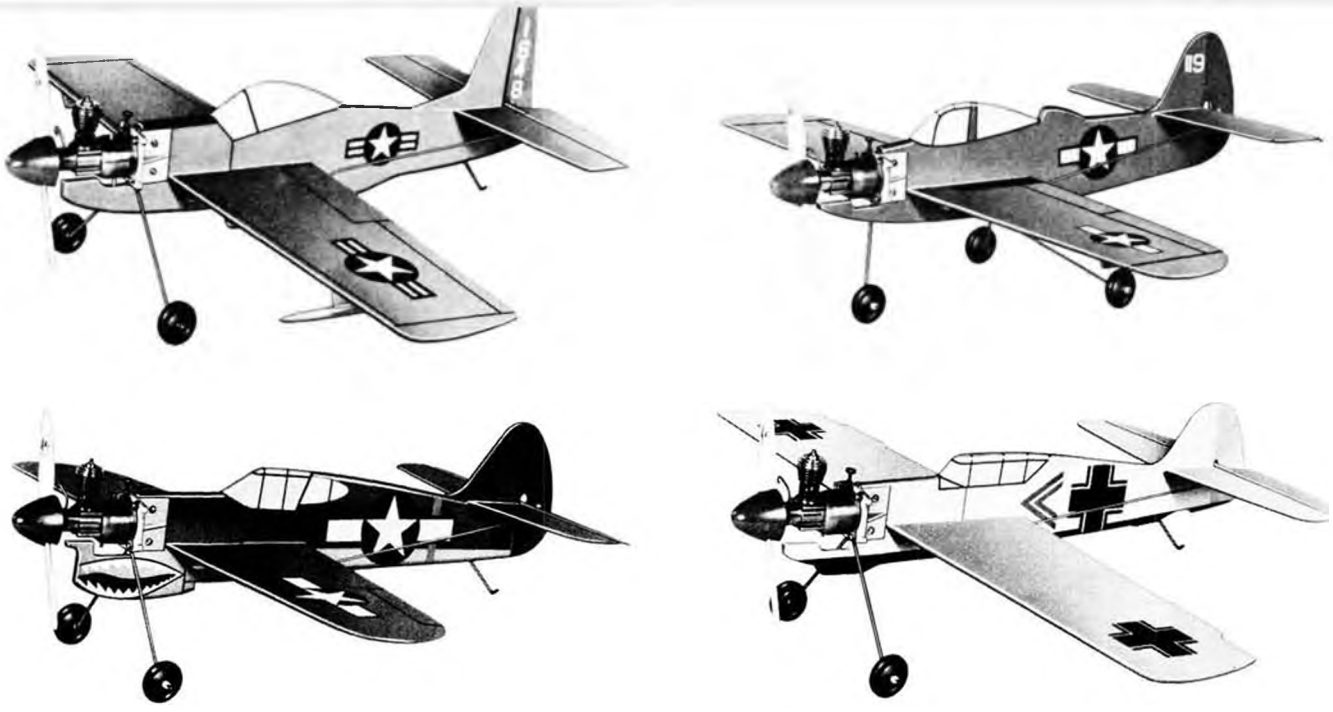
If one were to look at the South end of a North bound sailplane which had just received an "Up" order from its ground-based driver, it would look sorta like this: *(Sketch A)*

Or, if Old Nutty had called for "Down": *(Sketch B)*

Note that when acting in the elevator function, both surfaces of the V move in the same direction. Either both "up", or both "down".

Not so in the rudder function. When directional control is commanded, the surfaces of the V move in opposite directions . . . one "up" and one "down" similar to ailerons. But . . . and that's a big "but", so to speak . . . the opposite moving V surfaces do not cause the reaction of ailerons. That is, they do not roll the sailplane the way ailerons would if similarly moved. In fact, the V surfaces do not "roll" but rather "yaw" to turn the sailplane . . . and in the opposite way from what you'd expect, considering the aileron-ish appearance of their movement. Confused? Well, hang on and we'll see if we can work our way out of this mess. And besides, what's

Continued on page 44



Midwest Products Company's new line of 1/2A profile control line models. "Quik Mount" allows one engine to be switched from plane to plane.

CONTROL-LINE

By Dick Mathis

What do you get when you put some of the earth's atmosphere in a Reynolds Wrap box . . . ? Airfoil, of course! "Fast Richard" tells us what to expect from a few of the more familiar shapes in this 5th episode. . .

● Airfoils are nice things to have, especially on an airplane. *(Good thinking there, Ricardo! Ed.)*

A lot of flyers underestimate the importance of having the right airfoil on their machine and never realize the difference it makes. Of course, there are some designers who seem to take their airfoil selection very seriously. For example, it is quite a status symbol in combat circles to be able to quote a fancy scientific number for the airfoil on one's original design (like A.B.C. 00012½). Stunt flyers recognize the importance of airfoils so well that most of them are afraid to try anything other than a "Nobler" airfoil, which they *know* works. Many rat race, speed, and team race people seem to think the best airfoil is the least (or thinnest) one, which is not always the case.

I'm no wizard when it comes to airfoil theory, but I would like to suggest a few basic ideas that may be helpful, whether you are a designer, a modifier, or merely contemplating the selection of a kit design. You can look at most kit design wings and airfoils and tell which one will be great and which one is really an anvil.

Let's talk about "maneuverability" airfoils first. Symetrical (same on top and bottom) section are almost universal here because we usually want equal maneuverability both upside down and rightside up. To establish the terminology, look at Illustration No. 1. The "chord" is dimension A. The "thickness" is dimension B. The "high point" is dimension C. The "entry" describes the area around the nose of the airfoil D. The other major term is "aspect ratio", which is the span of the wing divided by the chord, so a high aspect ratio would be a long narrow wing shape.

Aspect ratio works pretty simply and it's related to airfoil performance. Imagine that we have an airplane with a fixed wing area of 500 square inches and a 5 to 1 aspect ratio (10 inch chord, 50 inch span). If the span is reduced and the chord is increased to, say, 12 inches, the airplane would probably fly faster but its ability to turn tight would diminish due to the fact that the shorter wing would have less lift. Generally, the rule is; the higher the aspect ratio the better the maneuverability and the slower the model. Also, it is always true that increased wing area, regardless of aspect ratio, accomplishes the same thing. However, a bigger wing slows things down and adds weight.

Another factor in the lift versus speed thing is airfoil thickness. Generally, the thicker the airfoil, the more maneuverability, but the less speed. Next, the high point (usually expressed as a percentage of the chord - like a 40% high point on a 10 inch chord airfoil would be 4 inches from the leading edge). The further forward the high point, the more maneuverability (within

limits) but the further forward high-point also usually requires either a larger stabilizer or a longer tail moment arm. That leaves the entry point. Generally, stunt and combat airfoils have very blunt, rounded entries, the reason being that the airfoil has to fly at many different angles of attack while doing maneuvers and a blunt entry makes it less likely to stall out (have a sudden increase of drag and relative loss of lift, making model stop flying).

When a stall occurs, the air becomes separated from the airfoil surface and sort of boils around, creating too much drag. Although the blunt entry makes this less critical, it costs some speed and lifting efficiency. Let's just say the blunter the entry the wider the range of smooth maneuverability, but the less speed.

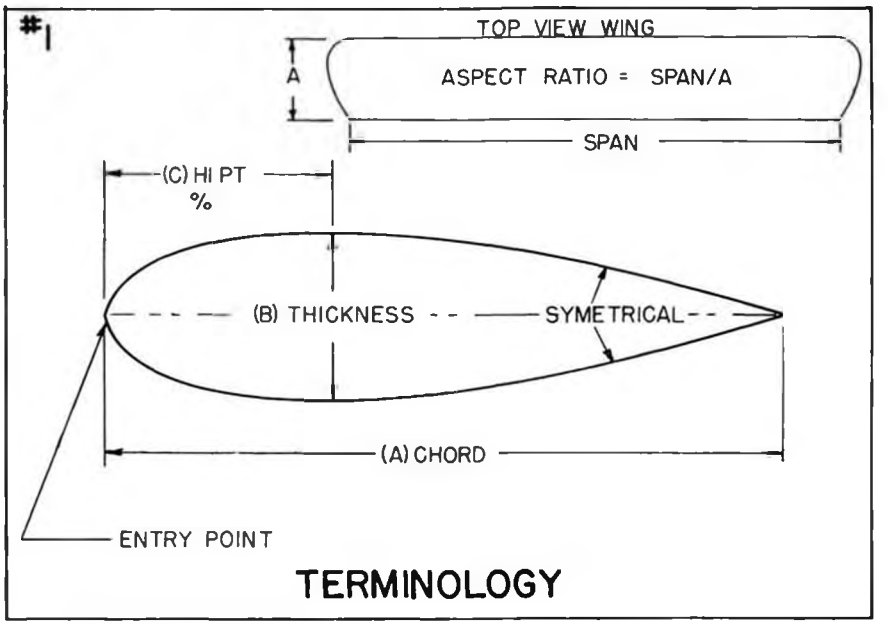
It's getting complicated isn't it? Remember that all airfoils must compromise between maneuverability and speed. For example, a combat ship that has a high aspect ratio, thick airfoil, blunt entry, forward high point, etc., may be too slow to attack well unless its wing area is significantly reduced.

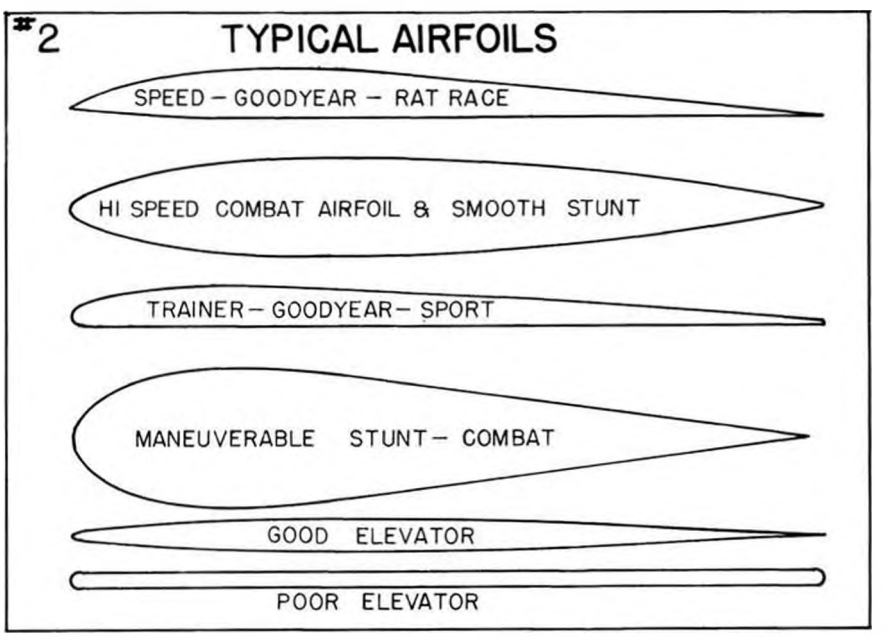
HOW ABOUT AIRFOILS FOR SPEED AND RAT/TEAM RACING?

Maneuverability isn't so important here, although it helps when passing and evading in the racing events. The main thing is low drag, which, you would think, means a super thin airfoil. However, structural limits make some thickness essential to keep the wing in one piece. The question of flat-bottomed vs. symetrical comes up seriously here. Generally, a symetrical airfoil will have less drag at zero angle of attack than a flat-bottomed one of the same thickness. However, in flight, the symetrical airfoil does not fly at zero angle of attack because it has to develop enough lift to keep the airplane up. The low drag symetrical airfoil will end up having to fly at a higher angle of attack than the flat-bottomed one. Unfortunately, drag increases dramatically as the angle of attack goes up, so the symetrical airfoil may end up being slower than the flat-bottomed one! *(This has been proved in R/C Pylon racing. Ed.)*

So, the general type of airfoil to use is a sort of compromise between the two, as in Illustration No. 2 with the top airfoil, which is flat, but has a raised entry. Note it is also thin. The third airfoil would be simpler for speed and racing, but it would be slower due to the bluntness of entry. However, the leading edge would be more durable than the sharp one.

HOW ABOUT ASPECT RATIO? The slower (lower) the better, right? Wrong! There is a little problem called tip loss, which simply means the air around the tips is all fouled up because it can't decide what is happening where the wing leaves off. So it just swirls around, even fouling up the adjacent air on the wing proper. With a low aspect ratio wing, more of the total area will be close to the mess on the tips and thus the total lift of the wing will be further diminished. The wing will have to fly at a higher angle of attack and thus create even more drag. A higher aspect ratio wing of even less wing area will probably be much faster. This is proven on the top speed designs, which generally have high aspect ratios. On a Goodyear racer you don't have much control over aspect ratio since it must be near scale, but you choose a design which has a higher aspect ratio in the first place.



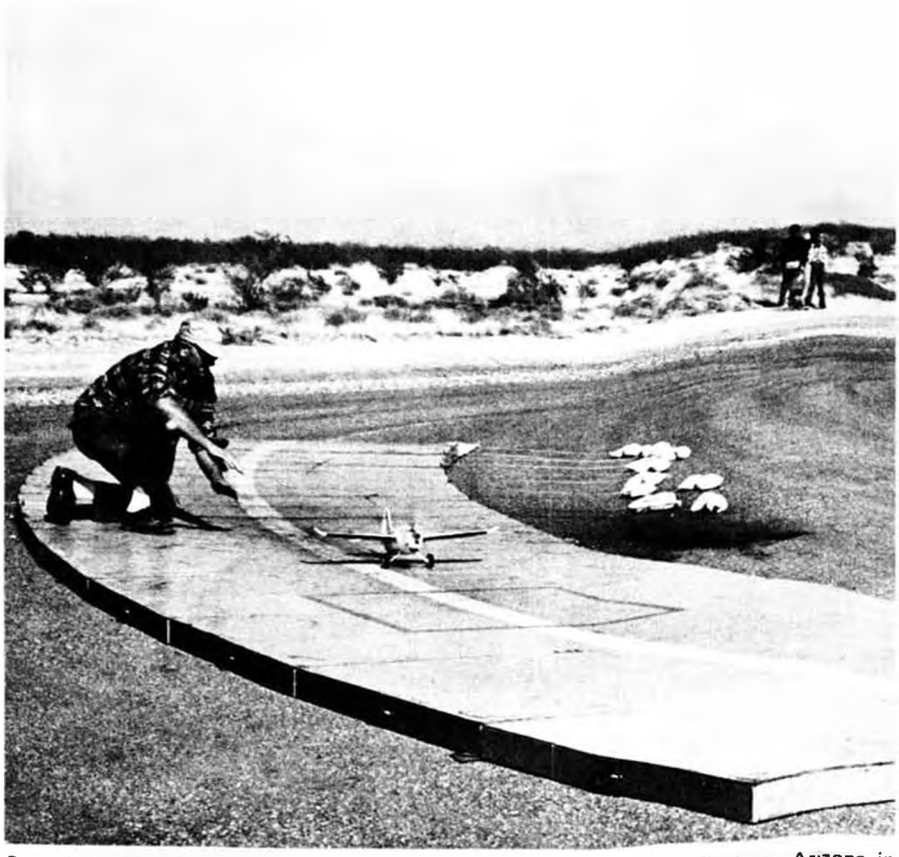


Some think they can reduce tip loss by using special wingtip shapes (elliptical, double taper, round, swept, etc), but the effect to tip shape is overrated and is much less important than aspect ratio.

I included a couple of typical elevator airfoils in Illustration No. 2 to show the importance of a streamlined-shape rather than the usual flat plate (the bottom one). A streamlined elevator airfoil can make a big difference in speed and maneuverability. Haven't even mentioned flaps, of the effect of different covering materials. Ditto for structure: Like. is a sheeted leading edge better? We'll go into it next time.

Food for thought. I'm flying a ½A super stunter (flaps, cowl, etc.) that is amazing. First, it goes on 52 foot, .008 inch lines, which are very long for

Continued on page 54

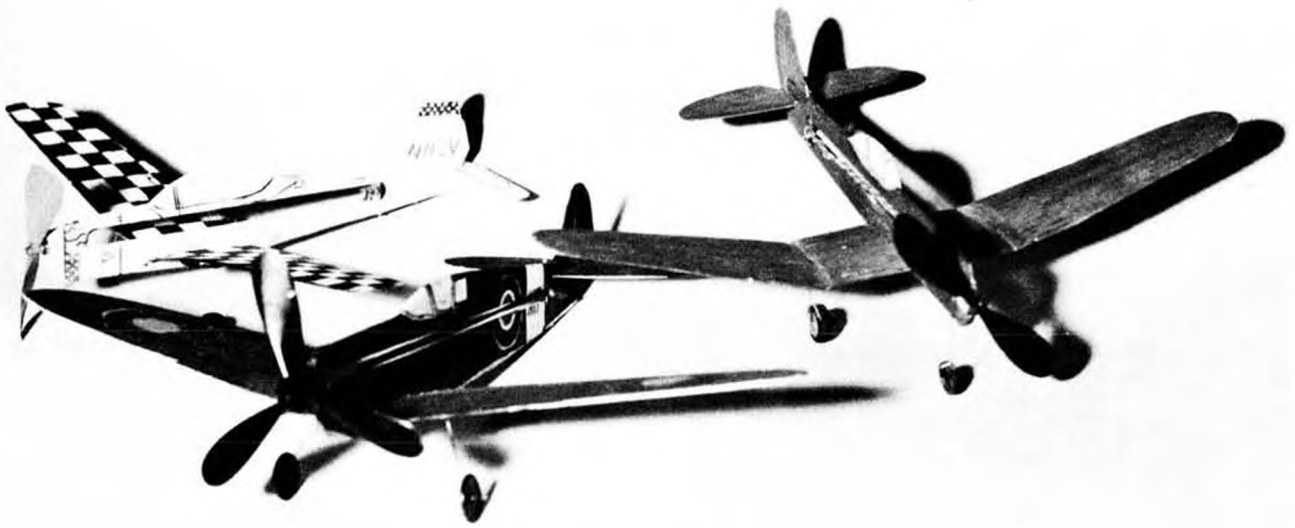


Scene is the 22nd Southwestern Regional Model Airplane Championships, Buckeye, Arizona, in January, 1972. Noal Hess' Curtiss SOC-3 Seagull is about to takeoff from the carrier deck.

Ron Duly's Martin XBT-1 making a rather direct approach to the deck. He was 2nd, Class 2.

Kris Jones, 15 years old, tuning his North American SNJ. Carrier is popular event for all age classes. Photos this page by Tony Naccarato.

Mark Fechner, Salt Lake City, and fine looking Supermarine Seafire profile class model. Wing came from "Twister" combat model.



Profile Peanuts are a great way to get the young modelers going. Chipmunk, Spitfire, and Yak indicate that the variety is unlimited.

THREE PEANUTS IN ONE SHELL

Here's a small bag of Profile Peanuts that should delight the youngsters . . . no matter how old they are! Walt, and chip-off-the-old-block, Curtiss Mooney, developed this interesting 3-in-1 project.

● Here are three quick simple Peanut Scale profile models. Each of them can be built in a very short period and each will give many hours of flying fun. Although decorating them will not make them fly any better, it is easy to color them in an authentic fashion using felt tip pens.

The DH Chipmunk, the Yak 18PM, and the Speed Spitfire were designed and built by Douglas Mooney during a single weekend and they have all proven to be excellent flyers. As can be seen in the photographs, several different propellers were used. These were a Kaysun on the Chipmunk, a North Pacific on the Yak, and a Kielcraft 2 blader on the Spitfire. All worked well, but since the 3 blader is probably impossible to obtain, the North Pacific (Sleek Streak) propeller is shown for all. Just cut it down to a suitable diameter.

All the models are constructed in an identical fashion. Choose light wood if you want them to fly well. The drawing looks a little confusing with the three models superimposed on one another but by looking closely the proper outlines for each one can be easily determined. The Chipmunk's surfaces are the most angular, the Spitfire's surfaces are the most elliptical, and those of the Yak 18PM are in between.

Cut the vertical tails, the horizontal tails and the wing panels out of one thirty-second sheet balsa. Cut the fuselages, the nose doublers, and the landing gear support pads out of one-eighth sheet balsa. Note that all the horizontal tail slots in the fuselages are on the same line. Make the slot only long enough to accommodate the proper horizontal tail. The wing slot for the Chipmunk and for the Yak are also in the same place. The front of the Yak slot is indicated by a "Y", and the aft end of the Chipmunk wing slot is indicated by a "C". Sand the edges of the parts smooth. Put the aluminum tube bearing in place at the front of the fuselage and cement the doublers on either side of it. Make sure that this joint is secure but don't get cement in the tube.

Now give all the surfaces and the fuselages a light coat of sanding sealer or thin dope. Standard Brands paint stores have a brand of lacquer known as "Magic" which includes sanding sealer in spray cans. This works really well, but other brands will undoubtedly work also. After this is thoroughly dry, sand off the balsa fuzz with 320 or finer sandpaper.

When the parts are smooth, they are ready for whatever decoration the builder cares to add. Felt tip pens which are available in whatever color you can think of, provide a very lightweight way to color the models. Canopy outlines, surface hinge lines, cowl and exhaust system outlines are easily drawn in with a thin black felt marking pen. If your flying weather is dry it won't be necessary, but if your model is likely to get in the dew, a light spray coat of lacquer or dope will keep the ink from running. Don't overdo it, 'cause the dope can make it run too!

The curvature of the wing slots determine the airfoil section of the wing. Simply cement the wing halves into the slot and block up the tips for the proper dihedral and let the cement dry. In the case of the Yak, cement the center section in place and then cement the outboard panels to the center section after forming the proper airfoil section by bending them around your fingers. As they are drying, check to see that the wing panels are maintaining the correct airfoil and dihedral.

Cement the horizontal tail in the slot. Check to see that it is properly aligned and does not lean either side of horizontal. Cement the vertical tails carefully in place. They must be exactly vertical and exactly centered on the top of the body.

Continued on page 54

TYPICAL LANDING GEAR MOUNTING IS SHOWN BELOW. SPITFIRE GEAR SLANTS OUT 1/2" OTHERS VERT.

CEMENT PAD TO BOTTOM OF WING.

DIHEDRAL

LANDING GEAR LOCATIONS: CHIPMUNK, SPITFIRE, YAK-18PM

WINGS

NOTE CURVED CUTS AT DIHEDRAL JOINTS BECAUSE OF AIRFOIL SHAPE

CHIPMUNK

YAK-18 PM

SPEED SPITFIRE

SPEED SPITFIRE

YAK-18 PM

CHIPMUNK

1/8TH BALSA NOSE DOUBLERS CEMENT ON BOTH SIDES OF ALUMINUM TUBE BEARING - USE PLASTIC PROP TRIMMED TO CLEAR GROUND

FUSELAGE TOP VIEWS

CHIPMUNK

YAK

SPITFIRE

CHIPMUNK LANDING GEAR SUPPORT PAD 1/8TH BALSA-WIRE IS CEMENTED TO IT.

YAK

SPIT

CHIP

CHIPMUNK

YAK NOSE GEAR

C.G.

YAK MAIN LANDING GEAR

SPITFIRE

YAK

SPITFIRE

YAK-18 PM

CHIPMUNK

SPITFIRE

HORIZONTAL TAILS

ALL WIRES SHOWN TRUE LENGTH IN THIS VIEW

NOTES:

1. ALL FUSELAGES ARE 1/8TH SHEET BALSA.
2. ALL TAIL SURFACES ARE 1/32 ND. SHEET BALSA.
3. ALL WINGS MADE FROM 1/32 ND. SHEET BALSA.
4. USE 1/32 ND. DIAMETER WIRE FOR ALL LANDING GEARS
5. USE HARDWOOD, PLASTIC OR BALSA WHEELS - NOTE DIAMETER.
6. USE STRAIGHT PIN FOR REAR MOTOR PEG.
7. GIVE ALL BALSAWOOD PARTS A LIGHT COAT OF SANDING SEALER, SANDPAPER SMOOTH AND DECORATE WITH FELT PEN.

THREE PROFILE PEANUTS

D.H. CHIPMUNK, YAK-18 PM, SPEED-SPITFIRE

DESIGNED BY DOUGLAS MARTIN MOONEY

DRAWN BY Walt Mooney 4-27-72

PHOTOS BY GEORGE BAHRMAN

Photo of the year? Eric Dyer wins his first trophy, 3rd in towline glider at SCAT Junior Only contest. Proud father and brother look on from lower right. That captured expression surely has to be the reward for a job well done by adult SCAT members who put on the contest. Contest Director Bill Hartill presents the award. Scene is Sepulveda Basin, Los Angeles, California.

FREE FLIGHT

by Mel Schmidt

ALL-JUNIOR SCAT CONTEST
26 March 1972

● Members of the Southern California Aero Team (SCAT) are devoted to the three FAI Free Flight events. However, for their 1972 annual, they put aside their own interests and hosted an All-Junior Contest. The events were gas, rubber, towline and hand launch glider and the flying site was Sepulveda Basin. AMA Category II small field rules were used. Entry fees were fifty cents and awards were made through fifth place in each event. How many Juniors entered? There were forty-two.

The weather was uncertain, with heavy cloud banks and periods of wind and calm. Thermals were spotty and often far between. During one of the trips downwind, we talked at length with three of the flyers. They were very enthused. More so than if it were just another contest with Junior events added in. This was their meet and they knew it and enjoyed it. We believe many more contestants would have entered had the meet received more publicity and the weather been more favorable.

The contest winners were:

POWER	
Jim Kelly	818 seconds
Scott Valentine	410
Tim Faulkner	235
Dan Kline	138
RUBBER	
Tim Faulkner	324 seconds
Brian Hartill	282
Joel Rieman	262
James Hatrak	252
Joseph Bonang	252
Monti Rieman	230
TOWLINE GLIDER	
Daniel Diez	533 seconds
Billy Hartill	479
Eric Dyer	450
Steve Schmidt	449
Brian Hartill	387
HAND LAUNCH GLIDER	
Joel Rieman	247 seconds
James Hatrak	201
James Bonang	166
John Ferrer	102
Kerry Cusick	100

Congratulations to the SCAT Club and CD Bill Hartill, for a job well done.

LS FOX .29X

Several months ago we mentioned that we were sending a Fox .29X to Larry Scarinzi for tuning. Here is a report on his effort.

The motor was back to the house twelve days after shipment. We mounted it on a test stand and started to run it using 10% nitro fuel and a 9 x 4 Kavan glass fiber prop. Setting it on a fast four cycle, the RPM's were at 15,100 (before tuning, the motor had peaked out at 14,500 using 35% nitro fuel and the same prop). This motor had really changed. We ran it for some thirty minutes, then set it for a fast two cycle. The Heathkit tach read 17,100. We then changed from 10% to 35% nitro fuel and tached it at 18,200 RPM. Larry had caused the peak RPM to change from 14,500 to 18,200. A substantial improvement!

How does this compare to other engines? It's about 1200 RPM faster than a good front rotor K & B .29 and di-

Our cover boy, Jim Kelly, and Sundancer. Plane's Ramrod parentage is apparent. Tatone engine mount and timer. Dyed Aero Gloss, tissue.

Unknown contestant about to launch helicopter during all Junior SCAT affair. Note the front air scoops on the jeans.

rectly equivalent to our results on the K & B .29 RR. When the motor is ready for 50% nitro fuel, we will use it. Also a K & B speed needle valve will be installed. Expected results are RPM's of over 19,000 with a BHP output of greater than .90. The LS FOX .29X is available for $21.50 plus $1.25 postage by sending a money order to Larry Scarinzi, 191 Parsippany Road, Whippany, New Jersey 07981.

FLYING POWER WITH AUTO-SURFACES

The adjustment of an auto-stab and auto-rudder equipped power ship can be puzzling if it is your first try. We will describe the checkout of a new model step-by-step. Our model is a pylon ship with typical moments, designed to be flown in a right-right pattern.

The C.G. comes first. Each design has a range within which the best C.G. will be found. The plans will show a C.G., but it may be necessary to modify this for best performance. Generally the C.G. should be farther forward for an auto-stab equipped ship than for one with a fixed stab. A C.G. position that results in a wing to stab angle difference of about 3 1/2 degrees seems to be about right for glide trim.

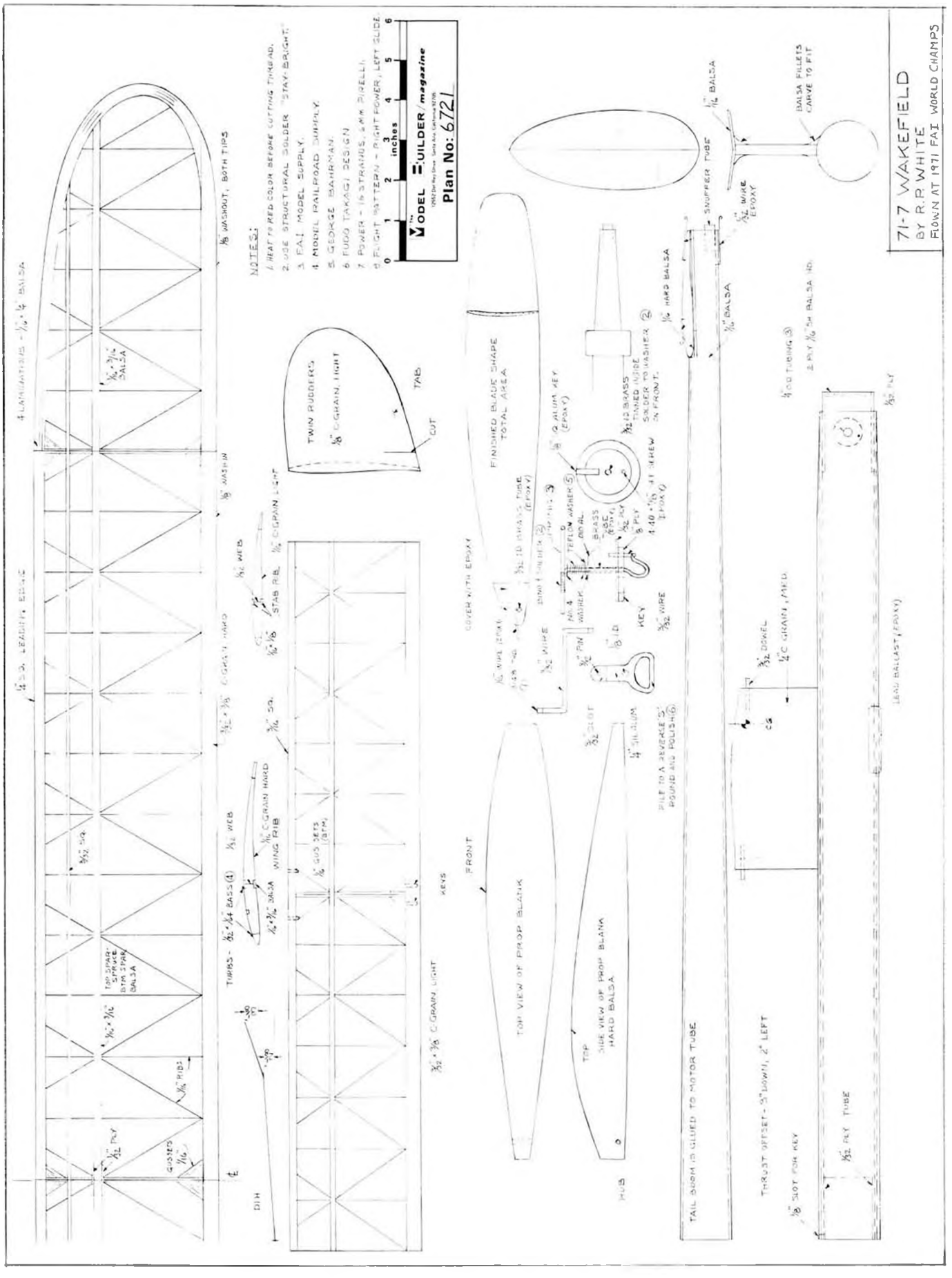
The C.G. is important, however its position is not as critical as it would be for fixed stab ship. This is true because the adjustment of glide incidence on a fixed stab ship also results in a change in power characteristics. Said another way, the C.G. should be located such that a flat glide occurs when the wing to stab angle difference is in the 3 to 4 degree range.

Downthrust is not recommended in this application. Vertical take-offs can be safely handled by launching at the

Continued on page 47

Nature's own thermal sniffer is demonstrated to Johnny Ferrer by his dad, John. Cat tail helped Johnny get a 4th in H. L. glider.

Brian Hartill sets up the dethermalizer on his "Torrey Pines" towline glider. Ship is a great trainer for this event. He placed fifth.



FULL SIZE PLANS AVAILABLE—SEE PAGE 56

PHOTOS BY GEORGE BAHRMAN

Bob and his 71-7 Wakefield. Ship earned Bob third place in World Champs in Finland, 1971. This was highest place for Americans in quite a few recent years of this event. Ship is not complicated.

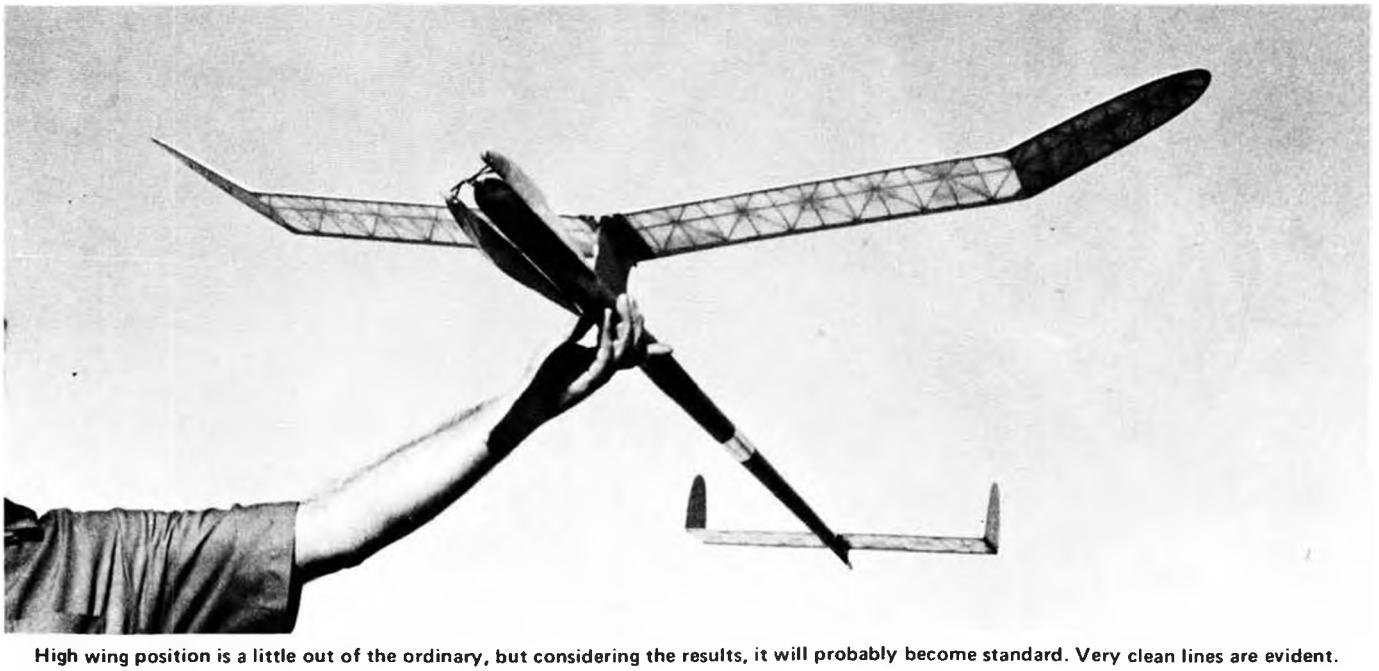
WAKEFIELD 71-7

Ounce for ounce the third best Wakefield in the world designed, built, and flown by U. S. Team member Bob White. His trimming method is well worth reading even if you don't intend to build the model.

● The model presented here is the seventh in a series of Wakefield designs that I used at the recent World Championships in Goteburg, Sweden. My approach to Wakefield design is performance, reliability and simplicity. By the omission of auto surfaces I have increased the reliability, and by careful placement of the center of gravity, relative to the model's individual flying characteristics, the performance, especially in glide, has been steadily improved to where, under certain conditions, the model will max without assistance.

When we talk of still air performance we have to consider other factors such as air density. It's quite difficult to evaluate a model under still air conditions, so I won't make any claims as to the model's still air performance. In our early morning California air I have no trouble exceeding the three minute max, but later in the day, when the temperature rises, I'm afraid it's flight time is somewhat less than 3 minutes.

This model is not intended for the beginner, although most assembly can be done without the aid of special tools. You don't need the facilities of a machine shop and parts are readily available at your local hobby store. The motor tube is two laminations of straight grain hard 1/16 balsa. Covering this is a layer of fiberglass cloth, applied with nitrate dope, and an inner plywood ring to strengthen front end in case of motor breakage. The motor tube portion of the body will break if the fiber-



High wing position is a little out of the ordinary, but considering the results, it will probably become standard. Very clean lines are evident.

The clincher! Bob's final flight at the 1971 FAI Finals for U. S. Wakefield team. He made it, of course. Lord Wakefield cup dates back to early thirties. Rules have changed quite a bit since then.

Details of wing structure show up in this photo. Geodetic surfaces prevent warps and flutter. Note bass wood turbulators. Fuselage is two layers of balsa, fiberglass and tissue.

Close up of prop mechanism. Note nose block key and easy blade replacement feature. Rubber bands hold blades snug to fuselage once prop stops. Blades carved from hard, straight grain balsa.

glass cloth is not used. A layer of tissue is also used over the fiberglass cloth. The plans are quite self-explanatory.

The ballast weight, which will vary considerably, depending on the total weight of the airplane, performs an important function, in that it helps locate the model's best center of gravity position.

The first step in test flying the model is to properly locate the center of gravity. This is accomplished by assembling the model completely ready to fly, and taping the lead ballast to the model as shown on the plan. The model is then test glided until it is gliding satisfactorily. The lead ballast is then moved rearward until the model stalls. Then positive incidence is added to the stab until the model glides evenly. This procedure is repeated until the model reaches what we call a zero condition of instability, which means the model flies in a straight line, either dives or stalls, depending on how it is launched. Then the ballast weight is moved forward and incidence is taken away from the stab until the model is gliding satisfactorily and also exhibits stability characteristics. This is my method of establishing the optimum glide characteristics of the individual model.

Power flights are accomplished by putting in 100 (one hundred) turns and launching the model in a gentle right circle and adding rudder tab to circle left in the glide. As power increases the model will straighten and go almost vertically during the burst, then level and circle to the right. During a normal power run, about 3 (three) turns is normal.

A word about rubber: I use a Bob Wilder torque meter to test my motors before flying. Motors are tested for consistency and adequate power. This is accomplished by winding a broken-in motor half way and measuring the torque. By using this method I don't fatigue the motors and yet I have a measure of the available power for each motor. This avoids the inevitable tired motor on your deciding flight.

There are many articles written on the strategy of flying Wakefield in F.A.I. competition. Mostly, I feel, it is important to have a properly adjusted and thoroughly tested model that you understand very well. Use the best possible rubber and put the model in lift, or at least, keep it out of down air. ●

Kent (left) and Joe Nogy get briefed on getaway procedure by starter Bud Anders. Scene is the FAST Club sponsored Talent Promotion Races at Mile Square, Formula I. Team placed 4th with Miss Dara.

PHOTOS BY CHUCK SMITH

pylon

By Chuck Smith

● There has been much debate about the best way to get new blood into pylon racing. Formula II, Sport Pylon, Ugly Stik races, etc., have had varying degrees of success in different sections of the country and seem to offer a partial answer to the problem. But due to the large number of flyers in the NMPRA Southern California District, a different solution has been found. On March 18-19, 1972, the FAST Club (First All Speed Team) sponsored this area's third Talent Promotion Formula I Race. John Garabidian was CD for this extremely successful contest held at Mile Square in Fountain Valley, Calif. Help was no problem since most FAST Club members, many of whom are top Formula I pilots, pitched in to help promote their favorite sport.

The question of who would be eligible for this contest was the responsibility of John Brodbeck's Rookie Pilots Committee. They generally decided that any pilot who entered two or less contests during 1971 could race. This still left the question of eligibility somewhat unclear before the contest began and there was some debate over the qualifications of five of the pilots entered. The contest management, however, decided rightly that the pilots should not be penalized just because they were "talented" rookies. When the contest ended Sunday, incidently, four of these pilots had captured the top places.

The FAST Club was not sure whether it was desireable to promote Paul White's particular talent, but Paul proved to be unbeatable in the eight rounds of racing with his beautiful K & B powered Minnow. This latest Minnow is a vast improvement over his last profile canopy Minnow and is about as cut down as you can make a Minnow and still receive reasonable scale points. His wheel pants are about 1/4 inch thick (he uses his own wheels) and his cheek cowls incorporate a unique cooling and exhaust system. The amazing thing is that he claims to have built the plane in only eight days!

Second place was decided in the last round heat between John Powell and Bill Warner. John, up to this time, had all first places and the fastest time of the meet with a 1:53.5. But Bill, who finished seventh overall, put it all together and nosed out John in a very exciting race. John's Supertigre powered Miss Dallas was extremely fast and he flew a smooth, consistent course. He definitely should be a top competitor this season.

Big Ron Neff from Bakersfield continued to improve on the talent he displayed during the latter part of the 1971 season, and placed third. Kent Nogy and his cousin Joe, who form the WART'S (Warsaw Air Racing Team), raced with their Telford-Violett uniforms and finished fourth. They were two out of several flyers who learned the lesson of the tweaked needle valve. Tom Cone, who usually races once a year, had a relatively slow Mustang but he flew what many considered to be the

First place winner, Paul White clears area while Jan Sakert holds his Minnow. All shots on this page at FAST Club Talent Promotion race.

John Powell (left) about to start his 2nd place Miss Dallas. ST power. Jack Hertenstein holds. John had FTD at 1:53.5, lost one heat.

Ron Neff, Bakersfield, shows concentration as he works for 3rd place. Caller Mel Santmyers, safety committee man. His "bug eyes" are ear protectors. High rpm racing engine noise definitely damages hearing.

Bill Warner, with L. Maynard holding. Bill was only pilot to beat John Powell, but came in 7th. Consistency still pays higher than speed.

First pylon race for lady R/Cer Loretta Hall. Howard Reed holding. Loretta discovered that stomach butterflies play no favorites!

Bill Hebestreit accepts 10th place trophy from Joe Bridi. NMPRA president Bror Faber, in white hat, applauds. Nice looking hardware.

most consistent, smoothest and tightest course of the contest. This flying ability was good enough for fifth place. Allan Howell, who finished sixth, had an unfortunate accident. He had finished his last heat in the last round when his Minnow folded its wing on his extra insurance lap. I guess that's better than folding it in the first heat at the next contest.

The following are some random observations: The fathers of Chuck Hebestreit and Dan McCan, Bill and Dwight, did a great job in proving they could fly pylon too; Lon Zienneker had a beautifully detailed Shoestring that he flew with the proficiency of an expert pilot; Wesley Morris from Phoenix consistantly made the best take-offs that I have ever seen *any* pilot make; Loretta Hall, Southern California's first woman pylon racer, learned what it's like for every pylon racing pilot. Before the racing started, she said to me, "You didn't tell me that my stomach would hurt so much!"

It would be difficult to have a more successful contest. Approximately half of the 37 entries had not raced before and I think that every one was bitten by the pylon racing bug. There were very few cases of a pilot flying erratically and only four crashes, two due to radio, one on landing and one wing folding, which isn't bad for a rookie race. I don't think any of the pilots attempted to fly a course that was beyond their current capabilities. A pilot gets in trouble when he allows his aircraft to get ahead of him, and it looked like most pilots at this contest did not allow this to happen. They didn't turn until they were ready to turn, which is part of the learning process that all pilots must go through.

There will be another Talent Promotion Race in Southern California this summer. It will be extremely difficult to

Winners in Tampa, Fla. (left to right): Ed Weitock 2nd, Jim Schweitzer his caller, Jim Demeritte 1st, Ed Demeritte his father and caller, Charlie Gray 3rd, team mate and caller Jack Fehling standing, Bill Williamson with best performance trophy. Demeritte's K & K, ST Ballerina in front.

Race gets under way at Tampa Fla. Looks like a real unassisted release on number 59.

duplicate the success of the March race. Trophies were awarded through tenth place and plaques through 30th. Everyone (well, almost) went home happy and anxiously awaiting the next race.

There was some discussion at the FAST Club race concerning the interpretation of several paragraphs in the AMA Rulebook. The first concerned the registration numbers on the aircraft. The rulebook states:

"23.7.2 The Registration number is required on the upper right and lower left panel. The minimum height of the numbers on the wing will be 2 inches. The minimum height of the numbers on the vertical tail surface will be 1/4 inch. The letter N will precede the registration numbers.

"23.7.3 An alternate method will be placing a minimum of 1 inch numbers along each side of the fuselage behind the trailing edge of the wing."

This last paragraph can be interpreted as meaning that it is an alternative to the entire paragraph 23.7.2, i.e., if an aircraft has registration numbers on the sides of its fuselage, then they do not have to be on the wing or vertical tail surface; however, this is not the intent of the rule. Paragraph 23.7.3 is intended to be an alternate to placing the 1/4 inch numbers on the rudder or fin; therefore, the 2 inch registration numbers should always be placed on the wing. The purpose of this rule is to have the registration numbers on each separable part of the aircraft and most R/C aircraft have a detachable wing. The FAI regulations also take into account a detachable stab by requiring registration numbers on the wing, fuselage and tail surfaces. So be sure that your pylon racer has all the required numbers, especially if you plan on attending the Nats (wherever it may be).

RESULTS

	NAME	ENGINE	AIRCRAFT	TIME
1.	Paul White	K&B	Minnow	1:54.6
2.	John Powell	ST	Miss Dallas	1:53.5
3.	Ron Neff	K&B	Minnow	1:59.5
4.	Kent Nogy	K&B	Miss DARA	1:56.0
5.	Tom Cone	K&B	Mustang	2:09.0
6.	Allan Howell	K&B	Minnow	2:13.5
7.	Bill Warner	K&B	Minnow	1:58.4
8.	Steve McIntyre	K&B	VK Ballerina	2:16.9
9.	Bill Lawson	K&B	K&K Ballerina	2:07.5
10.	Bill Hebestreit	K&B	Minnow	2:14.0
11.	Dick Artunian	ST	Shoestring	2:18.6
12.	Jose Amezcua	K&B	Minnow	2:50.5
13.	Ron Russel	K&B	K&K Ballerina	1:59.5
14.	Lon Zienneker	K&B	Shoestring	2:12.9
15.	Jerry Boyce	K&B	Minnow	2:15.0

The question was also raised concerning what to do if a contestant does not have a three-view drawing or photographs of his aircraft. The AMA rulebook only says that it is the contestant's responsibility to provide this material. It does not state what contest management should do if a three view is not provided. Should the contestant be disqualified or should the lack of three views be ignored, since most judges know what the aircraft is supposed to look like? At the Talent Promotion Race, a compromise was reached. The aircraft were first divided into three groups consisting of average, good and excellent workmanship and realism. The aircraft in the excellent group with three-views were then judged, followed by the ones without three-views. The good and average groups were then judged the same way. This means that an aircraft in the excellent group without three-views was still ranked higher than an aircraft with three-views in the good group. This was an excellent solution to the problem and probably should be followed by all CD's.

Surprisingly, even the simplest of rules need further clarification. The rule regarding props is a case in point. The rule book states simply that, "only wooden, fixed pitch, two blade propellers shall be permitted." Straight forward, right? Not so. Many flyers use props that have a clear finish over them. Most stock props come finished this way so this is considered perfectly legal. Then along comes the pilot who coats his props with epoxy or polyester resin. They still look like the finish on stock props but are stiffer. Then a pilot tries a coat of epoxy and fiberglass, which makes the prop even stronger.

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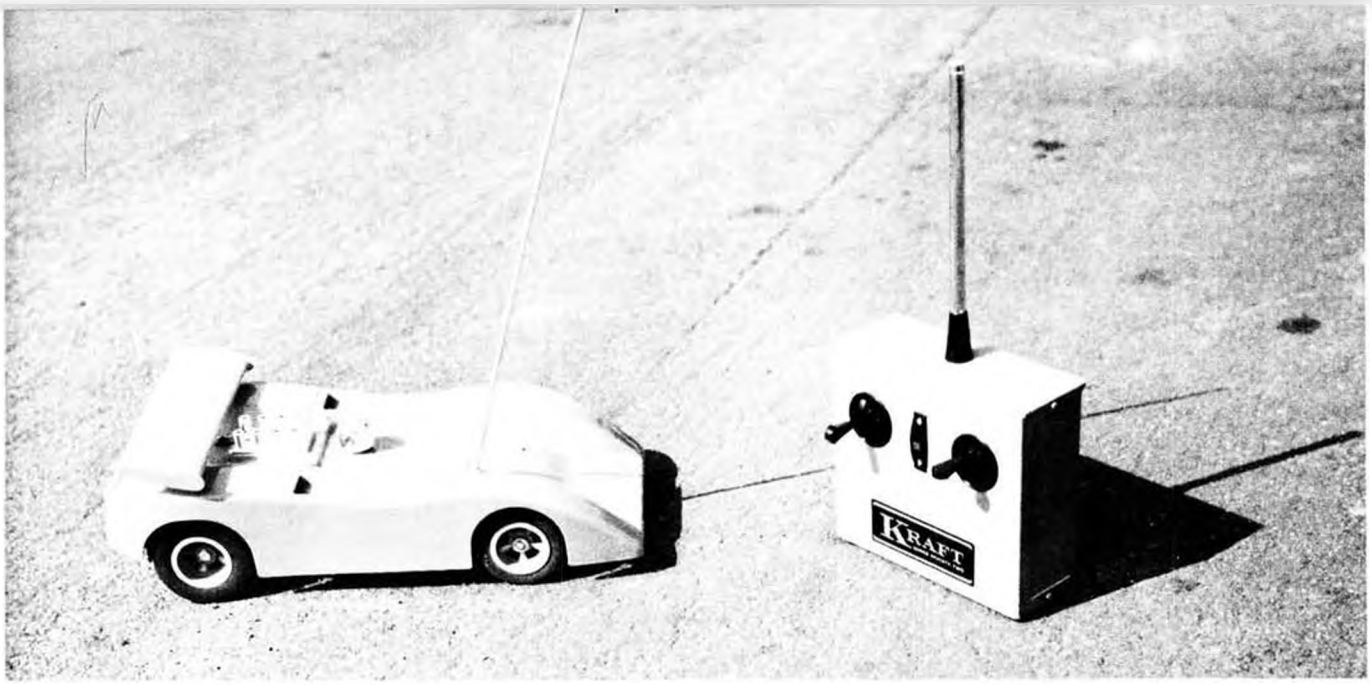


The "Fun Team" as tested by the editor; Jerobee's Comando and Kraft's KP-2B system. Car runs an actual 20 mph and keeps you busy!

R/C AUTO NEWS

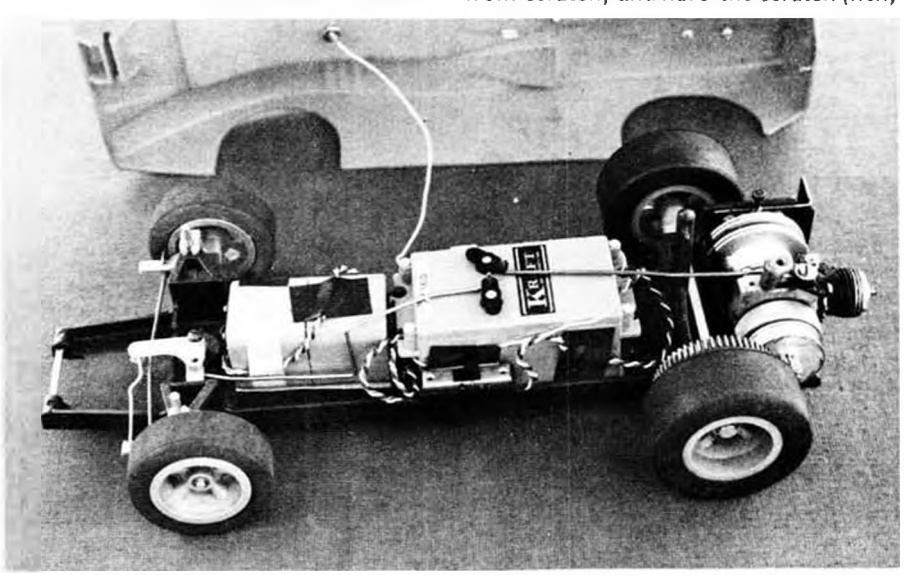
"Products in use" report on the Kraft KP-2B as installed in a 1/12 scale Jerobee race car, by MB's editor. Also a report on Southern California ROAR activities, by Dick Norsikian.

● Did you ever have an urge to take a whack at the sport of Glo-powered R/C race car driving? Currently, the 1/8 scale, .19 powered cars dominate the activity in this growing sport. "Growing" may seem to be a contradictory word choice to the casual observer, however, we are talking in terms of the slow but steady increase of "hard core" race car modelers who are developing the sport. The "faddists" have been and gone, the get-rich-quick promoters with ideas of permanent Grand Prix race courses and a miniature Hertz "rent-a-racer car" business have switched tobacco for other pipe dreams. Now it's time to consider the sport for the serious R/C car enthusiast.

There is almost no less expensive way to get a sample taste of this sport (outside of begging, borrowing, or stealing) than to purchase a 1/12 scale Jerobee Comando (McLaren body) for $34.95. This is a complete car, ready to run, needing only the installation of a radio unit and linkages to steering and throttle. If you're starting completely from scratch, and *have* the scratch *(heh, heh)*, you can purchase the car *with* Jerobee radio for $115.00. However, our idea here was to investigate the situation from the point of view of a modeler who is already in possession of a proportional radio unit of two or more channels.

The most logical airplane radio for use in car driving is a single/stick set up using the rudder knob for steering and throttle for . . . yeah . . . throttle. Since, however, the most common radio unit is two stick, we went that way. For this report, we borrowed (*Less* than less expensive, right?) a KP-2B unit on 72.160 MHZ from Uncle Phil. Literally translated, that means we requested the temporary use of a two-channel, two-stick, dry battery powered, radio from Kraft Systems etc., etc., see back cover.

The KP-2B is the least expensive unit produced by Kraft, currently selling for $119.95, featuring the popular "brick" concept receiver/servo block. The block consists of the receiver and the "innards" of two KPS-12 servos. To complete the land, sea, or airborne package, there is a square battery case to hold 4 pen-cells (don't waste your money and handicap your receiver/servo operation by using regular carbon-zinc flashlight batteries. Stick to the alkaline type), which is linked to the receiver/servo



Body removed to show Kraft radio installation in Jerobee. System is shut off with engine in high position for next start. "Z" bend in steering pushrod protects servo. Tape prevents flopping wire.

block by way of a switch/cable.

The transmitter takes an Eveready 276 9 volt dry battery (or equivalent), which should operate it, under normal conditions, for as long as one year. A word of caution to those of you who are used to having a rechargeable nickle cadmium power supply: It's easy to get a little careless about those ON-OFF switches when using nickle-cads. What the heck . . . if you forget and leave things on while you're piddling around with the installation . . . so what . . . charge 'em up. 'Tain't so with dry batteries, so *watch it!*

The photos show how easy it was to install the unit in the Jerobee car. A little thought and fit-and-try did help, though. For instance, the "brick" and the battery pack must be located to both clear the low front hood line and to allow a clean shot for the control linkages. We used double stick foam tape to mount the receiver/servo block, the ON-OFF switch, and the battery pack. Actually, it would be best to fasten the battery pack down with a "U" shaped metal strap, held in place with 4-40 bolts and nuts through the chassis floor, so that changing batteries would be easier.

Rather than shorten the 36 inch receiver antenna wire (the manual explains how to do this when the radio is to be used in a car or boat) we used it as is. First, install a 15 inch length of nylon tubing (inner Golden Rod or Nyrod tube) in the existing antenna hole. Clamp in place with proper size nuts which will self-thread into the tube, or use wheel collars. Feed the antenna through the tube and tie a knot in the end. Wrap the excess back and forth in the receiver mounting slots, leaving enough slack to permit swinging the body up for engine starting.

A Goldberg bellcrank is mounted on a sturdy spacer to transfer servo effort to the steering arm. A large paperclip wire was used to link the arm to the crank and 1/16 inch music wire control rod connects the crank to the servo output arm. A large "Z" bend in the control rod will absorb road shocks. A small "z" bend at the crank and an "L" bend (up) at the servo eliminates the need for keepers.

The factory installed linkage from the Jerobee radio throttle servo output arm to the Cox throttle lever is a masterpiece of 3-dimensional complexity in disguise of extreme simplicity . . . just one lousy piece of music wire that starts at the rotary servo output arm, passes through a hole in the body

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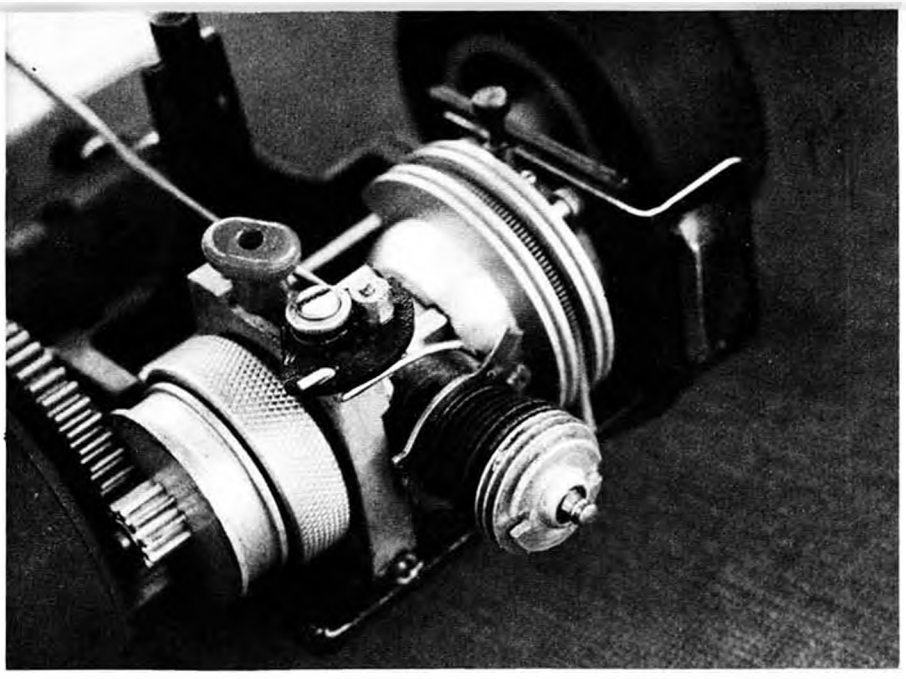
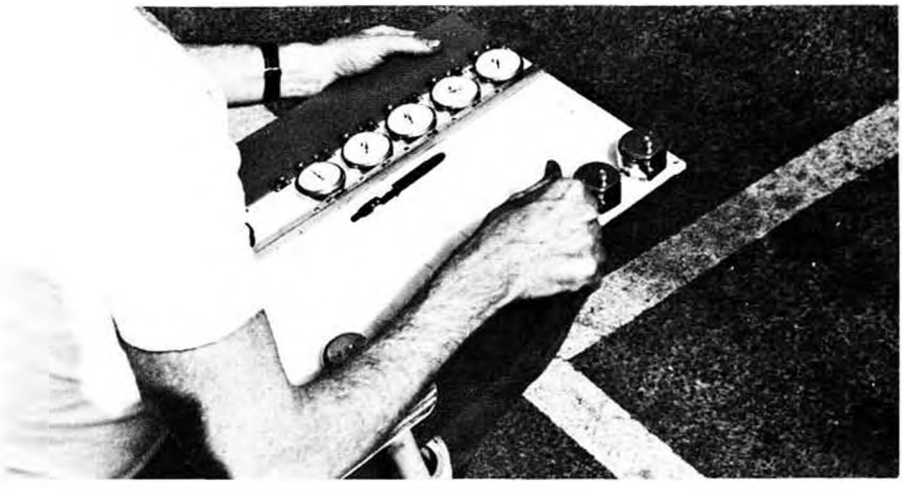
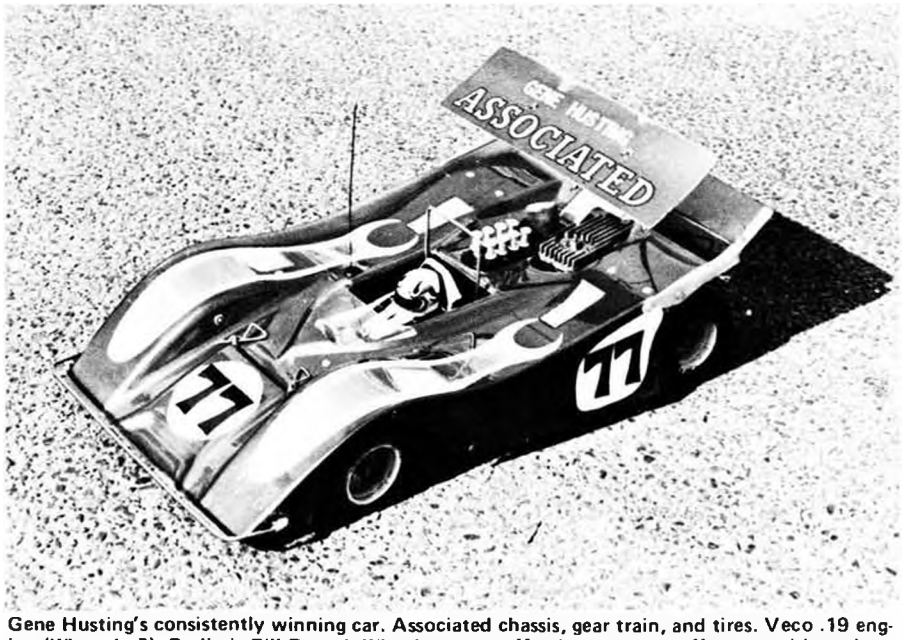


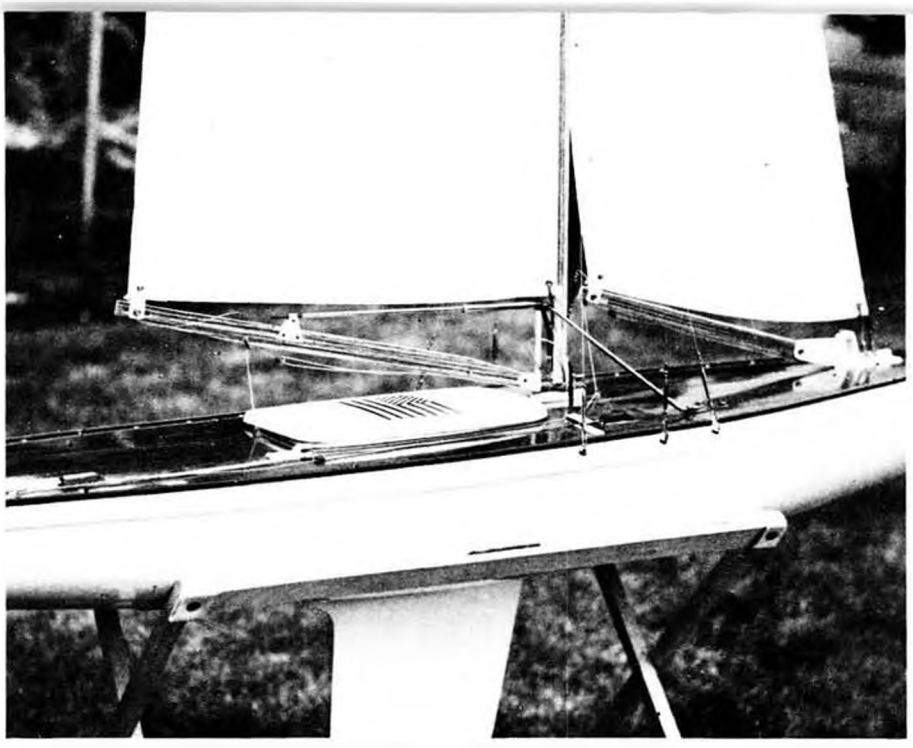
Close up shot of Cox engine in Jerobee shows cooling accessory strapped to fuel tank. Modified rotary servo output wheel provides transition from throttle servo to exhaust baffle lever.



Timing and lap-counter board as used by most southern California racing clubs. All watches can be started at one time, stopped individually. Names easily changed on white plexiglass base. Experience has proven that one man can handle the whole operation.



Gene Husting's consistently winning car. Associated chassis, gear train, and tires. Veco .19 engine (What else?). Radio is Bill Deans'. Wing is proven effective. Marked difference without it.



The GHIBLI is a 50/800, or Marblehead class yacht imported from Germany. Length 50 inches, beam 12-3/8, draft 16-3/4 and mast height is 6 foot, 1 inch. Fiberglass hull, mahogany deck.

Rudder, keel, and sails are all of high aspect ratio on this import. See text for more details.

in the lee..

with Ben Hogensen

For many years before easily available R/C came along, model sailing yacht racing was accomplished with Vane control. Our skipper brings us an explanation of this system.

● Several years ago, Roy Clough created a class of boats that has been extremely popular due to the compact size and fairly light weight which makes for easy transportation to and from the pond . . . and it is this class of boat that is the subject of this month's pictures.

Another factor for the popularity of the class was the simple rules established to govern the class! To meet the requirements, a boat had to be 50 inches long . . . no more, no less . . . and carry no more than 800 square inches of sail. Down through the years, there have been some requirements added by the various model yachting organizations, but the rules for this class are still simple by nature.

So, due to the ease of transporting and the simple rules involved, the Marblehead, or 50/800 Class that Roy created years ago, has been one of the most popular classes to date. Marbleheads are sailed by R/C in AMYA and by Vane in MYRAA.

The yacht shown in the pictures is the GHIBLI, which is 50 inches long, has a beam of 12-3/8 inches, a draft of 16-3/4 inches and a mast height of 6 foot, 1 inch.

The kit comes with a prefinished fiberglass hull complete with a ballasted built-in keel, in white only, a mahogany plywood deck with deck beams, glass-fibre hatch opening, sealed hatch cover, balanced glass-fibre spade rudder, mast booms, dacron sails, fittings and stainless steel wire. A very complete kit!

The method of mounting the booms is a bit unusual since the axis of rotation is a bit behind the luff of either sail. This allows the sails to belly more as the sheets are let out and a skipper can control the belly in the sail according to how much sheet is let out. A most ingenious system!

The GHIBLI may be obtained from Herb L. Hoser, 6275 W. Wilson Ave., Beaverton, Oregon 97005, who furnished the pictures and description of the kit. The kit is a product of Adolf Klug of Germany, and Herb imports them.

In the March/April issue of MB, the basics of R/C model yachting were covered. This month, the basics of Vane Sailing are covered and I am indebted to Al Strickland *(No, this is not Cannon Radio's Al Strickland. Ed.)*, MYRAA's genial Prexy, for delving deep into his files and furnishing the two articles on Vane sailing.

The first article, "The Push-Pull Type Vane Control," was written by Joe G. Adgett. So, without further ado, here are the words of Mr. Adgett:

"The push-pull type of vane control is suggested by Mr. L.G. Parker of the Lynn M.Y.C. It is a practical and well balanced mechanism.

"There is no backlash or lost motion, the operating force is equal throughout the steering range, and no matter what the angle of the rudder may be, the power to control it is constant, both on the push and the pull.

"Tests show that the stalling or 'burbling' angle of a rudder commences when the angle is greater than 35 degrees, and beyond this a retarding effect is created. *(Note: In the R/C discussion the angle was given as 25 degrees, but the basic fact remains that at large angles of helm the 'burbling' and retarding effect does take place! B.H.)*

"On yachts with the rudder placed well forward, an extremely long distance between the rotation centers (R. C.) of vane and tiller is necessary, but where the rudder is placed well aft, this distance can be much shorter. The position of the end of the main boom affects the placing of R.C. The vane spindle should be set as far aft as necessary to avoid the backwind from the sail, or to prevent the boom from

side-swiping the vane feather.

"Although the push-pull gear will work at practically any distance between R.C. where only one ratio only is wanted, a distance of six inches is recommended as shown in the drawing, when experiment with variable ratios is desired.

"The tiller arm and vane arm should be at such an angle to the connecting rod as to assure equal travel on both sides of the centerline of the yacht. If your vane is of the ordinary type, the vane arm will have to be shifted to the correct angle.

"For experiment with various ratios, a curved tiller arm is needed. Where only one ratio is wanted, both arms may be straight. The curve is necessary so that the connecting rod will not disturb the alignment of the moving parts when shifted from one hole to another.

"The drawing shows the proper curve for the several different ratios with holes, which when used, give different ratios.

"The push-pull type always holds the selected ratio, no matter what the angle of helm is, so the power between the vane and tiller is constant.

"The mechanism will work efficiently up to a 45 degree angle of helm from the centerline of the yacht on either side. As engineers agree that the maximum efficient angle of a yacht or airplane rudder is 35 degrees, there is 10 degrees to spare.

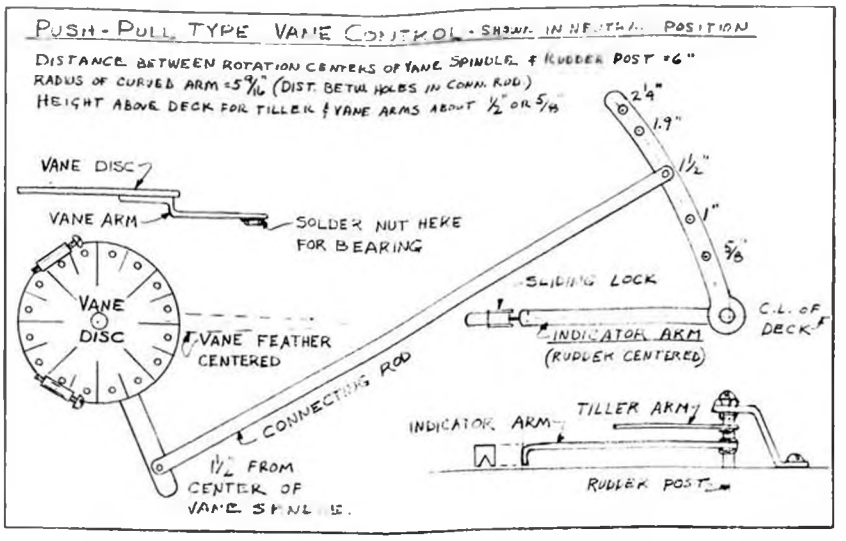
"To get this curve, describe a circle with compasses from the vane arm hole selected (1.5 inches out from R.C. on drawing) of a radius equal to the length of the connecting rod, using holes in latter as centers. The circle should also pass through the centerline of the rudder-head.

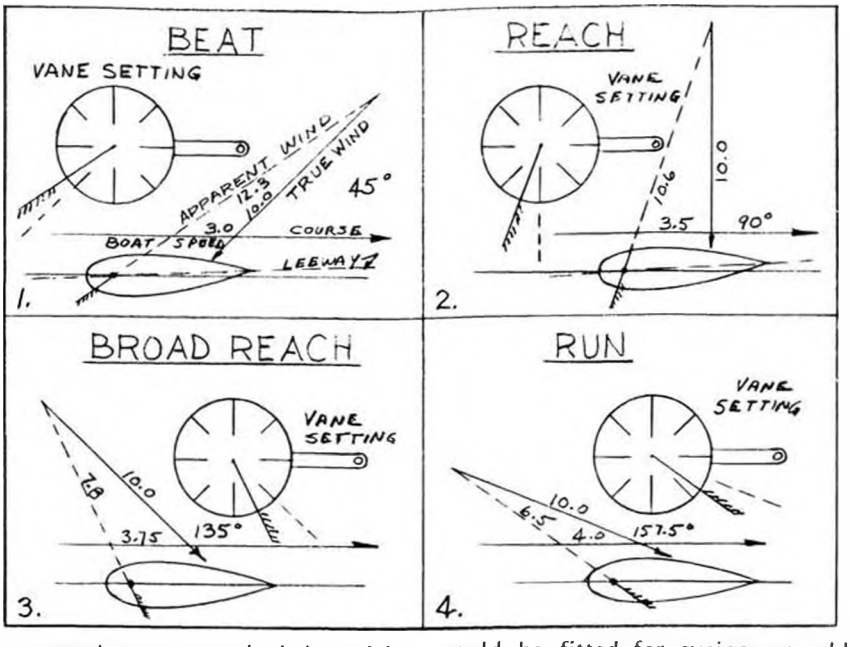
"Where equal distances on both arms are used as 1.5 inches out on both vane and tiller arms, the ratio is said to be 50-50. Using this ratio we find that the vane feather has to move 35 degrees to obtain 35 degrees of helm, which may be too slow in action.

"Going to extremes, an 80-20 ratio ratio would give 35 degrees helm with only about 5 degrees of feather, obbiously too fast.

"Hence a ratio of 60-40 is recommended, in which case the feather would move about 20 degrees to get 35 degrees helm. The writer prefers this ratio, using 1.5 inches out on vane arm and 1.0 inch on tiller arm.

"A vane arm which is *shorter* than the tiller arm has more power, but operates the helm slowly. A vane arm which is *longer* than the tiller arm has less power, but operates the helm quickly.





"Your problem will be to ascertain through experiment just what the combination is for your particular boat.

"The area of the rudder influences efficient steering. A large rudder is more efficient than a small one, in spite of more wetted surface. The larger the rudder, the less steering angle is needed, and the less drag; the smaller the rudder, the more angle needed and the more drag.

"The size of the vane feather will also have to be considered. It is obvious that a large feather will deliver more power than a small one, but this factor can be overdone. Moderation is to be sought.

"An indicator of some sort should be attached to or incorporated with the tiller arm, which will show the position of the rudder centered amidships. This indicator could have a lock to hold such position if necessary. Adjustable stops could be fitted for gyeing, or rubber bands or springs fitted for this purpose.

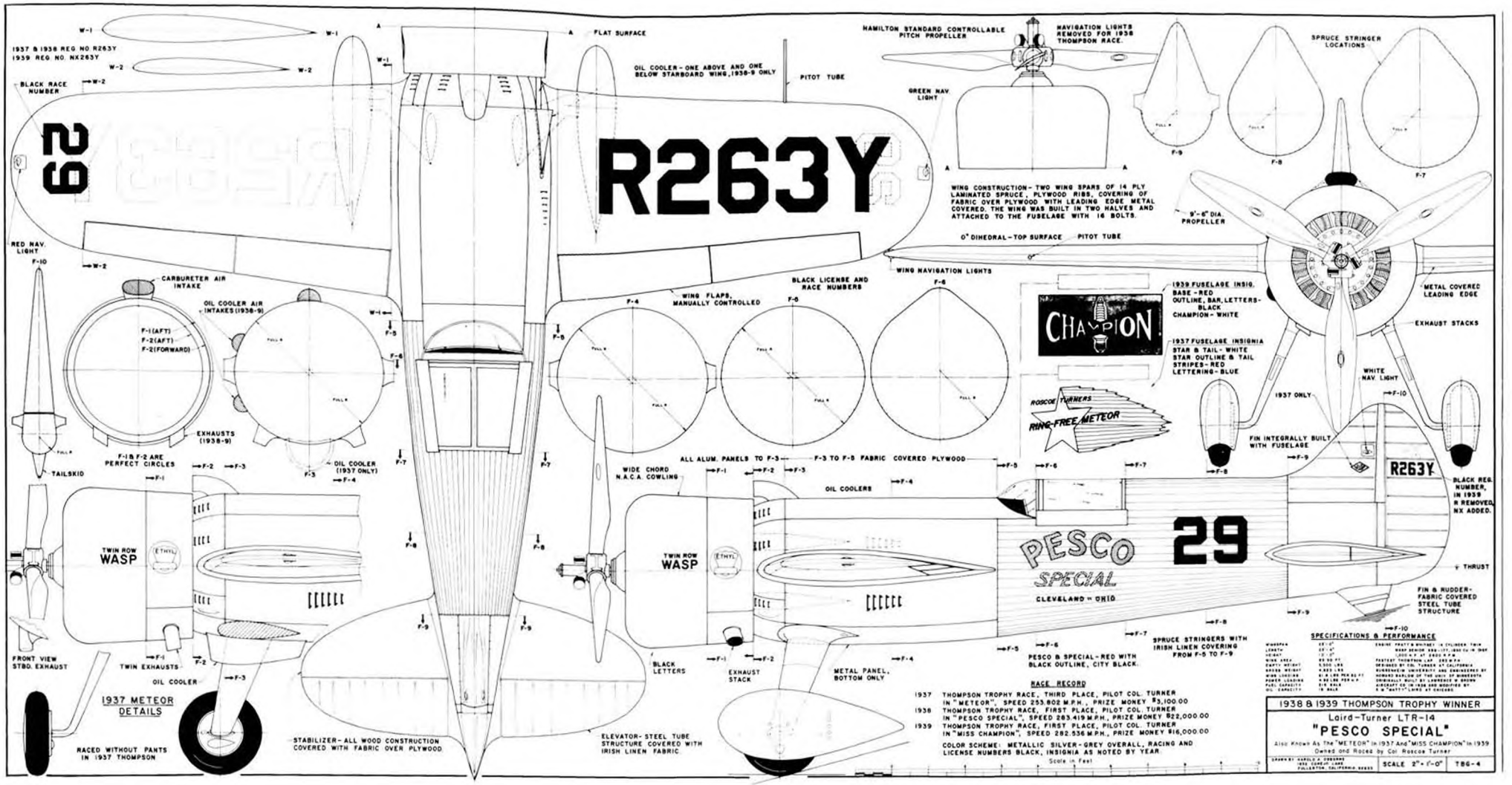
"All other types of vane steering control have a fixed ratio, unless of course, one elects to change lengths of vane arms and tiller arms . . . a tedious process.

"It may be that the ratio you are using does not give the best results, hence by shipping a push-pull type you may try several different ratios merely by shifting the position of the connecting rod."

While this text and the accompanying sketches appeared in the 1944 Year Book of MYRAA, one would have to look hard and long to find a better gear or a more complete description of whys and wherefores of Vane gear design! Admittedly, this is an early design but it is well suited for learning Vane sailing!

A Vane Gear may also be purchased from A.J. Fisher, 1002 Etowah Ave.,

Continued on page 43



SCALE VIEWS

"PESCO SPECIAL"

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

HAROLD A. OSBORNE
1932 CONEJO LANE
FULLERTON, CA 92633

AT SCALE 2" = 1'–0", 50" WING SPAN, 380 SQ. IN. WING AREA, PLAN SIZE 3-1/2' by 7'. $3.50 PER COPY

in the lee..... *Continued from page 41*

Royal Oak, Michigan 48097. This gear is well suited for use by someone just getting into Vane Sailing.

How about adjusting the gear so we can sail on a desired course? The answer to that is found in "Theoretical Vane Setting" by P.A. Fiske, who states:

"Most of us set the vane hit or miss; some adjust it carefully according to the *actual* wind direction, and wonder why the boat refuses to steer the course desired. A few skippers have discovered the principle that a boat does not sail on the *true* wind, that is, the wind direction shown by the wind-sock or flag.

"On the contrary, the boat actually sails on the *apparent* wind which is the wind direction over a moving boat.

"For instance, if a steamer is making ten knots north with the wind blowing ten knots west, the smoke leaving the funnel goes off toward the south-east. The apparent wind in this case is north-west.

"As an illustration, in the accompanying diagram (Fig. 1), a boat is beating to windward, forty-five degrees off the *true* wind, at a speed of three miles in a ten-mile wind.

"The *apparent* wind on which the boat sails consequently has a velocity of twelve miles and an angle of about thirty-five degrees over the moving boat.

"The vane should be set to this apparent wind. All sailing vessels make considerable leeway when beating; this usually amounts to two or three degrees, and can probably be disregarded in setting the vane, as degree markings would be too small to be of practical value. The markings on the vane disc indicate compass points, each point equalling 11.25 degrees.

"By examining the diagram, it can be seen that if a boat has the ability to travel faster than three miles in a ten-mile wind, the angle of difference will be greater, and vise-versa. They are simply approximate and are used for comparison.

"For correct vane setting, first determine the direction of the *true* wind, and set the feather to this in the usual manner. The necessary correction for the *apparent* wind, speed of boat, and leeway is accomplished by one adjustment, viz., moving the feather *aft* about ten or twenty degrees, or one to two compass points, as marked on the vane disc.

"It is suggested that the skipper and his mate shuttle the boat across the pond with the wind abeam, and try to make the boat return to the same spot each time. In this way the skipper can determine the greatest angle of difference. The compensating angle would have the same compass point value, but on the opposite side when returning.

"From a reach to a broad reach, the angle between the *true* wind and the *apparent* wind is greater than on any other point of sailing. (See Figs. 2 and 3) As the course of the yacht approaches the wind, as on a close reach or a beat, or keeps off the wind, as on a run directly before or nearly before the wind, this angle of difference decreases. (Fig. 4)

"A boat whose sail plan is in what is termed as the correct position generally requires a lee helm up to a certain speed. There are intermediate speeds during which a boat is well balanced, while for higher speeds she requires a weather helm.

"In order to get the most speed from our models in varying wind conditions, with the least rudder angle and its accompanying drag, movement of the sail plan is allowed in some degree by the rating rules. Moving the sail plan assists the vane and makes steering easier.

"However, in some classes this shift is so limited that it will take some experimenting to get the proper rudder pressure in extreme cases, such as very light or very strong winds.

"In a A-class yacht with a large sail plan, the back draft from the main-sail may affect the vane if the sail is sheeted too close. This may also occur with boats of smaller classes when the vane is to close to the main sail.

"From the analysis, it is observed that when on a beat, the vane feather is moved aft about ten degrees, or about one vane point or compass point from the *true* wind. When reaching or broad reaching, the feather will be aft of the true wind about two points, or 20 degrees. With the wind almost directly astern the difference is about one point.

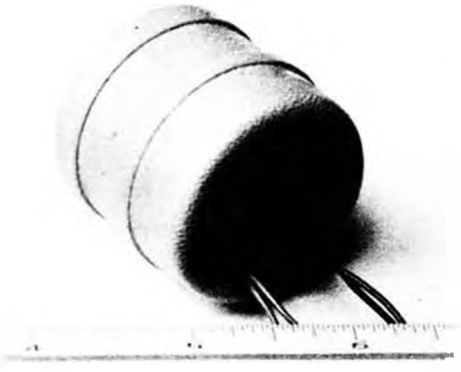
"When the wind is directly behind the counter, sails set wing-and-wing, the pressure of the jib will usually balance the pressure on the mainsail, so the vane should be set with the feather forward, on the centerline of the yacht.

"Are we still guessing? Perhaps; but at least we have something to judge by. A vane could be set accurately by mathematics, but this is out of the question for practical sailing.

"Setting the vane is very much like trimming the sails, and some skippers have an uncanny ability to get things right most of the time. They are the fellows who stand out in the club as the most successful skippers."

Mr. Fiske's article is also from the 1944 Year Book of MYRAA - and as mentioned before, I am indeed indebted

FOR SOARING . .



JANSSON THERMAL SENSOR

Here is a commercially produced, crystal controlled, lightweight telemetry sensor for every glider fan. Available on 146.385, 146.565, 146.745, 146.925 and 147.285 MHz.

Transmits under FCC Vol. 4 Part 97 on 2 meter head ham band, and requires a technician class license.

1 5/8" diameter x 1½" long. Weight is 1½ oz., and drain is 35 milliamps. Uses 4.8 volts, which may be taken from either a separate 250 maH battery, or taken from the airborne receiver battery pack. No connectors are furnished.

Packaged in a small crash resistant container and provides a range of over one mile.

Jansson Thermal Sensor broadcasts barometric changes (thermal air) by variation in tone - Low Tone: Descending - High Tone: Ascending. The audibly detected tone stabilizes at about 1000 Hz and increases (or decreases) at 3 ft. per second rate of change. It will broadcast thermal activity before the effect of rising air on the airborne glider is visibly detected.

Requires a pocket size portable receiver capable of receiving 146-175 MHz. Recommended for this use are either 99-35313L from Lafayette Radio Electronics or A-2587 from Allied Radio Corporation. These units sell for less than $20.00, and also receive broadcast band signals; test proven to be the best available for the money. They are not furnished with the Thermal Sensor, but must be purchased separately.

The Thermal Sensor will be drop shipped from the Jansson factory. Allow 2 weeks for delivery. If airmail is desired, add $1.00. Also please state frequency preferred.

(Drop shipped from Massachusetts)

No. 11A8—Jansson Thermal Sensor $75.00

ACE R/C INC.
HIGGINSVILLE, MO 64037

to Al Strickland for furnishing two excellent articles that cover Vane Sailing.

For those who missed the March - April issue, and to update the list of model yacht equipment available, here's a list of manufacturers:

A.J. FISHER, INC., 1002 Etowah Ave., Royal Oak, Michigan 48097: brass hardware, fittings, sailcloth. Catalog 50¢

AERO-MARINE PRODUCTS, INC., P.O. Box 3134, Burbank, California 91504: Regatta One-Design R/C Yacht, Dynafoil Sail Sheeting Systems, Servos and Controls.

CARR'S BOATYARD, 2713 Blaine Drive, Chevy Chase, Maryland 20015: East Coast 12 Meter hulls, sails for all classes to your specifications.

CHUCK BLACK, 4761 Niagra Ave., San Diego, California 92107: Sails and Sheeting Servos.

DUMAS BOATS, P.O. Box 6093, Tucson, Arizona 95716: Dumas 30 Star. Dumas 45 Star, Sheeting Servos.

GARRETT ENTERPRISES, P.O.Box 6421, San Diego, California 92107: West Coast 12 Meter hulls.

HARTMAN FIBERGLASS, 233 Melrose Street, Argenta, Illinois 62501: East Coast 12 Meter and "Olympia" hulls.

JOHNSON ENGINE CO., 420 W. Court Street, Paris, Illinois 61944: E/J Sheeting Servo.

MODEL YACHTS & THINGS, 3197 Toby La., Memphis, Tenn. 38111: East Coast 12 Meter, 50/800 and 36/600 hulls.

P.M.P. MFG. CO., P.O.Box 10233, Denver, Colo., 80210: 50/800 hull.

REYNOLDS MFG. CO., 3010 Cris Lane, Orlando, Fla., 32806: East Coast 12 Meter, Reynolds' Six Meter, 50/800 "Snipe" complete kits and sheeting servos.

SCOTTIE SHROFF, 2410 E. Caramillo, Colorado Springs, Colo., 80909: "Phoenix" 50/800.

BEN HOGENSEN, P.O. Box 127, Woodlyn, Penna. 19094: 50/800 hulls and sheeting servo.

VORTEX MODEL ENGINEERING, 210 E. Ortega Street, Santa Barbara, Calif., 93101: Santa Barbara one Design, "Soling" 50/800 and sail control system.

PERSONAL NOTE: On March 22, 1972, I resigned as Secretary-Treasurer of AMYA and the position is now occupied by Bill Maclaughlin, 3197 Toby Lane, Memphis, Tenn., 38111. Seems that there just wasn't enough time in a day to get everything done and something had to give . . . so the position with AMYA was relinquished. ●

soaring..... *Continued from page 22*

Of course the tail arrangement does not have to be knock off and can be considerably simpler if fixed, especially for smaller models. It is shown, however, to provide convenience for storage for the larger models. While a good tight fit on the tongue can be used I prefer a small hook on the lower surface of the tail secured by a rubber band. This can be placed at the center of the tongue.

In summary, the mechanism is quite simple and it is hoped that it's simplicity will inspire more modelers to try a V-tail sailplane. The new guenther-wolsleger Scale HP-14, soon to be on the market, will use the arrangement exactly as shown, including the knock-off tail. Also, considering the large increase in soaring activity in the United States, it would seem very appropriate for one of the manufacturers of R/C control products to offer this mechanism to the modeler; it would seem a natural for a few nylon parts. It could also double for coupled ailerons flaps for the R/C power fraternity . . . egads, what am I saying! ●

which way?? *Continued from page 23*

wrong with a regular tail, anyhow?

When performing the rudder function, the V surfaces move so that the surface on the outside of the resulting turn is "up" and the surface toward the inside of the turn is "down". *(Sketch C)*

As shown for a right turn, the left surface of the V is "up" and the right surface is "down".

Naturally, the opposite is true for a left turn; left surface "down" and right surface "up". *(Sketch D)*

An easy way to remember, according to Old Flying Buddy (OFB) Bill Watson of the San Fernando Valley Silent Flyers, is to "rotate" the model . . . either physically or mentally . . . so that one surface of the V is vertical. Now check the control action on the vertical surface, and it'll look exactly as would a rudder. *(Sketch E)*

And, yes, it still works if the model is rotated the other way: *(Sketch F)*

The surface that is vertical looks as would a rudder which had responded to a command for a similar turning action.

In the "rotated" illustrations, the control surfaces are shown as they would appear for a right turn. Note that the "rudder" controls are additive . . . both working in the same direction . . . for a right turn . . . in either illustration. There is no pitch . . . "up" or "down" command . . . represented in this example. Accordingly, one surface is moved "up" equally as far as the other

is moved "down". Check the horizontal surfaces in the two "rotated" illustrations. The surfaces thus cancel one another insofar as creating an "elevator" force is concerned.

This elevator "cancelling" action results in a lot of drag for doing nothing . . . which may be why the popularity of V-tails on full-size designs has diminished. Current thoughts put the stabilizer high on top of the rudder to keep it outa the rocks and stumps.

"How about a climbing turn?" Somebody just hadda ask. Okay, let's take a climbing turn to the right. The inputs from the pilot . . . either remote or direct . . . are made simultaneously, of course, but to keep it simple, take one step at a time. First, for turn to the right, the right surface goes "down" and the left goes "up". Just like before. With this, the surfaces are equally displaced, up and down, so that elevator action is nil. Now, for "up" control, both surfaces move upward from the relative "zero", "nil" or "no pitch" position. This "relative zero" position . . . meaning no pitch change input . . . is represented either by zero displacement of the surfaces . . . as in straight and level flight . . . or equal and "cancelling" displacement up and down, as in a turn. Since we're in a right turn, then, an "up" elevator action is obtained by moving the left surface further up, and the right surface less down . . . which is further up than where it was for turn only. *(Sketch G)*

For a spiralling descent to the right, the turn is obtained by left surface up and right surface down . . . as before. The nose down attitude is created by moving both surfaces downward from the "relative zero" position. Left surface is less "up" and right surface is more "down". *(Sketch H)*

Visualize these last two examples rotated as in the earlier sketches. It should help clear any confusion.

See? Simple. ●

pylon..... *Continued from page 37*

This is considered legal at most contests, but where do you draw the line? The wood portion of the prop can continue to grow smaller and smaller, until somebody makes a prop that has a toothpick for a core with fiberglass built up around it into an airfoil shape. Unfortunately, every regulation such as this in the AMA Rulebook must have every word clarified so that there is no question of its meaning and purpose. I hope this can be accomplished next year so that pressure to make their own interpretation of the rules, can be taken off Contest Directors. *(Paradoxically, the modelers who most dislike a multitude of complicated rules are usually the ones who bring them about. The thirst for victory knows no bounds.*

A prep school headmaster once said to the student body, "We do not create new rules until they are broken." That is exactly what happens when modelers work so hard to discover loopholes; they may only "bend" the rules, but at the same time, they permanently damage the intent. Ed.)

Looking through the AMA Rulebook, there are several other regulations that should be clarified. Under the General Rules, it states that the pilot must start and *regulate* the engine of an R/C model. This means that a pilot could theoretically be disqualified if his caller adjusts the needle valve on his engine on the starting line. An exception to this rule should be written for R/C pylon so that there is no question of the legality of a caller adjusting a needle valve.

Under the Flight Requirement section in the rulebook for R/C pylon, it states that a flyer must have demonstrated, among other things, that he can "pull up from straight and level flight at maximum air speed and rpm into a full

up elevator loop." In addition, he must "make a dive at a 30 degree angle for at least a length of 500 feet." I personally have never done either of these two maneuvers with a pylon racer and never intend to! They actually prove nothing but structural integrity, especially the (ouch) 150 mph full up elevator loop. A rookie pilot should be able to demonstrate that; he can take off reasonably straight, is in full control of his aircraft in the air, and can generally put his aircraft wherever he wants it. Most every Contest Director is capable of judging when a pilot is in full control of his aircraft. I have never seen the regulations concerning flight requirements enforced at any contest. Part of the reason for this is the rule has actually been overclarified with unreasonable requirements. If the rule were simplified to something similar to that stated above, I feel that it would be enforced more often.

The rule concerning wing thickness states that the wing, from centerline to tip, must have a straight line taper on both top and bottom surfaces. The intent of this rule is to prevent a wing from having a sudden taper in thickness near the root and then gradually tapering to the tip, thus producing a wing with a lower average cord thickness. An elliptical wing, such as on the Shark, follows the intent of the rule but could theoretically be disqualified since it does not have a straight line taper. An exception for an elliptical wing should be written into the rules. The rule should also mention a gull wing aircraft, since a straight line taper is difficult to detect on this type of wing.

The rules also say that all take-offs must be unassisted ROG. I feel that the word "unassisted" should be clarified so that it only eliminates the use of a mechanical catapult or any rocket assist. The caller should be able to release the aircraft in any manner he desires. We have found that a little (sometimes a very big) shove allows the aircraft to take-off straighter and get into the air faster. This rule should be stated so that callers will know whether to shove or not to shove.

* * *

My attention was recently drawn to Bob Hatschek's free flight power column in the March, 1972 issue of AAM. He begins his column by saying that, "R/C is Dullsville!: That's right. Flying radio-controlled models just plain lacks excitement. And R/C competition flying is a bore - almost as big a bore as control-line speed or stunt."

The following are sections from the rest of his column: "Free-flight - especially free flight competition - is the most exciting, the most intellectually stimulating, the most challenging, and the most satisfying phase of the model aviation sport. It is also the most diversified and educational and requires the highest degree of skill and craftsmanship."

"As a free flighter, I'm tired of being looked down upon from an overelevated R/C nose. I do MY thing because that's what I like, not because I'm incapable or can't afford to do something else. I'm tired of people who couldn't fly a model without continuous control, derogating as inferior what is to me the most perfect form of model aviation."

He ends by saying, "remember, in the outside world where they know nothing of the beauties of R/C, control-line or free flight, they all too often consider a model airplane to be a child's toy. We know better, so let's have a little more consideration for the other fellow."

Although most R/Cer's probably do not realize it after first reading the above statements, most of what Mr. Hatschek has written is partially true. Have you ever noticed the amount of skill and craftsmanship required to build a wing for free flight power compared to building a balsa covered foam wing? The difference is sometimes quite great. But his statements that free flight is the most challenging, most exciting, etc., leave something to be desired. No phase of our sport has the most of anything. Whether you fly control-line stunt, free flight power or Formula I R/C pylon racing, to be successful a flyer must develop the same amount of skill and dedication as the next guy. Model aviation is just as satisfying personally for an indoor scale flyer as it is for an R/C pattern pilot. The difference with R/C competition is that the sport is exciting not only for the modeler but also the general public (I have at times, however, seen control-line combat draw more spectator interest than R/C). Not too many people besides the modeler get very excited about seeing a model get a max. But an R/Cer must remember that a free flight modeler puts just about as much time and effort into getting a max as an R/C pylon racer puts into winning a heat race. The free flighter must get as much power as possible out of his engine, just as we do in R/C pylon. The trimming of a free flight model takes just as much time and effort, if not more, as an R/C pattern aircraft. But

Mr. Hatschek's statement about "people who couldn't fly a model without continuous control" is something else. We must have different definitions of flying. R/C models are built to simulate the characteristics of full size aircraft (not many of which will fly hands off), not just to be released to see what happens.

The point that should be emphasized is that you as a modeler, whether your thing is control-line, R/C or free flight, should never derogate another modeler because his phase of the sport does not turn you on. We must be united as a group if we are to successfully change the image that the general public has of model aviation. It is still my opinion, however, that radio control aircraft, especially R/C pylon racers, will be the models that will spearhead any change in the public's opinion of our sport. But as a group we must still, as Mr. Hatschek said, "have a little more consideration for the other fellow."

(Judging by Mr. Hatschek's opening remarks, we would suggest that he practice what he preaches . . . and also refer to our Dec. 71 editorial. Ed.)

The following report is by Jack Fehling.

TAMPA, FLORIDA - March 19, 1972
F.M.P.R.A. FORMULA I RACE No. 2

The weather, except for a small shower early in the morning, was ideal for the second of seven F.M.P.R.A. scheduled Formula I races. Competition was hot and heavy with very few free rides. Another good spectator turnout was on hand to see Jim and Ed DeMeritte put down all comers. Close on Jim's tail was Ed (2nd place) Weitock. First place was decided in the final heat of the day when DeMeritte and Weitock, both with all first places for the day, met for a real all out battle.

Charlie Gray of the Gray & Fehling racing team made his come-back to Formula I racing with a strong third place finish. The only wipe-out of the day was a spectacular crash by F.M.P.R.A. Sec./Treas. Jack Fehling. Bill Williamson was awarded the Best Performance trophy for being the most improved flyer in the circuit.●

RESULTS

	NAME	ENGINE	AIRCRAFT	TIME
1.	Jim DeMeritte Dunedin, Florida	Ballerina	Tigre	1:39.5
2.	Ed Weitock North Miami, Florida	Ballerina	Tigre	1:42.5
3.	Charlie Gray Miami Lakes, Florida	Minnow	H.P.	1:45.0
4.	D. C. May Atlanta, Georgia	Minnow	K&B	1:39.5
5.	Walt Schoonard Winter Park, Florida	Shushonik	Tigre	1:45.1
6.	Bill Williamson Margate, Florida	Mid-Wing	Tigre	1:48.5
7.	Ralph Leidner Miami, Florida	El Bandito	Tigre	
8.	Harold Coleson East Point, Georgia	Minnow	K&B	1:46.5
9.	Norm Holland Maitland, Florida	Minnow	Tigre	1:58.6
10.	Charlie Baucom Charlotte, N.C.	Shoestring	K&B	1:57.4

free flight..... *Continued from page 31*

natural climbing angle of the model. This differs radically from the technique used for VTOing fixed stab ships. Downthrust, along with low power incidence settings, results in low trajectory particularly early in the flight. This is most undesirable.

Practice launching and be cautious about the wind direction. Launch angle and speed are definitely more critical when using auto surfaces. A steep launch slightly to the right seems to be the best.

FAI power experts actually tune the engine to an RPM for which the ship has been trimmed. After starting, a photoelectric tachometer is used to read RPM and make final RPM settings. The launch is then made at just the right angle and thrust. Some AMA gas ships out-climb the best of the FAI ships because of the unlimited rules. For super powered ships, the power trim is only safe for a limited range of RPM. A good tach may be a worthwhile investment.

The tilted stabilizer for glide circle is a part of the adjustment. For our right hand glide we raise the right side of the stab (looking from the rear).

The angular difference required to achieve a medium circle varies inversely with the relative size of the stab. Auto rudder settings effect the glide turn, however, tilting the stab is still necessary but to a lesser degree than for fixed rudder ships. The auto rudder setting is useful as a fine trim for the glide circle.

The real purpose of auto-rudder is to guarantee a good power to glide transition. It is ineffective if the motor stops with the ship straight up, no matter when the rudder is actuated. It is also ineffective if heavy wash-in (or the equivalent) is used in the right wing panel; the reason being that heavy right power tab must be used with heavy wash-in. The way to use auto rudder effectively is to essentially keep the flying surfaces flat, then trim for a nearly straight climb which slightly drifts to right. The auto rudder should be actuated just before (about 1/2 second) or at engine cut-off. If it is done at engine cut-off, a larger tab with more throw will be required.

The optimum time interval between

motor cut-off and auto-stab actuation can vary from zero to four seconds. It depends on the size and weight of the ship. As a general rule, one to three seconds should be used. Zero seconds will work for the light-weight 1/2A.

1971 WAKEFIELD SYMPOSIUM
RON EVANS

Ron Felix, Bob Lipori, and Ron Evans were SCAMA members who had the pleasure of attending this meeting, hosted by Dan Marek, in New York. In addition to these mentioned, the chairman was Bob Hatschek; others present included Harvey Poirior, Bill Cullen, Bill Dunwoody, George Rivers, Roger Lang, John Kaufmann, Don Edson, Jack Minassian, and Carroll Allen.

The Sympo started at 2:30 PM. Bob Hatschek opened by outlining the general format (this article is written to that format, so no further description will be given), a comment about priorities, and the need to keep each discussion as short as possible.

THE WING-CONSTRUCTION. Don Edson made the general perimeter comments . . . The construction should be light (between 40-65 grams), strong, and warp resistant. He also gave a brief rundown on the methods in common use today; multi spar, D tube, geodetic, sheeted, and 2 spar (upper and lower in line, usually joined by vertical webs). An all sheet wing could be stronger, but is normally heavier.

There followed an open discussion regarding the merits of a light weight wing. The point was made that the wings should be able to withstand the hardest launch possible or a 25 mph wind. Strength above this was considered to be just extra weight.

The issue of one piece wings vs. two piece wings, while prompting much discussion, was not fully resolved. The two piece wings make a much smaller transportation package, but several fliers felt that one piece wings could be built stronger, at the same weight.

Bill Dunwoody made some helpful comments regarding the use of epoxy and all sheet construction.

Bob Hatschek and Ron Felix discussed the method of using no notches in the trailing edge, for the rib joint. This seemed to meet with general agreement.

There followed an open discussion regarding the use of thinner, harder sizes of wood for spars, as opposed to large softer stock.

Ron Evans made a point regarding all-epoxy construction, and suggested the use of "Sig" epoxy for over-all building and repairs. The no-shrink feature of epoxy was favored for warp resistance, and waterproof joints.

Roger Lang recommended using thinner and wider spars than are current practice, for example, a 1/16 x 1/8 rather than 3/32 sq.

WING-AIRFOIL. Don Edson again made the outline comments, by naming the sections most in use today: B7406, B8356, B6356, B6456, NACA 6407-5, "Hatschek" section, NACA 6409.

Ron Evans made the comment that it might be useful to indicate whether the section was intended to be used on a "calm air" model, or an "all weather" model.

Carroll Allen showed some charts he had made, regarding the L/D Co. of airfoils he and Don Edson had been testing.

Bill Dunwoody explained the general principle behind laminar and turbulent flow, and also, how leading edge shape and radius will effect the flow.

Carroll Allen made mention of the fact that he had tried string turbulators on a Wakefield wing at 23% and 40%, and noticed an improvement when he moved them to 7% and 23%. He also stated that the airplane had a better glide with both turbs than with one.

Carroll Allen and Don Edson discussed their methods of measuring altitude of climb, by dropping ping pong balls from the aircraft. A general discussion followed regarding the idea of using a 45 degree "tracker", by keeping the sighted model at 45 degrees, a distance between the tracker and the launcher will equal the altitude, provided the launcher is under the model at its max climb.

WING PLANFORMS. This discussion was primarily devoted to the argument of 2 dihedral breaks vs. 3 breaks, Don Edson led the 3 break group, stating that he felt it resulted in a more stable and quicker-recovering aircraft. This seemed to meet with general agreement. There were a few dissenters who felt that the slight instability rendered by 2 break wings made for a more thermaly sensitive aircraft. The point was made that distribution of dihedral breaks was not the only way to achieve this.

Bob Hatschek stated that his experience indicated a need for more lateral area on a tip dihedral layout than on poly.

ASPECT RATIO. Most seemed to feel that between 10 and 12 to 1 is sufficient, consistent with adequate stre-

ngth.

Bill Dunwoody pointed out that the chord reduction should not fall below 3 inches, except in the case of the extreme end of an elliptical planform.

ANGLE OF ATTACK. Ron Felix came out in favor of 0 degrees in the wing/fuselage line. Don Edson and Carroll Allen stated their preference of between 2.4 and 3 degrees wing/fuselage.

WING MOUNTING. Roger Lang noted the current practice in high performance sailplanes, of plugging the wing straight into the fuselage, with no fillets at all. Most felt this would work on Wakefields, and promised to try it.

STABS. General acknowledgement that a simple rectangle is as good as any other shape. The comment was made that "stab shapes are as important as pylon shapes" which pretty well covers it. The basic chord size of 3 inches was felt to be about as low as it is possible to use, but Ron Felix pointed out that Henry Struck (who was unable to attend) has used a 2-7/8 inch chord, with a string turb on the leading edge.

RUDDER. The only agreement here was that thick (built up) rudders are more effective than flat sheet rudders.

FUSELAGE. Most fliers either use a rolled tube, or intend to try them; nobody defended the box structure. Bob Hatschek described his favorite construction, that being a 1/16 inch rolled tube with silk reinforced ends. Bill Cullen favors a spiral wrapped tube with 2 opposing laminations of 1/32 inch balsa. The SCAMA crew seemed to be partial to lighter booms, and uses a winding tube to withstand motor breakage. The Skyscrapers prefer to have the fuselage strong enough to take a motor break. Don Marek detailed his aluminum tube fuselages. These are soaked in an acid solution to reduce thickness, with the final thickness about 10/1000. Before soaking, he masks off both ends, to leave the thickness intact. He etches only the inside of each tube, in a mix of water and lye, which he stated must be handled with rubber gloves, and used outdoors.

AUTO SURFACES. Don Marek described his use of the Xenakis type (torque) auto stab, and indicated that he was pleased with it. Ron Felix detailed Jerry McGlashin's torque V.I.T. and auto rudder system which uses a ply cam for stab movement, and is fully adjustable through all parts of the climb, even to the point of raising and lowering the stab several times in one pattern. Most fliers seemed impressed with the torque/auto concept, and few thought it was "not worth it". Another point that received wide favor was that torque systems are much better than prop-stop in that they don't have a sudden release of (either) stab or rudder.

PROPELLERS. There was, as expected, much disagreement here: The only trends that were apparent were those who had tried a "Swartzback" type prop liked them. The Skyscrapers in general, liked the large diameter, low pitch props, while SCAMA and Scraper's Allen and Edson, led the "opposition." Bob Hatschek displayed his jig for measuring prop pitch angles. The prop discussion ended the schedule, and after some "last minute" comments, the sympo closed, at 9:30 P.M.●

cal coaster.... *Continued from page 20*

door" enough to prevent bending under air loads. The odd angle at the bottom of the rudder allows it to swing without hitting the elevator push rod. Both push rods exit from the fuselage top, without any bends on either side of the rudder.

I used K & B "Super Poxy" finish for everything except the tail and found it to be almost ideal for high performance sailplanes. Use one coat of a good wood filler, sand it all off, leaving the holes filled. Then use one coat of K & B primer, sand with 400 - lightly. Add one coat of K & B as per their instructions, and wow! Very little weight increase and it looks like a million. If you really want to show off, let the color cure for a couple of days and rub down with compound. Put on a coat of hard wax and buff. Better wear dark glasses so you won't be blinded.

The wing is built around the incomparable "Jedelsky" type of construction which has proved its worth many times over. It is virtually indestructable, when built as shown, and seems to have been invented to make life easy for the beginner. The wing imparts that "hanging" type of flight that is so partial to thermals. Don't worry too much about the exact airfoil as you finish carving the wing, since small differences aren't noticeable at R/C sailplane speeds anyhow.

Materials selection is one of the most important elements in the construction of any model aircraft, and this is certainly true in all balsa, high performance sailplane. Since the wing is larger than any other part of the craft and will account for about half its total weight, we will start our materials selection here.

Choice of wood is, especially critical in this wing because, unlike a built-up wing, the thick leading edge plank is the reference point for "trueness". In a built-up wing, which is constructed of many small parts, the trueness of the wing is taken from the flat working surface, or the wing jig, upon which it was built. An un-true work bench usually results in warped wings. Not so in the case of Jedelsky wings. The thick leading edge plank is the "backbone" of the structure. If it is true and straight, the rest of the wing is likely to be straight also. A little time and effort spent in the selection of materials now will be well repaid when your California Coaster climbs out on the tow line.

The very lightest and softest balsa stock is needed for the leading edge plank. Take a small postal scale to the

hobby shop and select all the lightest weight 3/8 inch material, putting back any planks which are obviously warped. Now go through the remaining stack and eliminate those pieces which are warped as shown in Figures 1 and 2. This type of warp is non-recoverable, and at today's balsa prices . . . forget them!

The illustrations are grossly exaggerated, of course, to make the short comings obvious.

Try to find a pair of planks as nearly perfect, and of the same weight, as possible. A difference of up to 1/4 ounce can be corrected by adding an extra coat of paint on the light wing, or mating the light leading edge plank with a heavier trailing edge sheet. Remember that the finished wing must be very carefully balanced. About half of the weight of each leading edge plank will be planed away when the wing is shaped.

Chances are that perfect leading edge sheets will not be obtainable and some compromise will have to be accepted. By the way, do not limit yourself to only one hobby shop in this quest for good lumber. If more than one is available in your area, check every shop, weighing and sighting material until you have what you need. The hobby dealers may hate you for it, but chances are that the wounds he will inflict will heal long before your wing warps. If you run into enough really good material, it would be wise to buy wood for a second wing.

Now, about allowable defects: Probably the most common fault of balsa and one that you can do something about is "bow". Bow is illustrated in Figure 3 and is just what it says. The sheet is bent along the thinnest dimension as if it had a bow string on it. If the bow is no more than one-fourth inch over the entire length of the sheet, it can probably be used if you can find two pieces just alike. Just turn the bow so it is the same way for both wings and forget it. I turn mine down to form a slight gull effect.

The second most common type of warp in material is "bend" shown in Figure 4. It is the same as bow except the plank is bent along its wide dimension. This type of warp can be trimmed off. If the bend is no more than one eighth of an inch total, you will lose only one fourth inch total width (both edges, remember). *Under no circumstances try to bend the piece straight.* It will always return to its bent condition eventually and ruin your wing in the process. I have a shelf full of them like this to prove it!

Once three suitable pieces of 3/8 x 4 x 36 inch stock are available and an equal number of 3/32 x 4 x 36 inch sheets are selected, half the battle is over. The rest is fun. Remember that the 3/32 inch trailing edge sheet is flexible, so warp, curl and bow will not affect it as much. Bends as in Figure 4 are important and will have to be trimmed off, at least along one edge. If you don't have a perfectly straight trailing edge, who is to know? I won't tell if you won't. And if any of your friends start peeking, well, just check a few of

theirs.

Decide *now* which piece is the right inboard wing and which is the left inboard wing and which is to be cut into two parts for the tips. Mark them with a felt tip pen on the top surface near the leading edge so that they won't get mixed up. This part will be carved off later, so the marks won't show. Be sure to mark the 3/32 inch sheets too, but mark these on masking tape.

Now is a good time to measure and mark off the lower surface for rib positions. A good ball point pen works well here. Glue on the 1/8 x 1/4 inch spruce leading edge and 3/32 x 1/8 inch spruce trailing edge pieces. Hold in place with strips of masking tape applied between the rib markings so that construction may proceed even while the glue is still wet.

By the way, a few words about glue are in order. After going through all this hassle to avoid warped wood, it would be a little silly to use glue which shrinks and can cause warps. Tite-Bond or equivalent is recommended.

You should now have eight pieces of choice wing lumber with leading and trailing edge spruce "ding preventers" glued in place. Next, cut thirty-six ribs of 1/8 inch medium balsa, six ribs of 1/16 inch ply and two root ribs of 1/8 inch ply. It's a good idea to cut out the 1/8 inch ply ribs first and then use one as a template for the rest. From here on in, construction is rapid and easy. Just proceed as shown on the plans.

Since sanding of the bottom surface is very difficult after the ribs are in place, it is wise to round the lower edge of the spruce leading edge strip before proceeding with Step 1. Note that although the tip panels are tapered, the ribs are left at full length, until after the panels are completed. The outer ribs are then trimmed to match leading and trailing edges. Also, note that since the trailing edge sweeps forward more than the leading edge sweeps back, "wash-in" is automatically produced.

During construction, it is better if all the ribs are glued to the leading edge plank in one evening and then the trailing edge sheeting installed the next evening. This allows time for thorough glue drying and, in my case, keeps me from running out of pins!

The brass tubes to hold the two wing halves together are epoxied in place, then covered over with fiberglass cloth and resin. When this mess has all hardened, the plywood ribs are trimmed to fit over the tubing "lumps" and fiberglassed or epoxied in place. Take care that tubes in one panel align perfectly with tubes in the other. Tilt the 1/8 inch plywood center rib so that, at the aft edge of the 3/8 x 4 leading edge plank, the bottom of the rib is approximately 1/16 inch off of vertical, leaning away from end of plank. See Figure 5. The amount of "lean" should be the same on each panel. Also, do not glue in rib at outboard dihedral break, yet.

Step 2 takes only a little while to do, especially if you put tiny ink marks on the top side of the trailing edge sheets so you won't be spending a lot of time stabbing away with pins trying to find that rib underneath.

The next night, when the glue is dry and the pins are all pulled out, the tip panel ribs may be cut to length while you wonder just how this mess of lumber can ever fly. Cheer up. Under that untidy pile of expensive scrap, a high performance wing lurks. A fairly sturdy block plane is needed to bring it out however. The razor blade variety will work but something a little heavier is better. I find the X-acto plane with a one inch blade almost ideal for the purpose. Carefully shave the extra material away so that the trailing edge sheet is continued to its natural intersection with the upper surface as shown by the dotted line in Step 2 on the plans. Next the leading edge can be trimmed down to a natural curve, keeping the leading edge well rounded. Now shave some more off the top 'till it fairs in with the overall curve. Apply a sandpaper block carefully, and all of a sudden, there appears a graceful thing of beauty.

When all four sections are carved and sanded to your satisfaction, begin to fit the tips to the center sections. I use a large disc sander here but any method of sanding to produce the required dihedral angle shown on the plans should be satisfactory. The amount shown is not gospel and a lot less would probably still be OK. The Coaster will circle flat and hang into a thermal like a homesick angel with the dihedral angle shown, however.

Use one to one and one-half inch wide strips of very light fibreglass cloth and resin to join tips to center panel. Resin cloth strip from trailing edge around leading edge and underneath to trailing edge again. Add the rib at the polyhedral break after the fiberglass resin has set. By the way, I use a few dabs of five minute epoxy to hold the tip section joined to the center section while the fibreglass cloth and resin are being applied. The bottom of the rib at the dihedral break takes quite a beating

from skidding in for landings. If you get tired of replacing this rib, you might try covering it with fibreglass cloth. *(Or making it out of plywood in the first place. Ed.)*

Before installing the plywood ribs, add the 1/16 inch plywood sheet over bottom of 1st and 2nd root ribs on end panel. Fill gap thus created with scrap balsa. Carve and sand to a pleasing contour.

The steel wing dowels are 5/32 dia. x 12 in. long landing gear wire, bent to a 10 degree angle. The brass tubing is 3/16 inch inside diameter . . . not 5/32 inch. We want the wing to be able to flex in the center but not to bend the dowels. The latter arrangement is very forgiving in this respect.

When the wing is assembled for flight, I support mine inverted and slide the halves together onto the steel dowels. Then wrap a turn or two of one inch masking tape around the center to keep the two halves together. The whole unwieldy thing is then turned upright and rubber banded on to the fuselage. Presto! Ready to go.

This wing seems to prefer the old standard of 1/3 back from the leading edge as a balance point for thermaling, and perhaps a little farther forward for sloping. On a high-start launcher, with one-hundred feet of 3/16 inch inside diameter surgical tubing and three hundred feet of nylon line, the California Coaster will leap off the ground and climb almost straight up. She mounts up to the sky and drifts over the top, often without ever having to be guided at all. This combination puts her up four hundred feet or more on a good day. The Coaster does even better on the electric winch.

Thermal hunting is sheer poetry. Just don't slow her up too much. All those ribs under the wing are very effective skid stoppers. This bird can turn on a dime to stay in a thermal and never get a wing too far down while doing it. It takes practice, though. Learn to make spot landings in a wind with it, because it does not penetrate like a heavier machine. The California Coaster is a floater.

The aluminum skid which is servo taped to the belly is a real life saver. My radio died one day, causing a spin-in onto a black topped parking lot. Aside from a few scratches and a dinged aluminum skid, there was no damage. The skid, curved up almost in front of the nose had distributed the impact shock so there was no damage. However, the slick aluminum skid isn't much help when you want to stop in a landing spot. The Coaster can and has touched down in the 50 point circle, skidded into the 100 point circle, and on out the other side into the 50 point circle again. A few layers of masking tape over the skid, lets the black top grip it better and stop it fairly short. Maybe the new plastic skids will work better in this respect.

Flying weight should be about three pounds.

If you have any problems or comments, drop me a line in care of The MODEL BUILDER and I will try to help. ●

r/c auto.....*Continued from page 39*

mounting post, and ends up passing through the throttle actuator ring lever. Take a look at the Jerobee manual sketches and try to duplicate it if you care to. Rottsa Ruck!

We finally discovered that Cox had very conveniently left two holes in the top of the recoil starter housing. A No. 6 sheet metal screw is just a snug fit in them. A servo output wheel was trimmed to a 90 degree segment, attached with a No. 6 screw to the rear hole, and wire linkages run to the servo output and the throttle lever. The throttle sleeve is a friction fit in the actuator ring and can be adjusted to give proper position corresponding to lever movement on the transmitter.

By using the inner hole from the servo, and the outer hole to the actuator ring, the disc crank provides enough movement so that the full throttle range is obtained by moving the left hand lever (throttle in this case) on the transmitter only half the distance available. This means it is not necessary to remove the neutralizing spring from the left stick, thus retaining the "deadman" throttle feature desired by most drivers.

As a final touch, we added two accessory items available from Jerobee. One is an aerodynamic wing for $2.95 and the other, an aluminum heat sink which cools the engine through the fuel tank, $2.50.

Driving the Kraft/Jerobee is a ball, however our experience, in both these and the 1/8 cars, has been limited to storming up and down the street in front of the house. The following is a commentary by Don Stauffer, a member of the very active St. Louis R/C Car Club, as published in their newsletter SLAM SHEET:

"Had a chance to drive a Jerobee car for a while. Ken loaned me one to use in a match race with Gary Campbell at our last race. Because of the inclement weather the event never came off. I did

have a lot of fun practicing, however. The car is not nearly as slow as I had been led to believe. It is very easy to drive, but not because of a lack of top speed. In fact, Jerobee's idea bears looking into even for 1/8 scale novices. What they do is gear for top speed. They advertise a 20 mph speed, and are probably not overoptimistic. However, in order to achieve this respectable speed, the gearing causes acceleration to suffer. Although this would be a detriment to the real leadfoot, it is a godsend to the beginning driver. With most R/C cars, you must be very cautious in feeding throttle in the turns. But with the Jerobee, even on tight corners, you can jab in full throttle. No sudden oversteer . . . no spin-out. In fact, not much of anything. The car tries to go a little faster. Still retaining its understeer, the turn radius increases a bit, all under complete control.

"Now is there a message here for 1/8 scale? Suppose the novice substitutes a 4:1 gear for his usual 5:1. Sure, the car may be way too fast for him on the straights. But that situation usually does not require immediate reaction. He can see the car is reaching a speed faster than he can handle, and so the throttle can be gradually relaxed a bit. But on a corner, the start of a spin-out requires instantaneous reaction, which the novice cannot yet provide. Now admittedly this is all supposition. But it seems to work on the Jerobee, and seems worth a try on the larger cars."

SOUTHERN CALIFORNIA R/C CAR NEWS - by Dick Norsikian

The first race of the Southern California R/C Championships got off to a great start. There were 43 entries divided into 3 classes: Novice, Amateur, and Expert. It took most of the day to run the race, but race director John Hale did a fine job. By the way, John will be one of the main directors for the Nationals.

Most of the clubs in the Southern California area are running these classes of drivers. I hope the National Committee can work out a 3rd class for the Nationals next year. The main problem is in determining a point system. Maybe someone can come up with one.

Not only are there regular races every Sunday, but when there is a fifth Sunday in the month there is a special race. In January it was stock cars and in April there was a 500 lap Indy type affair. This one was for Formula cars only, and was run clockwise . . . more or less a tune up for the Nationals. More about this race next month.

Mike Morrissey had his new car out and it looks like a winner. He has done a lot of development work on this car and it is sure to pay off when he puts it on the market. The car comes complete except for the radio and engine. Everything is in ball bearings with a cast aluminum engine pod, nylon front end, and a unique molded fuel tank. For further information, write to Tarus Company, 1829 Redondo Avenue, Signal Hill, California 90804.

Most of the cars running in Southern California are Associated, Thorp, Dynamic, along with a few home builts. It seems as though most of the cars try to incorporate a flexible front end, some by means of a spring type suspension and others by a flexible chassis. A solid front axle with a flexible chassis seems to work as well as a rocking front axle.

Of course, tires are the big thing. Most front tires are a medium to hard sponge. The rear tires are the question . . . different tires for different tracks. It seems as though the light cars can use medium to firm sponge and the heavy cars firm to hard sponge, with a rubber cab. The main problem with cap tires is trying to keep the cap on.

Just when you get a set of tires broken in, the caps start to come unglued. Best by far, are the tires with the cap vulcanized to the sponge.

We haven't seen any of the Marker Machines run out here, with the exception of Del Fisher's. He was out here for a vacation, ran at our stock car race and following Sunday ran at one of our regular races. His car is a thing of beauty. Real top class machining. Del's car was running with the best of our top drivers. Plenty of horsepower. I think he was geared a little to low for our longer tracks, but I bet he will take care of that before coming to the Nationals.

Gene Husting has been one of the top drivers in the Southern California area, and at the last Orange County Race he was really smoking up the track. Gene was clocked for one lap at 16 seconds flat. That is moving. The track is approximately 640 feet around. Gene set a new 30 lap record of 8:22.

Here is a list of the winners and their points for the first Southern California Championship Races:

NOVICE

1.	John Stone	10
2.	Jeanne Sahara	8
3.	Bill Kloenpken	6
4.	Jim Cade	5
5.	Mark McKeghal	4
6.	Cooper Bili	3

7. Les Chorchill	2

AMATEUR

1. Bud Dill	20
2. Kevin Bowles	16
3. J. Kimbrough	12
4. Bob Donkles	10
5. J. Stone	8
6. B. Vanderziel	6
7. D. Rhodewalt	4
8. D. Felty	2

EXPERT

1. J. Husting	40
2. R. Curtis	32
3. E. Campbell	24
4. Gunderson	20
5. Sahara	16
6. B. Husting	12
7. J. Thorp	8
8. D. Camp	3

Don't forget . . . 2nd Series Race in Pomona at Thorp Raceway, 350 East Commercial.

More next month . . . .●

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control line.. *Continued from page 25*

½A, but it does fine. Second, it puts in a really sharp pattern and is easier to fly than a big stunter. Corners? You wouldn't believe it. Cox Tee Dee .049 really squeals even with Tatone muffler. Don't know what the reaction of judges would be, but we'll find out, maybe at the Nats with a baby "Chizler" equipped with retracting landing gear? Nobody in his right mind has ever taken ½A stunt seriously *(which explains why you're taking it seriously, huh Dick? Ed.)* but it would sure give stunt a shot in the arm if it works out.●

peanuts..... *Continued from page 27*

Bending the landing gear legs out of 1/32 piano wire. Cement them to the support pads. Use several coats of cement and if desired, cover the surface with a layer of tissue paper. Use wheels of your choice and retain them on the wire with a drop of cement. Cement the landing gear support pads to the wings in the proper position. The Yak has a nose gear that is pushed into the fuselage and cemented in place.

A straight pin is pushed down vertically through the body to act as a rear motor peg. This must be done carefully so it is in the exact center of the body. A thin skin of cement on the sides of the body in this area will strengthen it.

Slide a prop hook through the bearing tube. Slide several washers or a bead onto the hook to act as a thrust bearing. Put on the propeller and bend the front end of the hook so it will turn the propeller.

For test flying, use one eighth flat rubber. Make a loop approximately the length of the motor base and slip it over the prop hook. Pull the aft pin halfway out, slip the loop over it and re-insert it. Check to see that the model balances at the C.G., (center of gravity), shown. Balance it, if required, with modeling clay added at the nose or tail.

Test glide the model. It should not nose up and stall nor should it nose dive into the ground. Bend the trailing edge of the horizontal tail to get a good glide. Start test flying with a small number of turns and work up to the capacity of the motor. The rudder can be bent to control the turn as can the trailing edge of either wing. For maximum duration experiment with longer loops of rubber and use an indoor winder to pack in the turns.●

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workbench... *Continued from page 7*

Rose Industries, 1190 N. Rose, Escondido, Calif., 92055, is producing a small, light-duty "C" clamp. Designed primarily for wing construction, the clamps will probably become useful in many glueing jobs. The slot in the clamp body permits slipping it over a rib and clamping the upper and lower wing spars in place. Drop the company a note for further information.

* * *

Are some of you newcomers to modeling ready to find out what it was like in the good old days? Hobbies

Unlimited, 23262 S.E. 57th St., Rte. 3, Issaquah, Washington 98027 has a kit for Henry Struck's 1940 "New Ruler." Price is $29.95 by direct sale only. This six footer will take any of the large ignition engines, such as Super Cyclone, Brown Jr., Ohlsson 60, etc., or glow engines of about .35 size.

* * *

The Gee Bee Line, 143 E. Main St., Chicopee, Mass., 01020 is back at it again with a new line of floats for R/C models. At present, the only ones available are 33 inches long, which, complete with hardware, are $19.95 per pair. The Mark IV floats, as with earlier models, are made of blow molded white plastic, and are of the latest design with rather severe upsweep in the forward bottom, and a deep step. Profile is quite similar to the Seahorse II floats from the construction article in last month's issue.

* * *

R/Cer's in the game five or six years ago may remember the first RK pin type nylon hinges. They were immediately popular, and were copied by quite a few accessory manufacturers.

Roy Klett's products are now marketed by Carl Goldberg (who you *may* remember as designer of a plane called the Zipper!) and the latest is a new hinge, the RK3. The smooth, but rattle-free operation (you can hold one leaf and wave the other one back and forth with only slight movement) indicates precise, slopless action. We'll report further after we've put them to regular use.

* * *

Here's a way to combine land and sea. Universal Developments, Box 5253, Orange, Calif., 92667, offers a 1/8 scale land sailer in kit form for $19.95. Kit includes 3 pneumatic tired wheels, steel chassis, wooden mast, steering unit, axles, hardware, and instructions. It's a screwdriver-and-plier set requiring about an hour to be put in operation for free sailing. Finished unit is 27 inches high, 15 inches long, 12 inches wide. Single channel or one servo proportional radio could make this an interesting new competitive sport.

* * *

The new Heathkit R/C systems are now being shipped. As of now (May 7) we have the receiver, battery pack and servo kits on hand and the transmitter is expected next week. Ours is on 53.3 and 53.4 (W6-MGK), and we hope to report on building it next month.

The new systems operate eight *independent* channels; the receiver includes a built in connector block for direct

servo plug-in; two size servos are available; single or two-stick transmitters; two-position switch for landing gear; "buddy button" trainer system. Complete system kits are $249.95 (2-stick) and $269.95 (single stick).

* * *

POLYTHERM is the name of the latest in electric heat guns for shrinking plastic covering films, drying silk and dope, setting epoxy glues, but NOT for drying your hair. Unit features adjustable air flow, a swivel hanger loop, 3-position (hot, cool, off) switch, 1000 watts of heat, heat insulated case, wrap-up cord keeper, radio noise suppression, and polished nickle finish.

This excellent gun is available directly from Polytex Universal, P.O.Box 12, Newfoundland, N.J., 07435 for $36.00. Dealer inquiries invited.

* * *

Marlow Engineering, 6850 Vineland Ave., N. Hollywood, Calif., 91605 has put it all together, so to speak. This manufacturer of fine introductory and sport rubber free-flight models, parts and accessories, now has a four page brochure of these items. Dealer inquiries are invited, but orders may be sent direct if your local "pusher" does not appreciate the finer, but less expensive things in life.

Catalog shows wood wheels, with or without rubber tires, thrust buttons (for buttoning your thrust), washers, prop hooks, 16/1 and 9/1 winders, 14 shades of tissue, machine cut balsa props, and several progressive rubber powered free flight kits. Also included is a list of items by George Bahaman (see our cover photo this month, as well as most all photos in F/F column), such as leather fillets, teflon and metal washers, and pacifier tanks for F/F and combat.

* * *

"Hi-Fly Enterprises," 7212 Vassar Ave., Canoga Park, Calif., 91303, is kitting the "Condor 800," a B-C F/F winner and record holder at the Nats, along with several H.L. gliders, other items coming. Send for brochure. ●

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Specialists in R/C and headquarters for the new QUARTER MIDGET PYLON LEAGUE, Kirtland Hardware & Hobby Shop, 9138 Rt. 306, Kirtland, Ohio 44094, (216) 951-2220

Selling old ign. & glo engines. Several ignition race cars in perfect shape. Coils - spark plugs - mags. - parts. 35 ¢ for list. Dale Myers, RD 2, Stewartstown, Pa. 17363.

1969 Kraft Gold Medal 6 single stick, 4 KPS 10 servos, 72.96, xtra nicads and xtra charger. Price $250. George Saridakis, 32 Bradford St. Pittsfield, Mass. 01201

6-12 Orbit '69 I.C., single stick, open gimble, 4 PS-3 servos, 26.995, $150. 7-14 Log I EK, 5 servos, parts for 4 more, charger. $85. Dick Allen, 2315 E. Parkside, Orange, Ca. 92667. Phone (714) 637-4547.

FULL-SIZE PLANS
(with instructions)
SERVICE

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Highest placing U. S. entry in 1971 World Championships.
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ANNOUNCING THE MODELERS ARE CREATIVE PEOPLE CONTEST

Ever since we introduced Super Monokote a few years ago, we've found that modelers use Super Monokote for a lot of things other than covering their models.

And, some of them have taken the time to write and tell us about their creative efforts with Super Monokote.

FOR INSTANCE

One modeler wrote that he improved the looks of his kitchen 100% by covering the front of his dishwasher and refrigerator with Piper Yellow Super Monokote.

A modeler's wife said her cats always left footprints on the windowsills and all the washing was gradually wearing the paint away... So, she borrowed some of her husband's clear Super Monokote and now just wipes the footprints away with a damp sponge.

Another clever fan said that after he covered his model with Super Monokote, he actually made a bikini for his wife.

Several modelers have created wall designs, paintings and "stained" glass with Super Monokote. One particular artist-modeler did a painting of his TOP FLITE Contender and "Monokoted" the finish on the canvas just as he had done on his model.

Now, we'd like to find out what others are doing with Super Monokote. So, if you've ever used Super Monokote for anything other than putting a beautiful glasslike finish on your model... OR if you have a great idea for something you're *going* to do, tell us about it.

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11th-25th PRIZE—Two 6 ft. Rolls of Super Monokote
26th-50th PRIZE—6 ft. Roll of Super Monokote

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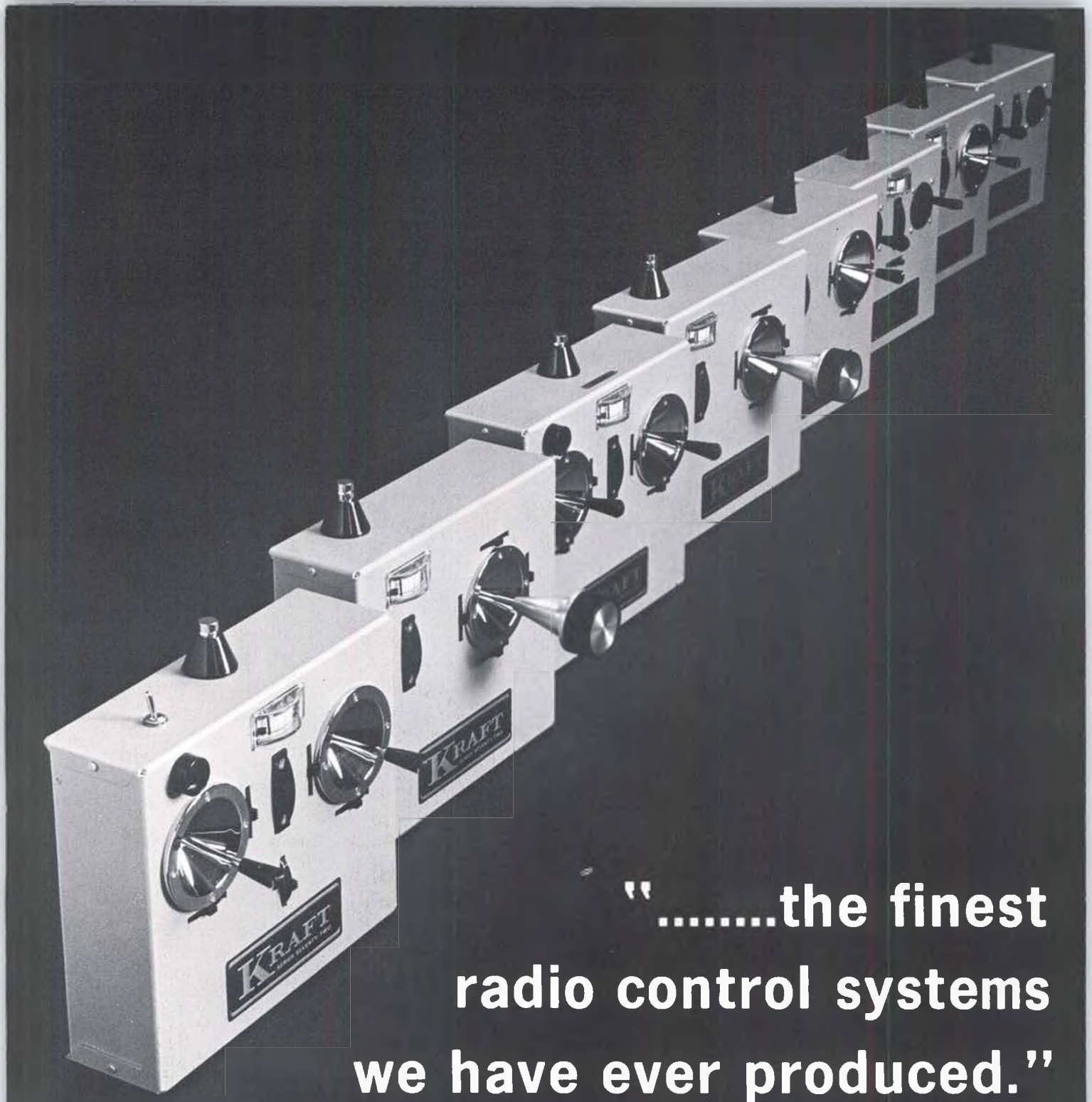

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