

The MODEL BUILDER



SEPTEMBER 1973

volume 3, number 22

85 cents



CARL GOLDBERG

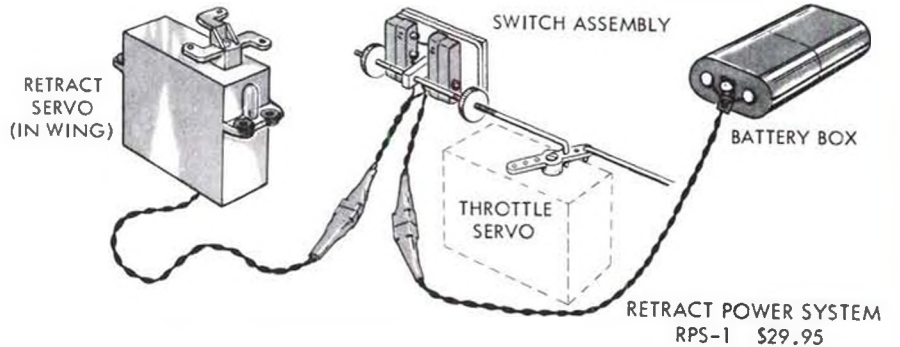
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4 SIZES

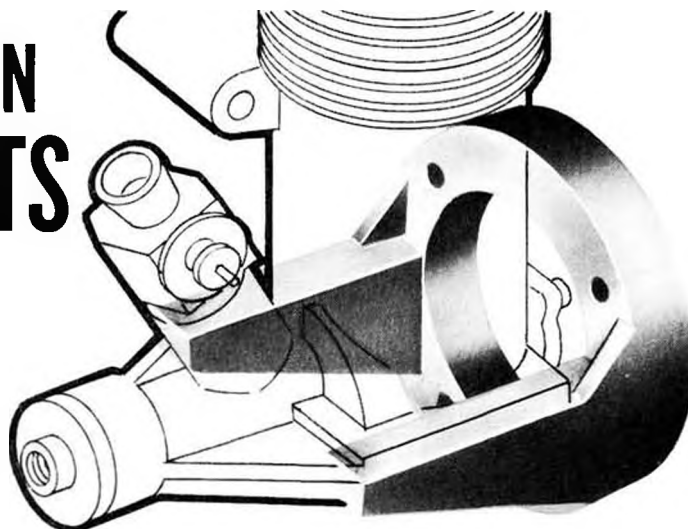
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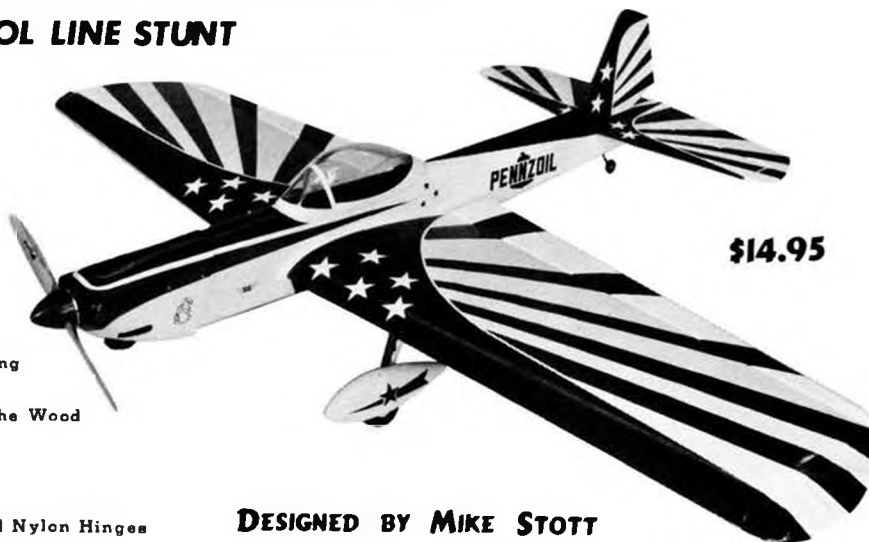


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53½" WINGSPAN

THE ULTIMATE IN CONTROL LINE STUNT



\$14.95

DESIGNED BY MIKE STOTT

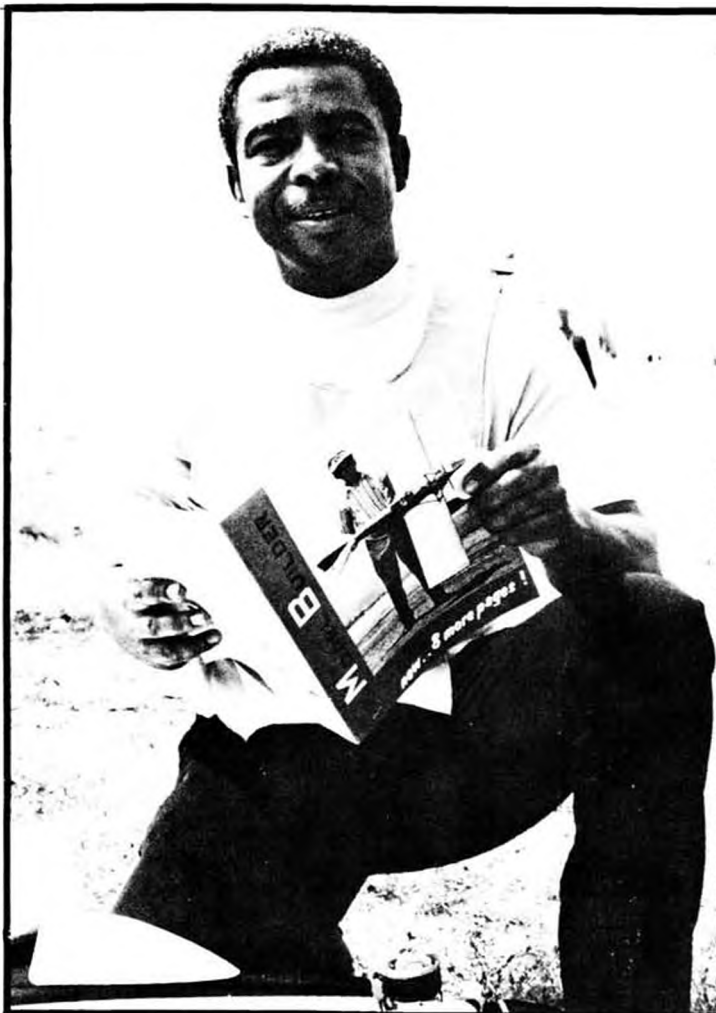
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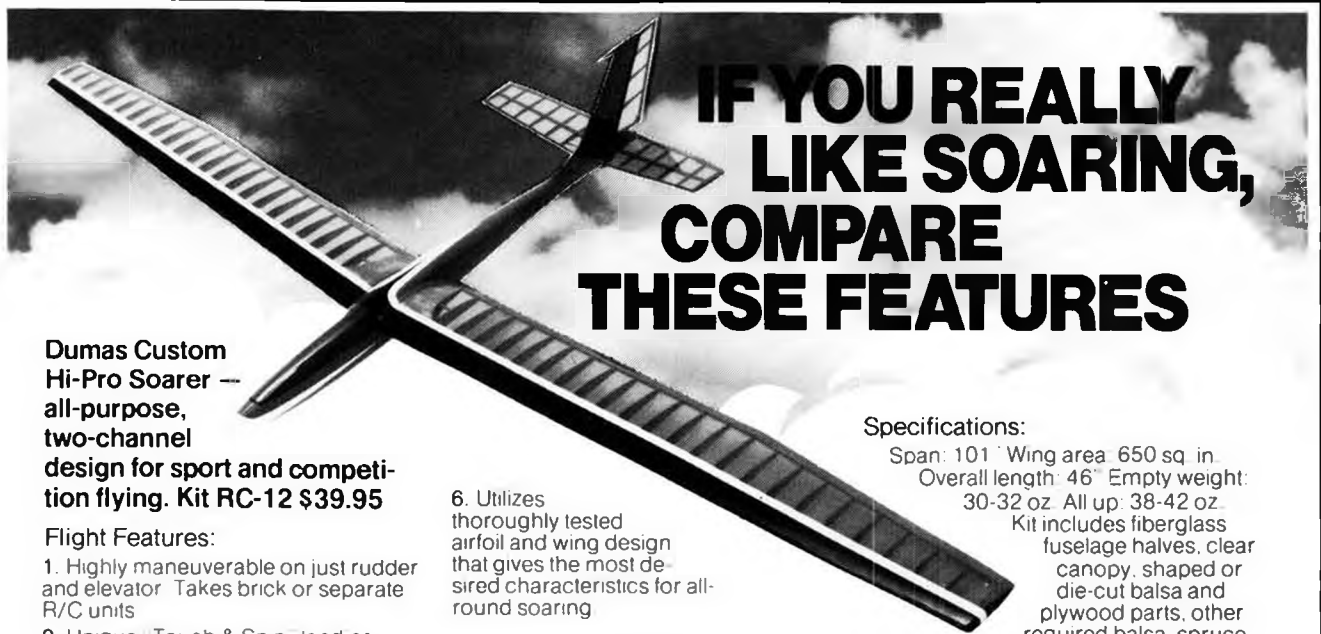
**Jimmy Grier says,
"If you don't read
The
MODEL BUILDER,
you ain't with it!"**

**The
MODEL BUILDER**

1900 E. EDINGER, SANTA ANA, CALIFORNIA 92705

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**Dumas Custom
Hi-Pro Soarer —
all-purpose,
two-channel
design for sport and competi-
tion flying. Kit RC-12 \$39.95**

Flight Features:

1. Highly maneuverable on just rudder and elevator. Takes brick or separate R/C units
2. Unique "Touch & Spin" landing alternative helps you make precision landings every time
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Span: 101" Wing area: 650 sq. in.
 Overall length: 46" Empty weight:
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Kit includes fiberglass fuselage halves, clear canopy, shaped or die-cut balsa and plywood parts, other required balsa, spruce, metal fittings, fiberglass tube and miscellaneous parts. Full-size, fully detailed plans and assembly instructions, including specific instructions for joining fuselage halves. Kit available from your hobby dealer

**dumas
planes**

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The MODEL BUILDER

SEPTEMBER

1973

volume 3, number 22

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Cover: Two excellent models grace our cover. The live one is Frank Tallman, partner of the late Paul Mantz, and proprietor of Tallmantz Aviation and Air Museum at the Orange County Airport, Santa Ana, California. The one with two wheels and two wings is a stand-off (?) scale Sopwith Camel, scratch built by Col. Bob Thacker from Swiss plans. Scale is 2", weight 7-1/2 lbs. (including 1-1/2 lbs. of lead in the nose!), O.S. 60, 14-4 prop, Aero Gloss matt throughout, and Orbit radio. Model flies great, but is a bear on ground handling. Ek tachrome photo by Bill Northrop.



Congratulations to Rhett Miller, Jr., Tallahassee, Fla., age 15, winner of Class C Expert at the 1973 AMA Nationals! Second and third places were taken by Don Coleman and Ron Chidgey respectively, both of whom plan to introduce Rhett to girls!

from Bill Northrop's workbench . . .

MORE ON THE COVER

You never can tell what a routine photo excursion will lead into.

Col. Bob Thacker brought his "Stand-Off" scale Sopwith Camel (Stand-Off in quotes because Bob decided the S/O judges are standing too close, or using binoculars, so his ship is detailed to "beat the system," including shell chutes, bolt heads, stitching, etc.) to the office so we could shoot it in color for possible cover use. As the Tallmantz Museum is only 5 minutes away, at Orange County Airport, we quickly adjourned to this location in order to take advantage of the "atmosphere" background.

Just as we finished taking almost a full roll of shots with our Yashica twin-lens reflex, who should taxi in but Frank Tallman, just returning from a parts-chasing hop. With the Camel as a conversation piece, a very cordial greeting and introduction all around was

almost completely lost in the rush of aviation talk that went on for the next hour or more. Frank took us to his "workshop" where we saw several full size aircraft under construction, including a Curtiss Jenny and . . . you guessed it . . . a Sopwith Camel! Of special interest was the discovery that Frank had decided to sneak a little wheel into the tailskid, just as Bob had done on his model. Voila! Now it's legal!

Before we left, Frank was kind enough to pose with Bob's Camel for a couple of photos . . . thus the solo shots of the plane were set aside in favor of this month's cover picture.

Incidentally, the Tallmantz Air Museum (Frank's famous movie stunt pilot partner, Paul Mantz, was killed several years ago when the plane he was flying . . . assembled remains of a crashed Fairchild C-82 Packet conceived for the movie "Flight of The Phoenix" . . .

crashed during a low pass or landing attempt) is interested in scale aircraft for display purposes. If you have something to offer, please write to us about it. Unless you're in the next hemisphere, Tallmantz Aviation may arrange to pick up your model by first-hand air transportation, in order to avoid possible damage by other shipping methods.

TURNED-OFF SCALE . . . REBUTTAL!

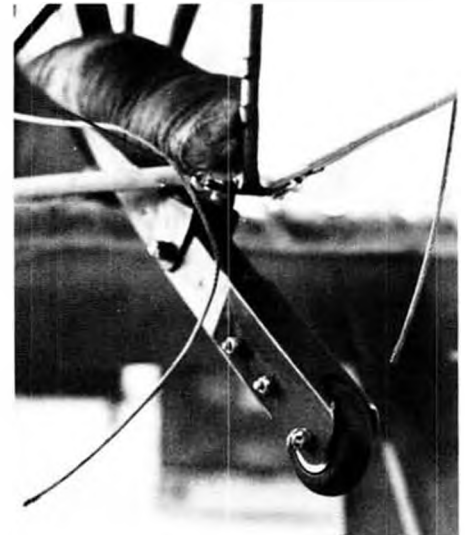
It seems that our comments about Stand-Off/Sport Scale rules have put us in the middle of quite a controversy. As editor and publisher of a magazine we have somewhat of an advantage in captive audience numbers over the average modeler, who may have just as valid an opinion about the situation, albeit different, as we do.

We have many supporting comments; such as Charley Reed, in his Kansas City (Missouri) R.C. "Contacts" news-

Continued on page 59



Official Bud Page and C.D. John Elliot (far and 2nd left) clarify a point for contestant Dieter Ziegler (rt) and his helper/interpreter Horace Hagen at the Orbit sponsored helicopter champs.



Here's a close-up look at that tailskid/wheel on Frank Tallman's Sopwith Camel. Not steerable.

OVER THE COUNTER



Span Aero Products, Wildwood Lane, Norwalk, Conn. 06850 is introducing a new 3-for-1 version of its famous 8 foot J-3 Cub. Plans and materials are included to build the J-3 Cub, the Clipped Wing Cub, or the PA-18 Super Cub. When ordering, specify the regular or Super Cub cowl. Kit features fiberglass cabin section, fiberglass cowl, aluminum wing spars, and over 24 sq. ft. of plans.

* * *

Orbit Electronics, 1641 Kaiser Ave., Santa Ana, Ca. 92705, is now offering a new low-priced three-channel radio which should find immediate acceptance, primarily in the R/C glider fraternity. Appropriately named the "Hawk", the dry battery powered set costs \$139.50, with two servos. Extra servos, and the rechargeable nickel cadmium power packs for the transmitter and airborne unit are available separately.

The Hawk should also appeal to newcomers in R/C because of the relatively low initial cost, and as a 3-channel unit for rudder, elevator and throttle, it makes an excellent beginner's and sport flier's radio.

The basic concept for the Hawk emerged several years ago when Orbit developed the Cobra radio for cars and boats. The small, molded, high-impact plastic transmitter case and the quickly interchangeable frequency crystals are directly related features that have been carried forward into the Hawk (All six interchangeable frequencies on 27 MHZ are available . . . one set included with each radio . . . other sets available at



Span Aero's 8 foot Cub kit has been modified so that any one of three different versions may be built. Cowl and cabin area are of molded fiberglass. Wing spars are aluminum.

\$9.95, including 2 crystals, holders and frequency ribbon.)

* * *

Orbit has also come out with a couple of handy little accessory items. One is a small molded rubber airborne antenna lead outlet grommet. It has been molded in such a way that it may be used in either a molded fiberglass fuselage or one built up of sheet balsa.

The other item is a metal coupling device for a wire pushrod end and any typical rotary servo output arm. The

device eliminates the need for bending the wire pushrod end and gives immediate, unlimited adjustment of pushrod length.

* * *

Sig Mfg. Co., Montezuma, Iowa, has put its patented "Kwik-Bilt" construction system to use in the design of its new R/C Sport Scale "Super Chipmunk." Main feature of the "Kwik-Bilt" system is the use of a molded fuselage which is not subject to the usual deterioration from vibration fatigue.



Latest Cox .049 is the "Black Widow," an updated version of the Golden Bee. Twin ported.



The dry battery powered Orbit "Hawk" sells for \$139.50, and should be a real attraction to new R/Cers and glider guiders. Rechargeable packs available. Price includes two (2) servos.

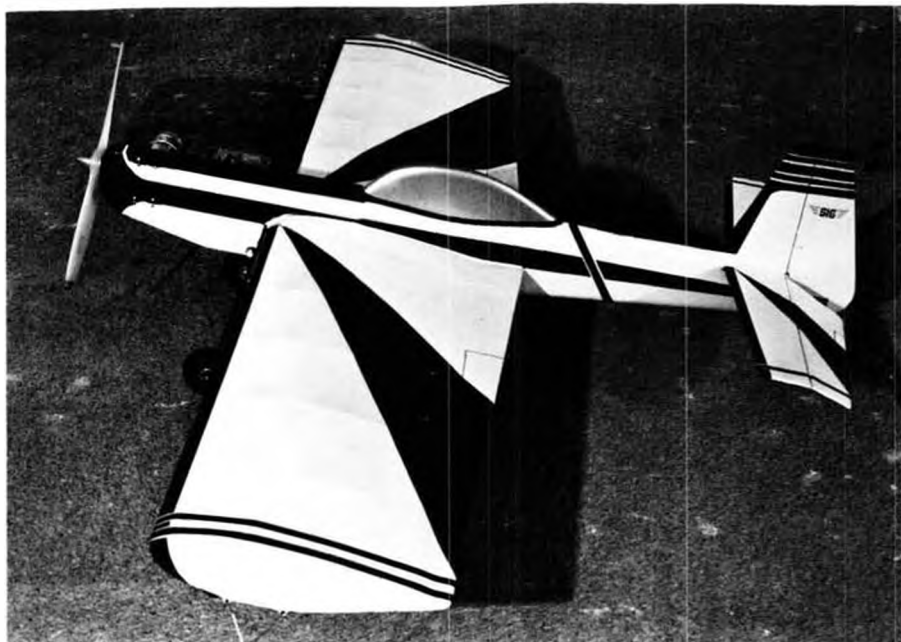


Sig's R/C Stand-Off Scale Chipmunk features the new "Kwik-Bilt" method of fuselage construction, which provides the detail of molded plastic combined with the strength of a 1/2" balsa crutch. Ship has foam wings and sheet tail surfaces, making for fast building. \$39.95

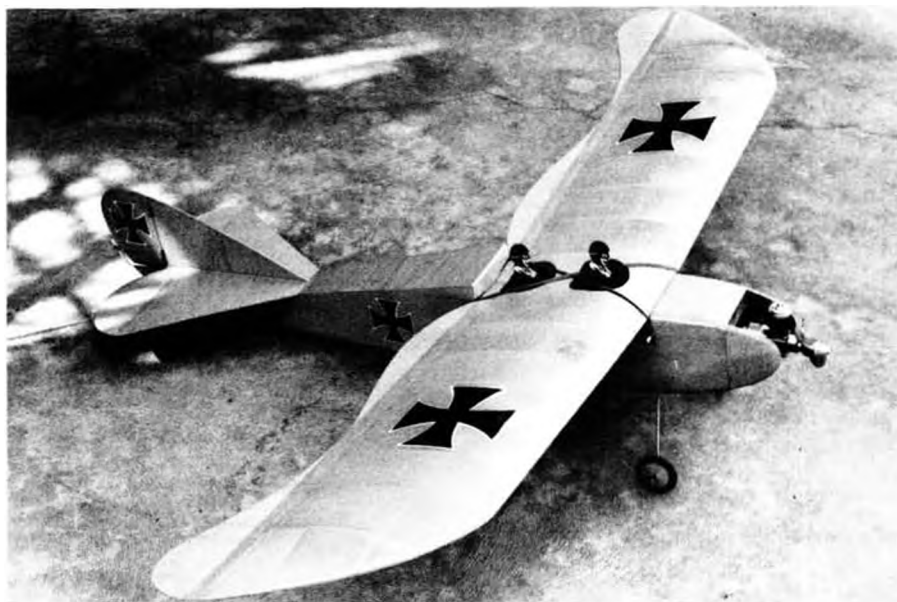
A 1/2 inch thick balsa profile carries the load of the engine and flight surfaces. The molded fuselage, in two halves, is merely "hung" on this sturdy backbone, and has nothing else to do but go along for the ride and look pretty . . . with all of its detailed rivets, seams, and fillets.

Complimenting the Kwik-Bilt fuselage, the \$39.95 kit also includes foam wing cores, formed plastic tips, molded canopy with framing, molded wheel pants, sheet balsa tail surfaces, torsion-bar landing gear, and a very complete hardware pack. Wingspan is 64 inches, area 660 sq. in.

Another new ship from Sig is the C/L Akromaster, for .15 to .25 engines, which sells for only \$4.95. For C/L Stunt and general sport flying, this 34 inch span model is a lot of airplane for the price. Included in the kit; shaped profile fuselage, shaped leading and trailing edges, all remaining parts from die-



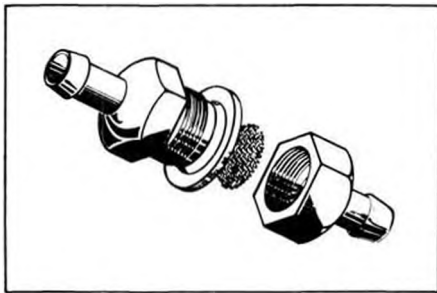
Sig's profile C/L Akromaster for .15 to .25 engines. With a 34" wingspan makes a nice stunt trainer and sport model at the low price of \$4.95



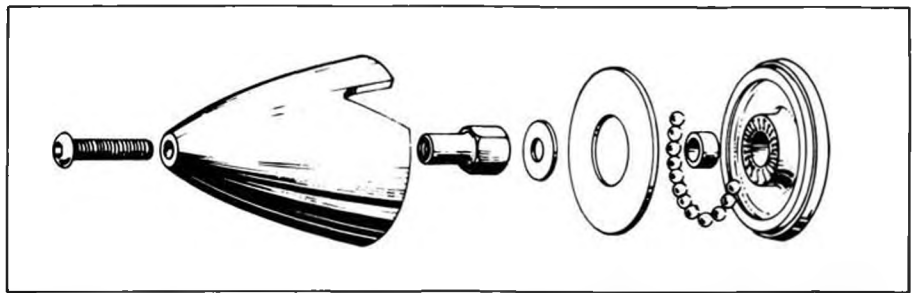
Competition Models' newest kit for Sport Scale or just plain fun is this semi-scale model of the Rumpel Taube. For .020 to .049 power, the 40" span ship sells for \$8.50. Use for R/C or F/F.



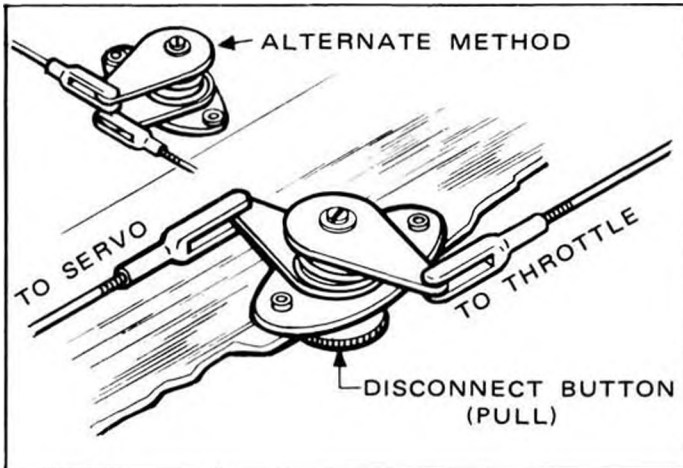
Tatone's new Muffler-Manifold for Cox .09 engines and cleaner, quieter running.



Hi Johnson's fuel filter comes apart for cleaning, is color-coded for proper flow direction.



Auto-Balance spinner by Hi Johnson represents an old principle put to a new use. Don't know why, but those balls go to the light side. Fine balance like this will add RPMs, reduce wear.



Throttle pushrod coupling device by Kraft Systems permits checking of engine operation without radio, also allows reversing motion.



The 1/2A-A Orbiteer by Competition Models is fast building and potent design that has already proven its worth in contests.

cut balsa or plywood, shock-absorbing ready-bent landing gear, formed pushrod, hardware package (nylon bellcrank, elevator horn, hinge material), and complete building and flying instructions with isometric drawings.

* * *

Tatone Products has three new items to add to its ever-expanding line. Two of them are typically high-quality, polished aluminum castings; a muffler-manifold for the Cox .09 and an engine mount for the Cox .049.

The \$3.95 manifold serves a triple purpose in that it keeps the engine cleaner by not allowing dirt to enter the

cylinder, keeps the plane cleaner by directing all exhaust residue in one direction, and also cuts down on the sharp irritating noise with very little power loss.

The \$2.25 mount weighs only 3/4 ounce, and has four firewall mounting holes for easier thrust adjustments.

The third item from Tatone is an improved model of the popular "Hinge It" set for cutting hinge slots in control surfaces. It's the metal guide plate which is a marked improvement over the earlier adjustable unit. Designed for six dif-

ferent surface thicknesses ranging from 1/8 to 3/4 inch, the new guide should assure perfectly parallel slots. The cutting and gouging knife is the same as before. Price is \$2.95.

* * *

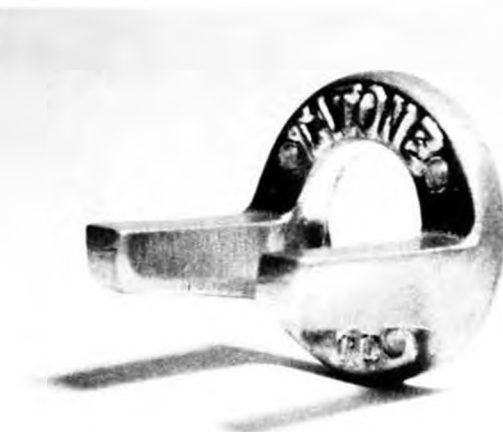
Kraft Systems keeps coming up with those fantastic "for-the-man-who-thinks-he-has-everything" modeling accessories.

For the pylon racer, Joe Martin has designed new thin molded nylon wheels specially made to fit the very slimmest of wheel pants. Quarter Midget wheels

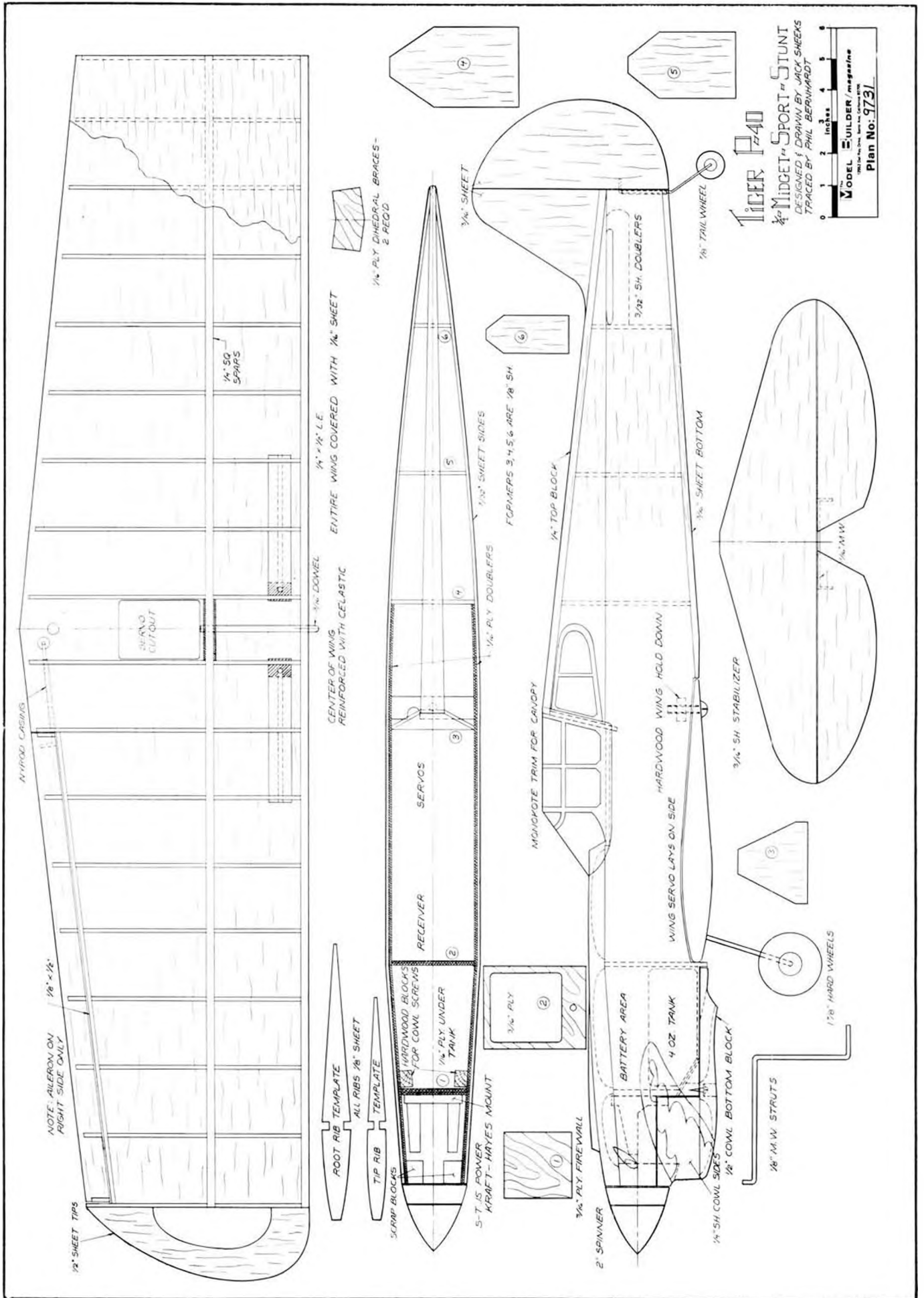
Continued on page 57



Revision of guide tool is a marked improvement on Tatone's "Hinge It" slot cutter.



New Tatone aluminum motor mount for the Cox .049 Tee Dee. Weighs only 3/4 ounce.



Tiger P40

Midwest Sport Stunt
 DESIGNED & DRAWN BY JACK SHEETS
 TRACED BY PAUL BERNHARDT

MODEL BUILDER magazine
 1 2 3 4 5
 0 1 2 3 4 5
 inches
 Plan No: 9731

NOTE: ALERON ON RIGHT SIDE ONLY

WOOD CASING

1/2" SHEET TIPS

SWAY CUTOUT

1/4" SQ SPARS

1/4" x 1/4" LE

ENTIRE WING COVERED WITH 1/4" SHEET

CENTER OF WING REINFORCED WITH CELASTIC

1/4" DOWEL

1/4" PLY DIHEDRAL BRACES - 2 RECD

1/4" SHEET

1/2" SHEET SIDES

FOAMERS 3, 4, 5, 6 ARE 1/8" SH

1/4" TOP BLOCK

1/4" PLY DOUBLERS

1/4" SHEET BOTTOM

1/8" TAIL WHEEL

MONOFOTE TRIM FOR CANOPY

HARDWOOD WING HOLD DOWN

3/4" SH STABILIZER

WING SERVO LAYS ON SIDE

BATTERY AREA

4 OZ TANK

1/4" SH COWL SIDES

1/8" COWL BOTTOM BLOCK

1/8" M.W. STRUTS

1/8" HARD WHEELS

2" SPINNER

1/4" PLY FIREWALL

S-T IS POWER MOUNT

SCRAP BLOCKS

HARDWOOD BLOCKS FOR COWL SCREWS

1/4" PLY UNDER TANK

3/4" PLY

RECEIVER

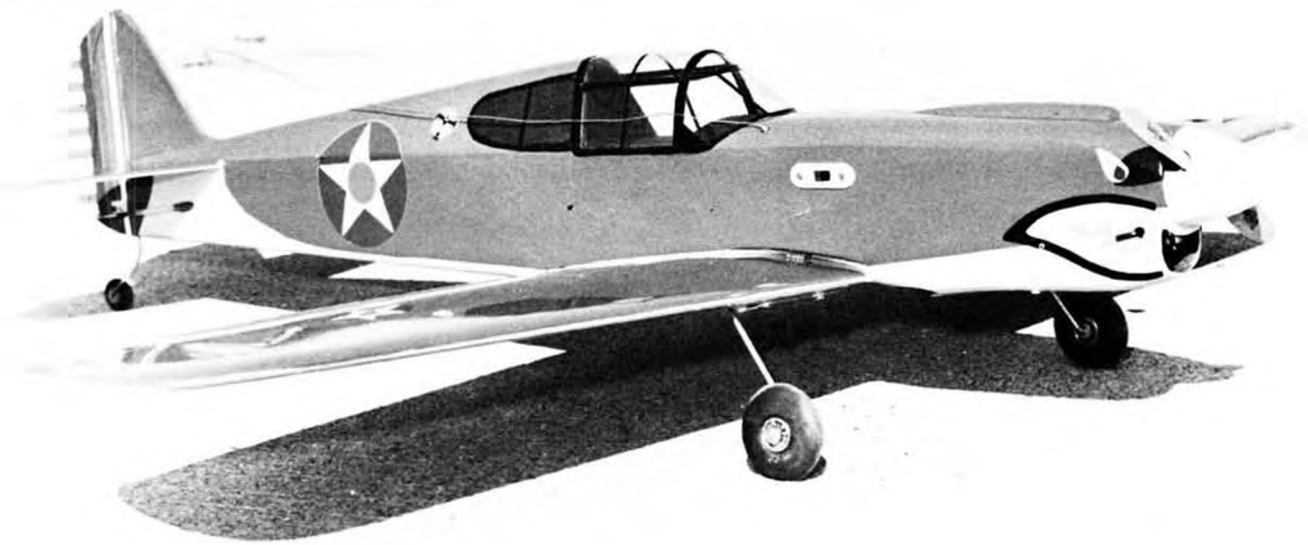
SERVO

1/4" PLY DOUBLERS

1/4" PLY

ROOT RIB TEMPLATE ALL RIBS 1/8" SHEET

TIP RIB TEMPLATE



P-40 QUARTER MIDGET RACER

Quarter Midget racing is sweeping the country, and what's nice is that many of the winning planes are original designs. The P-40 has already shown great potential in several races. **By JACK SHEEKS.**

Wish we could tell you that this little ship is the descendant of the great balsa God "Speed" or that we have been working on the basic design for over 10 years to make it perfect. But we have done none of these things. We can say that it has proved to be a very good design that is stable in flight and is not too shaggy when it comes to speed. The P-40 took shape not long after my ME 109 proved to be such a good competitor. We decided to try and make the next ship even faster, with an enclosed cowling and modified rib pattern. The landing gear was placed further out in the wing in order to get better ground handling. This helps to get around the first pylon quicker. The straight leading edge of the wing helps the ship turn quicker after getting it in knife edge flight. With these modifications, the only ship both Hal Vandiver and myself liked, that would still be a military ship, was the P-40. So we built one to see if it would cut the mustard.

The little ship isn't doing too bad in competition. Hal has flown it in two different meets now and placed third in the Lafayette, Indiana 1/4 Midget races. He couldn't quite beat the K & B's with his Tigre. But third isn't too bad out of 35 entries. He then went to Rough River, Kentucky, for the 1st Mint Julip meet. By this time he had modified the ship and had a hot K & B 15 growling in the cowl. He was a lap ahead of most of his competition when she quit. He changed plugs, props, fuel filters and flew his second heat. Again

on the eighth lap she quit, while leading the race. The culprit was in the tank. The clunk had slipped off and he was only drawing half the fuel from the tank. This has since been remedied.

Our P-40 weighs in at 2 lbs, 9 ozs. with a Blue Max radio, Tigre 15 and MonoKote, so there shouldn't be any problem with weight. Midwest balsa was used throughout.

The only thing we have to say about getting more speed out of a ship is to be sure she is clean. By this we mean no

rough areas on the fuse or flying surfaces. This slows you down considerably. Use all the tricks you have seen other pylon racers use and give the P-40 a try. We think you will like it. It maneuvers very well also, and would make a good ship for sport flyers.

CONSTRUCTION

The construction of this ship is very simple. Begin with the wing ribs. Cut the templates out of thin aluminum and sandwich enough 1/8 inch balsa rib blanks between them for one wing half.



While his son, Scott, holds the P-40, Jack fuels up. Picture taken just after they were both squirted with fuel! Note the wording on sticker on Jack's Blue Max transmitter.

Drill a couple of holes through the ribs and bolt the ribs and templates together. Now carve the ribs to shape. Next cut the 1/16 inch balsa sheet to size for the bottom planking, placing it over the plan. Pin the lower 1/4 sq. balsa stringer in place on the planking glueing it on the inner edge. Put the ribs in place on the stringer and glue each of them securely. Glue the top stringer into place now.

While this is drying do the other wing half. Next comes the leading edge and the rear planking on the top of the wing. Before planking the right wing on top, install the aileron controls, then plank over them. After this is dry, cut out for the aileron. Next plank the rest of the wing. Carve the tips to shape and install them. Then hinge the aileron (trailing edge stock) and install it. Cut out the section of the wing that receives the servo and install the dowel that holds the front of the wing. Set the wing aside now, because the only thing left to do is to drill the wing hold-down holes and this is done after the fuse is complete.

Next cut the stab, elevators and rudder from 3/16 inch balsa, sand to final shape and install hinges.

The fuse is started by cutting the two sides from 3/32 balsa. Next cut out and install the 1/32 plywood fuse doublers. Saw the firewall from 1/4 or 3/16 inch plywood. Whatever your bag is. They both work well. Next cut the other formers from balsa as per the plans. The lower section of the fire wall can be either balsa (hard) or plywood, since it is only used to hold the tank. Epoxy the firewall to the body sides. Pull the rear of the body sides together and glue a piece of scrap 1/8 balsa between them. Let this dry.

By the way, I forgot to tell you to install the landing gear blocks in the wing before you plank the front half. Sorry about that . . . age you know. Don't forget the dihedral braces.

Install the body formers as shown, also the motor mount and the fuel tank. Glue the stab into position. Glue the top nose block into place, along with the lower nose blocks. After these have dried, carve and sand them to shape. Plank the turtle deck with 3/32 balsa, topping it with 1/4 inch balsa. Install the NyRods from the bottom, making sure they are secure, then plank the bottom with 3/32 balsa.

Install the hinges in the lower part of the rudder and glue it into place, along with the tail wheel bracket.

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We're surprised that more pylon racers don't adopt the one-aileron system shown here on the P-40. Uneven drag should work in the pilot's favor during those knife-edge pylon turns.



"And awaaay we go!" With a detuned engine and a little more attention to detail, the P-40 could be turned into an excellent Stand-Off scale ship or just plain fun model.



Quarter Midget winners at Mile Square, June 24, (left to right and 1st thru 6th): Ray Emery, Lou Governale, Tom Christopher, Ken Holden, Bob Johannes Sr., and Dick Rebenstorf.

PYLON

By TOM CHRISTOPHER

PHOTOS BY TOM CHRISTOPHER

At press time, we are busily preparing and practicing for the AMA Nationals that will probably be concluded by the time you are reading this column. This particular Nats will bring together some of the best racing talent that our sport has ever produced. It will take a combination of preparation, practice, good equipment, a good steady pilot and a helping hand from Ole Lady Luck to emerge victorious in the Formula I event this year! Good Luck, fellas!

While we are on the subject of the Nats, and racing, and all that goes with it, I would like to give you our ideas on what I consider a "Lost" event. The FAI class of racing is one of my favorite classes of racing. In our estimation, two races that were run last year could ruin the event unless something is done to alleviate the problem. We are referring to the two aircraft designs that were allowed to compete at the Nationals and the Inter-Nats at Cranston, England. From discussions with competitors who normally participate in FAI pylon, we cannot help but conclude that the event is on the way out. We predict that the entries at the Nats this year will bear us out as to the popularity of the event. We would

have to say at this point that a few people just "Designed and Stretched" themselves right out of a racing event. At present, there is only one FAI Pylon race scheduled for Southern California for the entire year! We would predict that maybe twenty-five at the most would attend!

We aren't people who say something just to hear ourselves rattle, and we would like to propose only conventional designs and conventional silencers that

are available to everyone!

We were hoping that maybe there would be provisional Quarter Midget races at the Nats this year. We promise you that there would be twice the entries that the FAI pylon event would produce. Maybe next year!

These Quarter Midgets are really going strong in Southern California. As we have stated before, the QMRC sponsors a race each month at Mile Square in Fountain Valley, California. There have been six races so far this year and six different winners! The QM racers are a close knit little fraternity that likes competition and enjoys a close race . . . only a little more than chasin' women!!
Ha!

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Same ships as above, from front: Minnow, Dara, P-51, P-39, Minnow, Brown Special.



New young QM Pylon star, Clyde Bracey, age 64. Stafford P-51, K & B .15.



Kent Thomas (left) designed and built the two P-39s. They placed 1 and 2 at Mile Square, May 27, with Kent 1st and Ken Holden (right) 2nd. Nice looking machine.

The May QMRC race was a special race to us in that one of our close friends and competitors Kent Thomas cleaned everyone's plow with his scratch built P-39, powered by K & B. Kent is one of our senior members who designs and builds everything that he flies. Kent is not only an articulate builder with extreme attention to detail, he has also been known to provide some real exciting competition in just about every race that he enters!

Just to prove how good the Thomas designed P-39 is, we can attest to the fact that the sister ship, also built and flown by Kent, powered by Supertigre, is one heck of a performer also. Kent sold his ST powered back-up to Ken Holden, who probably flew his best race to date, and finished second overall behind Ole Big Daddy Thomas!!! Talk

about two QM racers that were happy! Neither of them were touching the ground for days!

But speaking of performances, Tony Nickel entered the May QM race as a relative unknown. It was his first race! When the meet was over, everyone knew Tony . . . he finished third overall in a fine, consistent showing with his ST powered K & K Ballerina.

Lou Governale finished in fourth place, flying his classy, scratch built Miss DARA. Lou has some super help in that his son Rick really calls a good race and keeps Lou from getting too excited! Right Rick? . . . Right!!!

Ray Emery captured top honors at the June QMRC race also held at Mile Square. Ray flew a very consistent race with his scratch-built Minnow powered

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Don Gilihur, San Diego, designer of the Minnows flown by Bob Johannes Jr. and Sr.



QMRC President Mel Santmeyer. He's also QM's rep to the NMPRA.



Rick (left) and his father Lou Governale with their scratch-built Miss DARA, powered with a K & B .15.



Owner of "House of Balsa," Don Dombrowski. He produces excellent QM Shoestring kit.

REFERENCES:
 THE AERO OCTOBER 26, 1910
 THE AERO NOVEMBER 30, 1910
 THE AERO JUNE 1911
 FLIGHT DECEMBER 17, 1910
 AIRCRAFT AUGUST 1911
 AERO & HYDRO DECEMBER 7, 1912

NOTE: STABILIZER HAS BEEN OMITTED FROM FRONT VIEW FOR CLARITY.

NOTE: LARGER (13" WING SPAN) PRINTS OF THIS DRAWING ARE AVAILABLE FOR \$ 1.00 POSTPAID FROM BILL HANNAN BOX A ESCONDIDO CALIFORNIA 92025

FLUGSPORT TAFEL VIII 1913
 PHOTOGRAPHS, MUSÉE DE L'AIR

STRANDED STEEL CABLE
 HEAVY GAUGE PLAIN STEEL WIRE
 STEEL TUBING

PYLON DETAIL

UPPER CABLE IS FORWARD STAY RIGGING.
 LOWER IS WARPING CONTROL WIRE WHICH PASSES THROUGH TUBULAR GUIDE

WHEELS BECAME "KNOCK-KNEED" FROM HARD USEAGE

ROTATION

ENLARGED VIEW OF CHAVIÈRE PROPELLER

THE TAILPLANES WERE CONSTRUCTED OF VERY LIGHT STEEL TUBING BRAZED TOGETHER.

PORTION OF ASH LONGERON SHOWING LIGHTENING CHANNELS BETWEEN CROSS MEMBERS

NOTE: LATER NIEUPORTS FEATURED SEMI-CIRCULAR HORIZONTAL TAIL

WING AEROFOIL

FORE AND AFT MOVEMENT OF THE STICK ACTUATES ELEVATORS

SIDE MOVEMENT OF STICK ACTUATES RUDDER

ALL MOVING METAL PARTS IN COCKPIT ARE BRASS TO PREVENT COMPASS DEVIATION.

ENGINE CONTROL LEVER

FOOT PEDALS ACTUATE WING WARP CONTROL

CONTROL DETAILS

SHAFT "A"

WOODEN PULLEY MOUNT

TO RUDDER

TO UNDERSIDE OF REAR WING SPAR

TO RUDDER

TO UNDERSIDE OF REAR WING SPAR

ELEVATOR WIRES

WARP CONTROL PLATE

PORTION OF RIB

WING SPAR

PRESSED STEEL PLATES

METHOD OF SECURING THE STAY CABLES TO THE WING SPARS

NOTE: THE SHAPE OF THE RUDDER VARIED ON OTHER VERSIONS OF THE NIEUPORT

PYRAMID-SHAPED FIREWALL IS BRIGHT ALUMINUM

STEEL ENGINE MOUNT BRACKET

SHAFT "A"

WARP CONTROL PLATE

NOTE: SOME ENGINE DETAILS HAVE BEEN OMITTED FOR LACK OF POSITIVE INFORMATION.

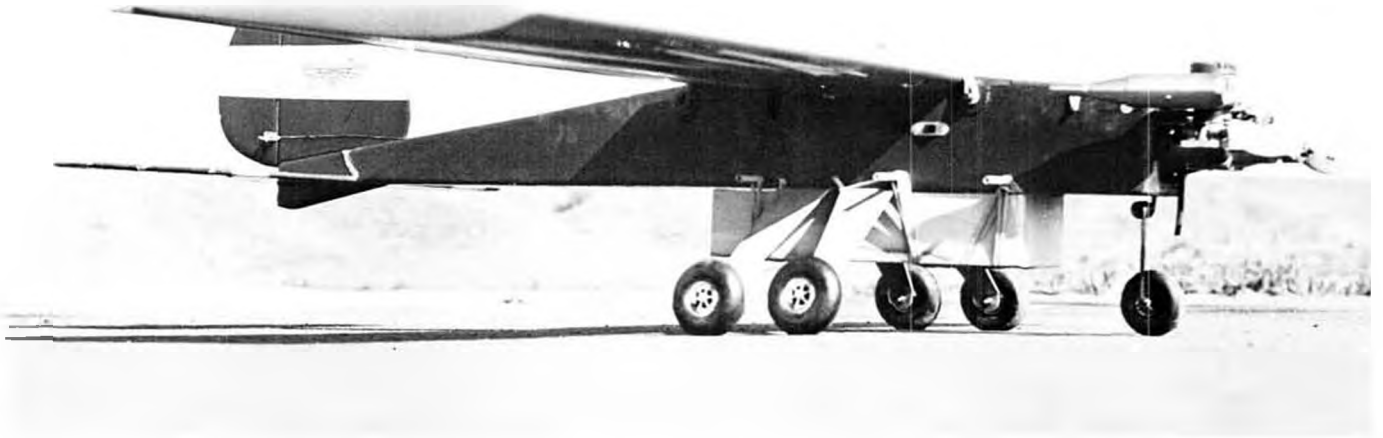
LANDING GEAR DETAIL

LEAF SPRING

1910 NIEUPORT MONOPLANE

DRAWN BY W. C. HANNAN

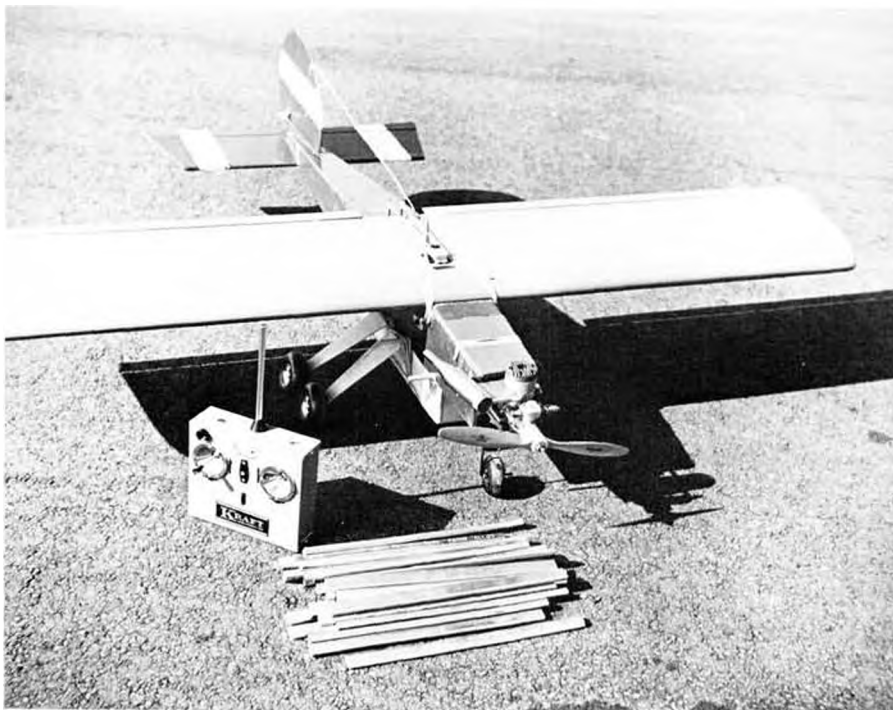
SPECIFICATIONS: WING SPAN 27' 7"
 LENGTH 24' 7"
 PROPELLER D. 6' 6"
 WEIGHT (EMPTY) APPROX. 495 LBS.
 POWER: 20-25 H.P. DARRACQ TWIN



How to make an Ugly Stik uglier! Joe Martin added an extra main gear to handle the payload of lead bars in an experiment to see how much weight a standard R/C model could carry. It managed to get off at 17 lbs, 4 oz., but could not rotate . . . hit a bump that made it airborne!

RADIO CONTROL REPORT

By FRANK SCHWARTZ



Wing on Martin's Stik is not stock. It's a glass covered honeycomb. Bare weight with two main gears, 8 lbs. Webra .61 engine. How about a payload R/C event? More info in "Workbench" col.

You would think that after over thirty five years of modeling and almost twenty five years of R/C that I would have learned a simple lesson, probably the most basic . . . and yet the most disregarded . . . that vibration can sure kill a battery pack. If it never happened to you, you wouldn't believe what can go wrong.

Remember last month I was talking about the little Pronto I was flying for fun? Well, I had the battery pack mounted, in foam of course, under the tank. All went well until the engine bolts came a little loose and the engine began to cause excessive vibration, and WOW! . . . everything went ape . . . the servos went to one side and locked. Thank goodness it was on the ground, because the flight just before that I had been getting "funnies" and couldn't figure why . . . then I gassed up again, fired up the engine and it happened.

First I found the engine was loose and then that one cell in my receiver pack had actually reversed voltage. This was a flat pack with GE cells. Replaced the baddie with a Gould cell and put the equipment in my old Lucky Fli and went out last Sunday to have another go at it. All went well again and this time the servos began to jump when I slowly went through high to low throttle. Sure enough, I had the pack wedged down in this plane behind the tank and it was getting too much vibration. Best solution to vibration sensitive cells: replace them with new good ones. Best preventive: properly insulate your pack from vibration in the first place. I wonder how many planes have bitten the

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PHOTO BY ROY STEPHENS

"Hot Canary" Quarter Midget racer by Carl Cumbow, of the Tri-Cities Aeromodelers, Kingsport, Tenn. Plane is stable, smooth, and fast, has large stab. Yellow Solarfilm, black trim, ST .15.



Cox .09 with tuned pipe powers this glider by T. Hirasawa, Japan. Flood-off stop by R/C.



Eldon Wilson and his Santos Dumontish looking stand-off scale ship that raised quite a furor at a contest. How about that, Johnny Casburn?



Our little friend, "Bobo" Sato, at powered glider event in Japan. He and his father, Yoshiro, flew in 1972 US Glider Nationals.



Kenji Hoffman, 15, launches Amigo II for his father, Larry, who sent us the pictures from Japan. Mt. Fuji in the background.



Jack Hammond, Valley Flyers, Van Nuys, California, built this DR-1 from the VK kit. Researched Smithsonian for details . . .not yet flown. Photo by Reed Packard.



Original design by N. Yamamoto, has flaps, spoilers, rudder, flying stab. OS .10 power.



Bob Stalick's son, Ted, above, built the FAIMan 7 shown in these photos. Ship is relatively small as FAI power models go, but is not any less capable of doing the job. Could also be built for 1/2A-A power, but would be mild with the thick airfoil shown.

FAIMan 7

The beginner will like this ship for its easy and inexpensive construction, and the expert will like it if his favorite FAI bird hooked a thermal and went OOS just before a big contest. By BOB STALICK

The FAIMan series began 7 years ago as an attempt to design a model that would be non-critical, simple to build, and easy to fly . . . but yet would be competitive in the FAI power battles of the day. Additionally, the model would have constant chord wing and stab, and box fuselage with wood sizes standardized to minimize unused materials. Geodetic surfaces were utilized to maintain airfoil integrity. Bob Cherny's 9% Orbiter airfoil would give a high speed climb, and a high aspect ratio wing (9.5 to 1) would provide a better-than-average glide.

These parameters were built into FAIMan I and II. The original model is still flying (albeit with some rebuilt parts), and it is still winning. It won first place in the Northwest Semi-Finals in September, 1971 by scoring 7 maxes and a 127 second flight. It flew at the Caddo Mills FAI Finals in July of 1972 and was lost 6 miles downwind of the launching site during the 8th round. It wasn't located until that evening, so its claim to a high placing in Texas was not to be.

At this point in time, the series has come full circle from this early FAIMan detailed above. Following this simple non-nonsense model came FAIMan III, which had a 10 to 1 aspect ratio wing, auto-rudder and tapered wing and stab; then the ill-fated FAIMan IV, which never flew; FAIMan V, which was equipped

with auto-everything, tapered wing planform, Rossi engine, etc.; FAIMan VI, which was just completed this spring, and has a completely sheeted wing and auto-everything.

Now comes FAIMan 7. Its purpose is to satisfy the enthusiasm of my junior

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Business end of the FAIMan 7. Engine plate is drilled to take landing skid and set screw.



Up, up, and away! Model climbs in right spiral and makes about two turns in a 10 second run.



Jim Wade's "Missle" shattered previous Senior record by 13 mph. New mark is 196.21 mph. Upright engine, no takeoff dolly.



Winner of 1/2A Scale at San Jose, Fedel Salas and his Dormoy "Flying Bathtub." Cox Medallion with throttle control.

Control line

By DALE KIRN

Results of June and early July contests have been pouring in. The number of modelers/planes entered per contest is much higher than last year. Can't explain why. Maybe there are enough experienced modelers now taking the time to show the newer flyers the "in's and out's" of competition flying. Have seen this in several of the California and Arizona contests this year and assume the same conditions are happening elsewhere.

Had the pleasure of attending a Western Associated Modelers (WAM) contest

held in San Jose on the 4th of July. Flying site was Del Mar High School which had both asphalt and grass flying areas. Of special note was the number of planes entered . . . over 400!!

WAM recently celebrated their 25th year as a model airplane governing organization. They have over 1500 members at the present time. Many of their rules are the same as the AMA, but with two major differences. First, all planes flown in competition MUST have mufflers (except jet) and second, they use a different system for classifying the model-

er. The modeler is classified by his degree of skill/proficiency, not by his age. This applies to all of their events. The classifications are Beginner, Advanced and Expert. Everyone starts at Beginner and works up to the Expert category by winning a specified number of points. This system has many merits as is evidenced by the large number of entries at their contests.

SCALE

The interest in flying scale is extremely good in the San Francisco area. This is due to the fact that under



Winner in 1/2A Stunt (no, not scale!) at San Jose, Arlie Preszler and Tee Dee .049 Wildcat.



John Westbrook set Jr. 1/2A Proto record of 90.46. Mono-line, one blade prop.



Donny Rhoades broke Jr. record at 188.80 but couldn't back it up due to "broken parts."



Ray Smith, Lawndale, Cal., and his A-26A. Span is 72", weight 15lbs. Uses two Fox .60 Eagle engines and is flown on seven (7) lines!



First place winner in Jr/Sr Flying Scale at San Diego, Becky Snyder, with her Fokker E-1. Uses 25 year old Arden .19 for power.



Jerry Bradshaw set WAM 1/2A speed record of 104.49. Tee Dee, L.H. prop, own tuned exhaust.



Bob Whitely was winner of stunt at San Diego with this ship which also took the best finish award. Power is an O.S. 35 with muffler.



Max Snyder and his S.T./Snyder .29 Proto. Set Jr. record of 133.03.

WAM rules there are four different categories; single-engine, multi-engine, jet and 1/2A. The San Jose contest had 28 scale planes. Seven of these were multi-engine. Ed Childress had a beautiful B-24H powered by four K & B 29 (old green head) engines. He took 5th place with his plane at the 1958 Nationals and all of the "bugs" have been worked out. Ed Dunstant flew a well seasoned Short Stirling.

You have heard of flying saucers, but how about a flying bathtub? Fedel Salas decided someone should make one, and it should be scale. Lo and behold, he found that there was a real plane made by Dormoy called the "Bathtub." His version has slightly less power than the original — a Cox Medallion .049 with throttle control. Guess this is another

first for Cox engines . . .

In San Diego on July 7 and 8 the Mission Bay Prop Twisters held their 5th Annual Western Championships. Flying site was North Island Naval Air Station, which had plenty of grass area and a super smooth asphalt speed circle. In the scale event they had only six planes entered, but they were of very good quality. Ray Smith's A-26A won first (Open) and was extremely smooth flying. He used two Fox .60 Eagle engines with throttle control and flew his plane on a total of seven lines! Three regular metal lines and four electrical lines. His battery pack was quite impressive, too.

The Junior scale event was won by Becky Snyder, age 9, with her Fokker

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Looks like somebody went ape with the cookie cutters when they built this one. Photo of unknown design taken by Whitey Pritchard. A beautiful picture that fully portrays the majesty of silent flight.

R/C SOARING

By LE GRAY

Our favorite soaring editor (Well, he's our only!) launches into a winchy discussion entitled, "ALL ABOUT WINCHES . . . or, A BOY'S GUIDE TO FUN AND GAMES."

● The toughest part of writing an article about R/C sailplane winches and their operation is getting past the subtitles. 'Tis a fertile field, indeed, and most difficult to pass up such gems as "Winches I have known," "Happiness is a good winch," "Flyers that winch together stay together," or "A good winch is hard to find." Of course, "Take a winch to launch" is a natural.

But putting temptation behind and hurrying right along, let's spend a few minutes talking about winch techniques . . . No, that's not another subtitle.

In the July issue of MB, Bill Lawrence laid it on the line about forces and factors involved in the launching of an R/C sailplane. About all that is left to cover is some of the background or history and a bit of practical operation of the winches.

Maynard Hill, of the DC/RC, started the whole thing with his article about construction of an electric winch in the September 1966 issue of Model Airplane News. His system required an operator positioned with the winch unit at the end of the field opposite from the launching model. A launch was initiated by hooking the sailplane to the line and

holding the model up at arm's length, or wigwagging the transmitter antenna flag, to indicate that all was ready. The winch operator, some 1,000 feet upwind, interpreted the far-off flurry as a "go" signal and threw the switch to activate the winch motor. Woe to the pilot who developed a last-minute problem, had a change of mind, or whose sailplane was upset by a sudden gust of wind after he had made an affirmative sign. No turning back. That sailplane was goin'. Talk about commitment.

The winch system worked fine. Communication was the problem. On the West Coast, an early attempt to solve the problem utilized a very crude dead-man ring as a line turnaround device. This was a large eyebolt driven into the ground at the upwind end of the field. With this arrangement, the winch and its operator could talk to each other. Great. The one small problem was that the eyebolt created so much line drag that launch altitudes over 100 feet were rare. Back to the drawing boards.

The next step in winch-launch development was "flag talk." Field arrangement went back to the original setup with the line running across the field

directly from winch drum to sailplane. But now flag signals provided communication. This required another person in the system for a total of three . . . winch operator, pilot, and launching flagman. If the pilot had a helper hold his sailplane for the launch, the operation could take the membership of a small club.

With flagtalk, signals were available to stop, slow, or speed up an in-progress launch. The action was quite colorful and a great crowd pleaser, but it involved too many people. Besides, nobody wanted to get stuck way out at the winch as operator. It was dull and lonesome duty. Occasionally, some spectator or new club member could be pressed into service. The problem was, that too often, an inexperienced operator became fascinated with the beauty of the launch he was controlling and forgot to watch for cut-off signals. Exciting.

The real disadvantages of positioning the winch operator at a location remote from the pilot were emphasized by the stack of overstressed wings that were collecting on flying fields. Inventors scurried to their laboratories to develop a much needed, low drag turnaround

ring. All kinds of fancy pulleys with close-tolerance guides were fabricated. Some worked fairly well, but any fouling required a near half-mile round trip walk across the field to clear. Most units were far too complicated, expensive, and easily fouled. It seemed that the obvious answer to alleviate all fouling problems was even more complicated, at greater expense.

One day Marshall Watson strolled onto the field with a small, simple unit that utilized the axle from a bicycle. It had neither large-diameter protective side plates nor highly machined matched surfaces. The "experts" really folded up over this one. Watson apparently didn't understand the problem. Only one catch. It worked like a charm. The only real improvement to his system since that day has been Rod Smith's incorporation of traverse guides in lieu of Marshall's original eyebolt line guide (Described in MB).

Watson's turnaround ring was almost frictionless, and it permitted sailplanes to be launched at altitudes comparable to the old across-field setup. Pilot and operator were in direct, verbal contact . . . Beautiful.

Up to this time, winch motors were actuated either by a switch mounted on the winch box or a remote hand-operated button such as introduced by Fred Walters . . . whose greatest claim to R/C soaring fame is that of fathering Rick and Jeff. With the Walters' remote switch, a few hearty souls launched solo, but they gave the appearance of a one-armed paper hanger. Normal operations still required a winch operator.

Keith Brewster, current Secretary of The League of Silent Flight, came up with the next improvement: a plate mounted, foot activated switch. With a length of extension cord, solo launch became feasible. Now you didn't have to wait for your flying buddy to finish his yard work before you could go out and play. Brewster's device probably broke up more relationships than a new blonde in the neighborhood.

As far as anyone knew, the normal winch launch of an R/C sailplane was by hand release. This technique involved holding the model at a positive angle of attack, waiting for line slack to take in and tension to build, and then releasing with a forward thrust which hopefully matched the line retraction speed of the winch. Too violent a thrust would cause the model to overfly the tow ring and experience a premature release. Too timid a throw, or none at all, laid the model in the air at slow air speed. With luck, the line speed would yank it up to flying speed before it fell to the ground.

Both situations left much to be desired.

In addition to these hazards, it was recognized that a sailplane elevated above the ground was susceptible to wind gusts, especially cross winds. It was a real chore to hold a long-winged sailplane with one hand against an uncooperative wind while grasping a transmitter with the other. Even if successful release was accomplished, which often required the aid of an assistant, a bad gust before flying speed was obtained could cause serious problems. Many sailplanes crashed during hand launch in the early days. Still do. The procedure seems to take an inordinate amount of coordination, skill, and just plain ole luck in other than near-ideal conditions. Rough conditions can provoke real spectator interest.

Someone suggested ROG (rise-off-ground). You've got to be kidding. Why? Cause it won't work. How ya know? Cause nobody never tried it, that's why. That makes sense. But what if it did work?

People started thinking. ROG could offer several advantages over hand launch, it seemed. With the wing close to the ground, it would be better protected from side gusts than when elevated 5 or 6 feet. In an ROG launch, an upwind wing could even be lowered until the tip touched the ground, or nearly so, until the instant of release. Maybe the wind wouldn't get under it at all.

If a sailplane was allowed to ROG, there would always be tension on the towline, and it would take to the air when it had flying speed. Not when the pilot or his helper judged that it was time to let go of the thing.

One problem was envisioned. What happens if a wing drops and touches the ground? Things could get serious if it snagged. How about holding the model with the wings level, or at least clear of the ground in a crosswind takeoff, until line tension builds up? That way, the model would move forward immediately upon release. The wings would have air flowing over them, keeping them level even if the sailplane wasn't ready to fly. Might work.

And so a small group believed that ROG might offer significant advantages over hand launch of R/C sailplanes. But no one would try. Theory's fine, but not with my sailplane, fella. As the group stood about the flying field one morning, none willing to attempt the new idea, the more devious among them developed a plan.

One of their regular members had yet to arrive. It was suggested that when



Hal Cover and his monstrous but graceful "Eclipse", well named for what it does to the sun when aloft! Span 15 ft., fish pole boom.

the latecomer did show, those already there would profess the fascination, excitement, and safety of their newly discovered technique, ROG launching. Being true friends and loyal companions, they then would lend a helping hand to the late arrival so that he could enjoy full advantage of their feigned experience.

Let the historians record that Mr. Wally Wallberger, with a Graupner "Foka," made the first ROG launch of an R/C sailplane . . . with much assistance from his "friends." Wally was so enthralled with his new found skill that he failed to hear the mutterings of his helpers. Had he listened, he would have heard such remarks as, "Well, I'll be damned." "Hey, it works." "Sonofagun, think I'll try it."

Wally has retired from R/C soaring. Maybe because the quality of friends he acquired left something to be desired. When and if he reads this, it'll be his first knowledge of his pioneering ROG flight.

While all this was happening on the West Coast, similar developments and techniques were evolving all over the country. Just who actually did what first

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Gene Wallock tunes up his Shereshaw designed "Nimbus" for a flight at the S.A.M. Championships at Taft, California. Gene is half of P & W Model Service (other half is Chuck Partch) which markets partial kits for many Old Timers.



PLUG SPARKS

Last month's guest editor stays on to describe the "biggy" of the year for Old Timer enthusiasts, the Society of Antique Modelers' Annual Championships at Taft, California. By JOHN POND.

● If you are an old time free flight fan and didn't attend the Society of Antique Modelers National Old Timers Championship contest, then you missed the doggonest best contest ever!!

Staged during the weekdays of Tuesday, Wednesday, and Thursday of June 19, 20 and 21, the meet drew contestants from all over the nation. Even Peter Fisher of Great Britain attended this eye-popping contest. With all these entrants, the meet was an assured finan-

cial success. In summary, the S.A.M. Champs have come of age.

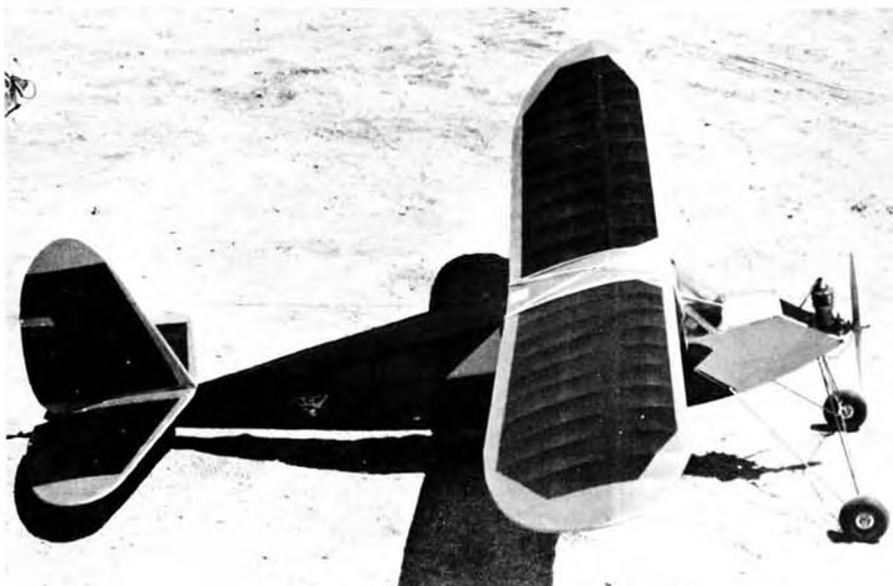
Some people might wonder why the contest is held during the weekdays rather than the weekends, but experience has proven that from across the country modelers can leave on Friday night and arrive four days later, on Monday, in time for the welcoming bean feed. This bean feed custom, inaugurated by the Denver Model Museum, has proven to be a great ice breaker. It gets the com-

petitors together so they can find out how the other half lives. With the contest closing on Thursday, contestants have three days to get back to work? Good deal, huh?

According to Gene Spence, the Contest Manager, arrangements had been made for excellent weather. The author agrees wholeheartedly, and adds that he must have lit one candle too many for the heat, as temperatures were never under 105 in the afternoons. Those contestants flying in the morning found conditions ideal, as the models drifted very slowly in the light morning air.

The afternoons were something else, with the small vales and canyons becoming infernos for contestants to traverse. Wayne Cain from Grand Rapids, Michigan, was badly overcome Wednesday afternoon and for a while, the situation looked serious. Although proven the hard way, another Easterner was convinced of the Taft heat and thermal activity. Cain had to sit out the next day, a real tough break, as he had brought almost ten models to fly.

Talking about beautiful mornings, the best of all was on Wednesday, the day of the Texaco Event. In this event, the average run is about six or seven minutes. Just imagine watching



Albert Hellman, Woodland Hills, California, a member of SCIFS, built this Megow Flying Quaker. Power is a Super Cyclone.



Jack Transue gives a clean release to his Class C Cleveland Playboy, Ohlsson .60 power.

three large airplanes with wingspans of eight feet or better, gradually climbing into the blue. It's a real thrill to watch one's handiwork fly gracefully and slowly enough to appreciate the wonders of a model flying.

The best part about flying that early in the morning is the lack of any real appreciable drift. On more than one occasion, the writer observed models flying to the east, only to return westward via a southerly route. In flying, this was the year for the big models, with Wallock winning the event with his magnificent ten foot Nimbus, closely followed by his partner, Chuck Partch (the P of P & W Enterprises) who had a duplicate Nimbus. Of course, Ed Rangus rounded out the winner's circle by placing with his large Lanzo Record Breaker.

This year, it was noticeable that the Nimbuses (Nimbi?) were flown at widely different time intervals. Last year, both were launched within a minute of each other. Wouldn't you know it, after a half hour chase, Partch came upon Wallock also pursuing an errant Nimbus. In less time than it takes to describe it, both were shagging the same model! That'll teach you to build twins!



Spiro Nicholaw gets ready to crank on the O.S. 60 Gold Head in his radio controlled PB-2. Lenny Curriel holds transmitter.



Curriel's version of the Lanzo Record Holder (Model Builder Plan No. 773-OT) with Kraft radio. This is absolutely the most relaxed type of R/C flying . . . like powered sailplanes.

Also worth noting was the huge 15 foot Boehle Giant in the Texaco Event that simply dwarfed the rest of the entries. The model, because of its large wingspan, was exceptionally easy to clock for long flights. However, it failed to enjoy "good" air and only placed fourth. As owner Hugo Lung sez, "Whadya got to do to win this event?"

Not enough credit can be given to Sal Taibi for the "Dawn Patrol" idea, the event which he annually hosts.

Started strictly as an idea to determine the most efficient airplane in calm air, the idea has caught on like crazy. In many cases, the original, all day Texaco Event has been replaced by this fun variation. After all, it's a lot more pleasant to retrieve in 65 degree weather than it is at 100 degrees!!

The Unlimited Event, which is a reduced version of the Texaco Event (1/8 oz. per lb. of plane weight as

Continued on page 25



You can almost here the mighty, but dignified roar of the Forster 99 as Sal Taibi's Powerhouse starts its takeoff run.



Larry Boyer's Comet Clipper is powered by a McCoy 29 converted to ignition. Larry's from San Diego.

compared to 1/4 oz. allotment) produced equivalent times because of the afternoon thermal activity.

The perpetual trophy for this event (called the Pond Perpetual) really should have its name changed to the "Polack" trophy, as first Ed Rangus would win it, tote it to the west coast, then Wallock would win and have to cart it back to the east (based on the rotating Champs sites). Although Wallock did win this event with his superb Nimbus, he was challenged very closely by Nick Sanford. Almost a repeat performance of three years ago! Up to the very last minute of the contest, the winner of the event was in doubt.

Continued on page 52



Gene Wallock "accompanies" his Super Cyke powered Nimbus for the first few feet of takeoff run. This flight lasted around 10 minutes.



Jim Adams releases his Forster .29 powered Pacer, a Sal Taibi design.



Larry Jenno with his Megow Ranger. Ship is powered by an O.S. glow engine converted to ignition by Bruce Chandler.

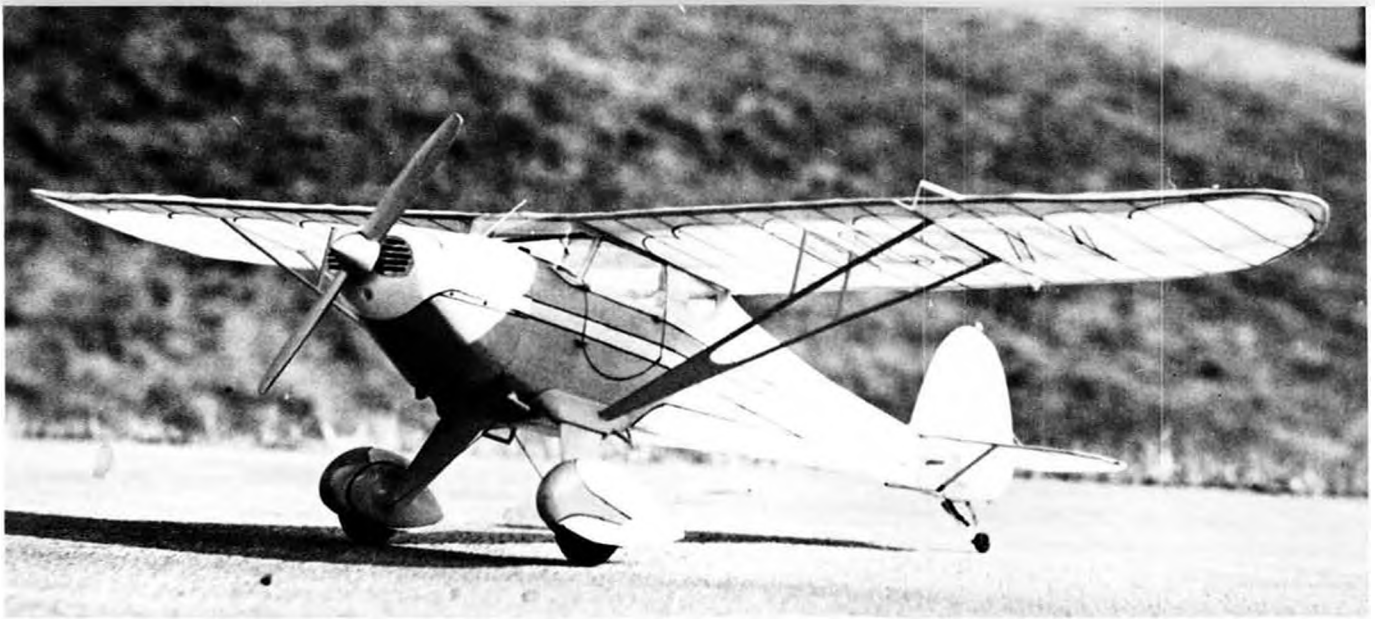


Old Timer Model of the Month; MODEL-CRAFT'S "SPOOK 48." Reproduced from the original kit plans, provided by Phil Bernhardt.

● Although the Spook did not appear as a kit until the Spring of 1940, it can be proven that the prototype was flying in competition prior to Dec. 31, 1938, which qualifies it as an Antique. This information comes from Barney Snyder, co-designer of the Spook, along with John Muir, and then owner of Modelcraft, which manufactured the kit.

The model in the photograph was built by Marge Bernhardt, Phil's mother, and is her third model, all Antiques. It is covered in orange silk and is powered by an Ohlsson .23, with a Tornado 9-4 prop. Engine has not yet been opened up to full power.

Entire fuselage, just ahead of the tail surfaces, is separated and hinged for the dethermalizer. ●



Indoor scale Monocoupe 90AL by 1972 Outdoor Rubber Scale winner Tom Stark. Ship is 3/4 inch scale, yet weighs only 1 ounce!

FREE FLIGHT SCALE

By FERNANDO RAMOS

This month I thought that it might be interesting to discuss the completion of Sterling's Piper Super Cruiser, a unique engine installation for reed valve engines, (I got this one from Lonnie Cope) and the trimming out of a new F/F scale model.

As stated in the May article, the Sterling Piper Cruiser is a well-designed and easily built model. The only deviation from the kit that I incorporated, was to laminate the tail surfaces, and this was done only for more realism. The rest of the kit was built according to the

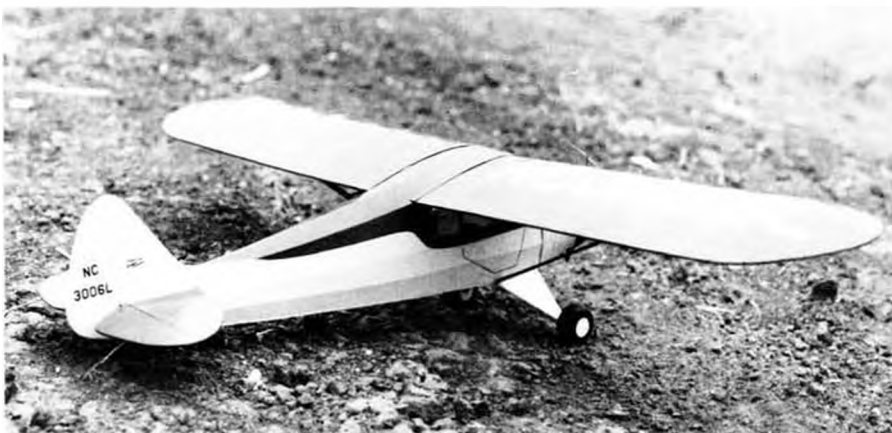
plans. Since the Cox Pee Wee will be completely enclosed in the cowl two things must be provided for before covering. One is to make an external battery connection for starting, and the other is to take care of trapped exhaust fumes, which will affect the running and performance of the engine. The simplest way to take care of the former is to wrap 20 gauge copper wire tightly around the glow plug, and solder the end to a small rectangular plate of brass, which can be concealed just behind the bottom of the cowl. The ground is simply another wire wrapped around one of the engine mounting screws, with the other end done exactly as the glow plug lead. This means that instead of the usual battery clip that attaches to the plug and cylinder, you'll have to use two separate alligator clips.



Sterling's Piper Super Cruiser as built by our Scale F/F editor. Ship was entirely trimmed by second flight, and performs superbly. Power is the Cox .020 Pee Wee.

Now for what I consider a unique engine installation that will take care of trapped exhaust fumes and still provide for a completely hidden or cowed engine. First, let's assume that the engine was mounted in the conventional way . . . that is, flat against the firewall. Then the front portion of the cowl is put into place. When you start the engine, all of the exhaust fumes are trapped inside of the engine compartment, and the engine draws more of these fumes through the rear of the tank and usually stops. With a design like the Cruiser, there really isn't a good clean way to have an opening large enough at the rear of the cowl to dissipate these unwanted fumes. So, here's a way to take care of this problem.

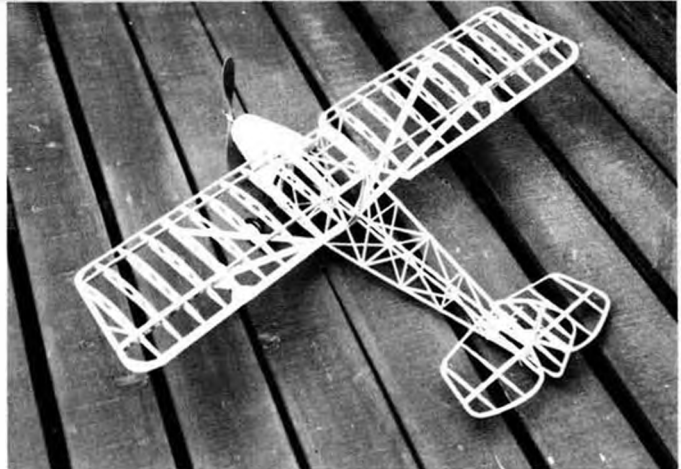
Cover the groove in the rear of the tank with a little silicone rubber cement,



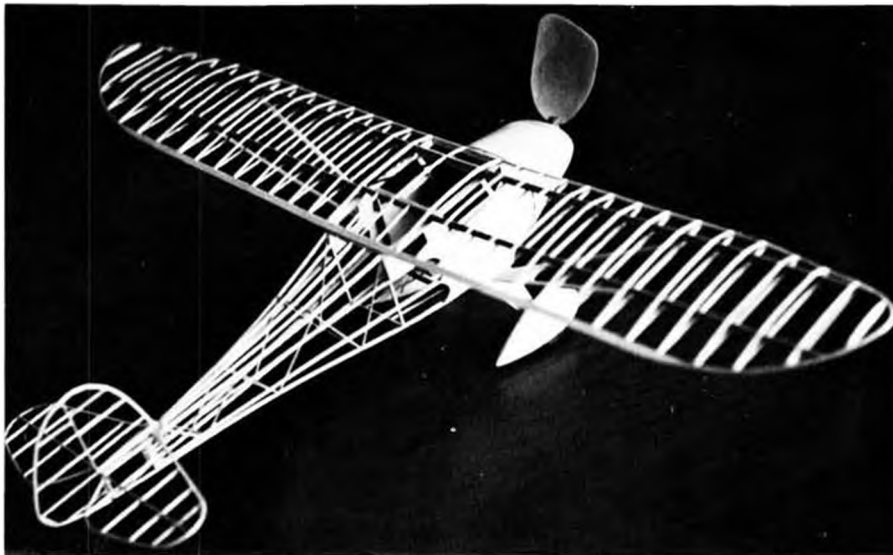
Read Fernando's text to discover how he has eliminated overheating problems with the completely cowed engine. Plane is completely stock except laminated tail outlines.



This 1 inch scale ABC Robin was scratch-built by A. P. Wilson, Tokyo, Japan. Span is 25-3/8".



Framework of Wilson's Robin shows attention to weight saving. Note cut out ribs.

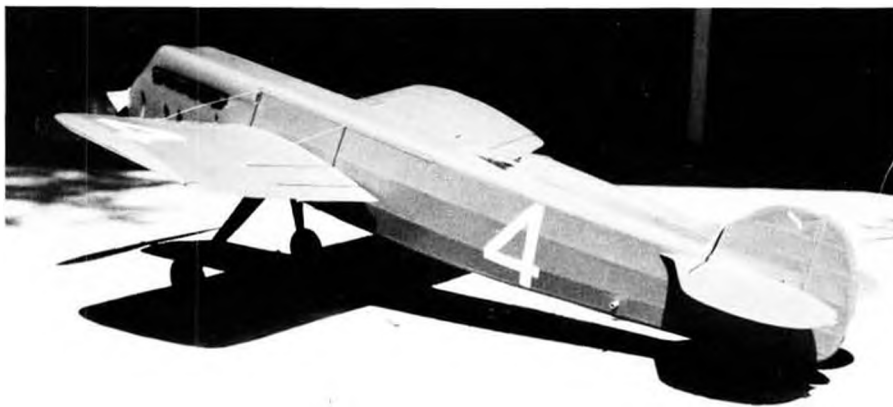


Shot of Tom Stark's Monocoupe gives some hint as to how he kept its weight down to 1 ounce. Note paddle blade prop and two-piece ribs with spars in between.

being careful not to get any on the actual tank vent. Also make certain that it is flush with the tank backplate. Drill a hole the same size as the vent (1/4") on the firewall exactly where the vent rests against the firewall. (At this point I would assume that the blind-nuts for the engine mount have already been epoxied into place.) Take an "O" ring the diameter of the tank (3/4" o.d.) and cement it to the back of the tank with silicone rubber. This "O" ring serves two

purposes. One, is that it acts like a gasket between the engine and the firewall, and best of all, it serves as a tool to adjust the thrust setting easily. By screwing in or out you can increase or decrease side or down thrust. This beats having to loosen an engine and place wedges or removing screws completely and installing washers.

Where is the engine going to draw fresh air from? What I did in the Super Cruiser was to take the dummy exhaust



Another 1 inch scale rubber ship by A.P. Wilson, Tokyo, Japan. This Wittman "Bonzo" spans only 17 inches. Note position of rear rubber retaining tube.

stack (comes out the bottom of the cowl) and lengthen it out so that the enclosed end was directly behind the tank vent, behind the firewall. This way there is always a supply of fresh air to your engine. Regardless of the design you are flying, have an opening somewhere in the fuselage to provide fresh air to the engine tank vent. In an open-cockpit plane, the open-cockpit takes care of that, provided of course, that there are no bulkheads that seal off the passage.

The Cruiser was finished using Japanese tissue, with four coats of clear nitrate dope. (I doped the tail surfaces with three coats.) This was followed by a couple of sprayed coats of color butyrate dope. I am not a butyrate fan at all and dislike using it for any modeling purposes. The butyrate did not go over the nitrate very well, dulling down something awful when it dried. I had to spray the entire model with some SIG Aerolac, when the paint was dry, to give the finish some gloss. I should have started with butyrate from the beginning to the end, and I'm sure I would not have encountered any problems. This is another reason I prefer to use diesels over glow engines, since fuel-proofing is not a problem and nitrate dope can be used throughout.

After all of the details, (like windshield, decals, wheels, wheel covers, etc.) were applied, I installed the wing struts and the engine. I gave the engine about two degrees of right thrust and about 3 degrees of down thrust. I purposely left the front cowl off until after the first few test flights.

The completed model weighed 6 ounces and there was no need to add ballast to the nose or tail. This is most unusual. Prior to any test glides, I checked to make sure there were no warps anywhere, especially in the wings. Everything looked true. I made a few test glides, and I was simply amazed at how well the model did glide. (Ed Manulkin knew it all the time, didn't you Ed? wcn). *Continued on page 51*



Folding prop, extra dihedral, and tell-tale gimmickry about the tail surfaces quickly give away the fact that this is not just a flying scale model.

"HOPPED UP" SCALE

Sort of what Stand-Off scale should be to R/C, here are some suggestions on how to make a gung-ho competition model out of an otherwise sedate scale machine. Look out, Bob White! By JEAN ANDREWS

● Every competition free-flighter has a secret longing to build a scale model, I think, and of course I'm no exception. I was simply tired of the same type of machines always coming from my workbench, with pencil-slim fuselages, skids instead of wheels, areas calculated down to the last one hundredth of a square inch, etc., so decided to take a break from that type of "All-Out" model for my next effort.

A scale type should break the monotony, thought I, so began to look around the local airports for a ship which I could model without too much extra effort. (Basically a lazy person) I had just about discounted the Citabria, since most factory paint schemes were too complex to duplicate, when I came

across a 1965 model which had been recovered by Razorback Aircraft, in Oklahoma. This became the ship I copied.

The power source was next, and with my background of non-power it was fairly simple to decide on rubber as the motivation. With these two considerations settled, I hied myself off to the local wood merchant's emporium and snatched up a Sterling kit to provide the background for what I intended to do... see how much performance could be gotten from a rubber-powered Scale model without sacrificing the 'Scale' aspect of the finished ship.

I started construction on the wings by throwing out the kit ribs, and cutting new ones with ten percent thickness and a moderate undercamber. The main spar

is medium 1/8 x 1/4 balsa, and the top turbulator spars are soft 1/16 square. The leading edge is medium hard 1/8, and the kit trailing edge was retained.

The horizontal stabilizer area was increased by fifteen percent from the kit plans, and was built with 3/32 sheet outline and 1/32 ribs, with a slight lifting airfoil. The vertical fin was cut from a very light 3/32 inch sheet.

The fuselage was built almost entirely according to the kit, with some modification of the plastic nose cowl to allow for a removable nose-block for winding. I used a 1/32 inch plywood former on the front of the body, and a 1/16 inch plywood former epoxied inside the plastic cowl to take the thrust from the

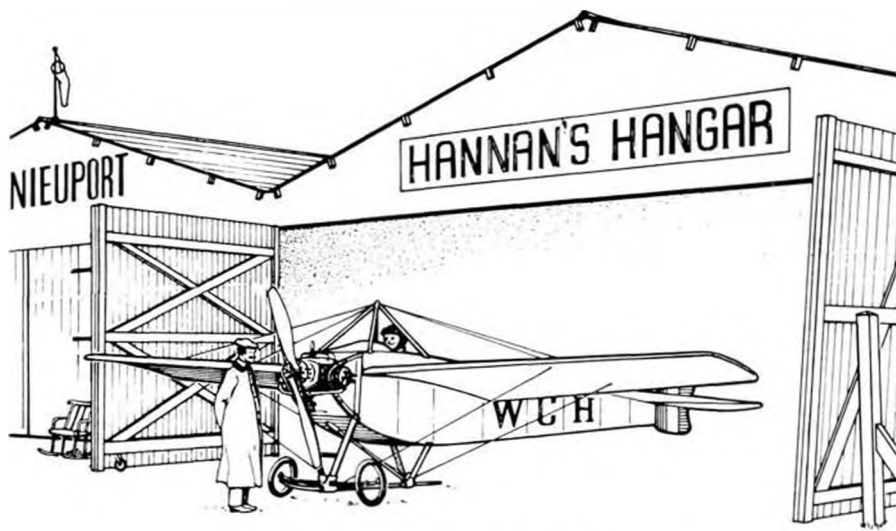
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The revised airfoil is evident in this photo. Just think, wouldn't it be a blast to win Unlimited Rubber with a ship like this? Shades of the Cover/Lanzo Puss Moth!



Close-up of the DT rig. Note also lifting stab airfoil. All photos by author.



..... miscellaneous aeroplane-related minutia

NIEUPORT NEWS

We have received requests for additional information about the little aircraft which resides in our masthead hangar. Glad to oblige. Elsewhere in this issue appears a general arrangement drawing for the machine, which we have singled out as our favorite from among the numerous variations of Nieuport monoplanes produced during an era spanning about 1909 through 1914.

EVOLUTION

Edouard Nieuport and his brother Charles were among the first group of aviation experimenters in France. This elite congregation of pioneers included Bleriot, Santos Dumont (Demoiselle), Robert Esnault-Pelterie (R.E.P.) and the Voisin brothers, to name a few of the more well known. Initially, E. Nieuport was known as a constructor of magnetos and spark plugs, no easy products to produce, even today. He decided to produce a flying machine which would be light, fast, and compact, in direct contrast to many others which were either flimsy and underpowered, or grossly overweight with ponderous powerplants. Nieuport's earliest complete aircraft seems to have been a pod-and-boom tractor type monoplane,

powered by a water-cooled two-cylinder horizontally opposed Darracq engine. This was flown during 1909, but the next year a better aircraft was produced, featuring a fully enclosed and streamlined fuselage plus a curious universally jointed tail assembly. While the stabilizer was stationary, the elevator and twin rudders could be moved as a unit from side to side or up and down. A photo of

this machine appeared on page 30 of the May, 1973 MODEL BUILDER. It achieved a quite remarkable speed of 52 mph with its tiny air-cooled 18 horsepower Darracq engine.

In October of 1910, a newer and cleaner version was presented during the Paris aero show. Featuring a distinctive swallow-like horizontal tail assembly, the machine made a good impression upon aviation journalists from several countries. Our drawing depicts the machine as it appeared during the Paris show, to the best of our available information.

Later, another type of horizontal tailplane of a basically circular configuration was introduced, which continued to be featured on Nieuport aircraft until about 1914. It is difficult to determine whether this changeover began with modification to an existing machine, or if it first appeared on an entirely new aircraft. At any rate, one source claims a slight increase in speed as a result.

Nieuport began to experiment with different powerplants, and modifications seem to have been performed on existing ones. One variation featured a car-

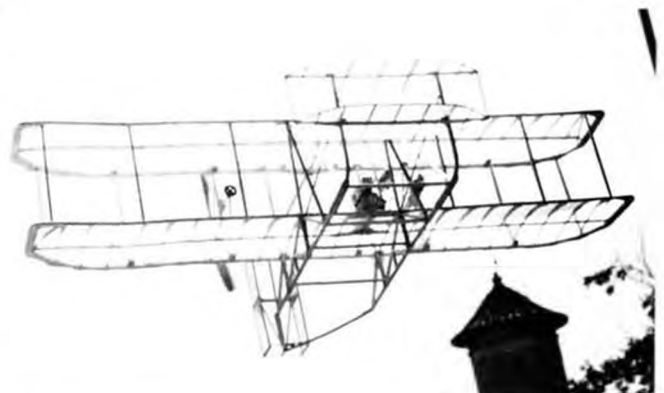
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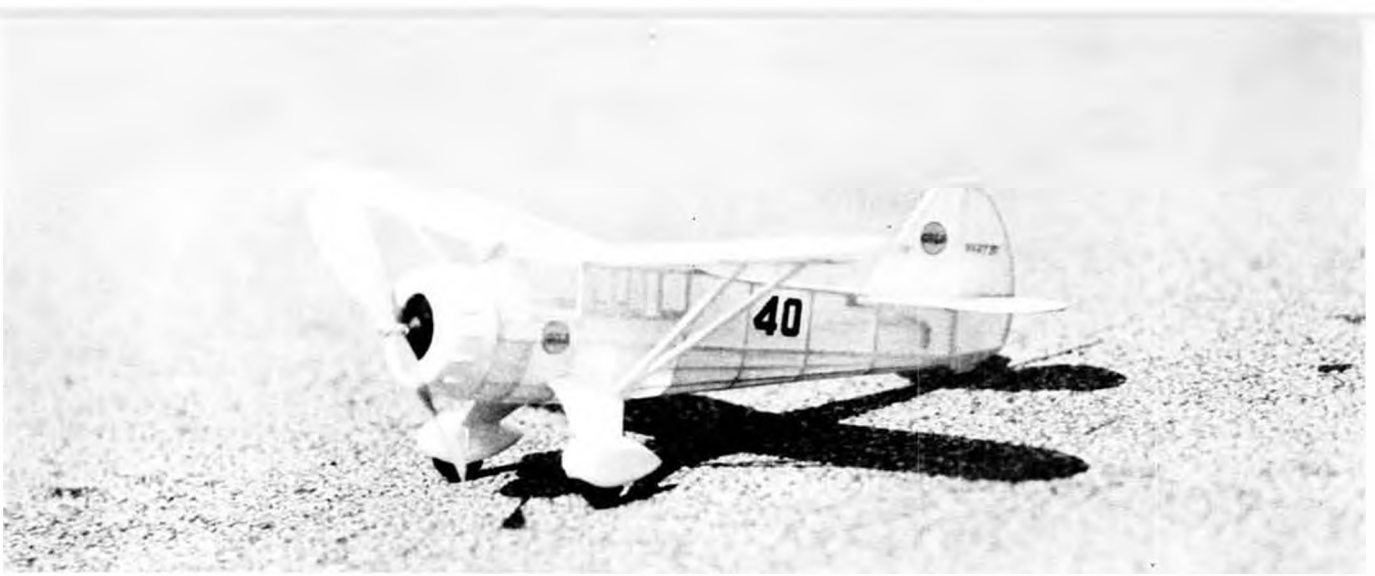
Author and lightplane authority, John Underwood, trying out Volmer Jensen's "Swingwing" hang glider. Note camera under trailing edge of wing.



Semi-scale Beardmore "Wee Bee," by R. G. Schmitt is CO₂ powered, has been flown indoors with R/C. Calls for quick reaction time!



Wright biplane constructed in Italy by students of Piero Romagnano.



Hank Nixon's little "Mr. Mulligan" is our Peanut model of the month. With that big prop, takeoffs must occur within the first revolution!

PEANUT GALLERY

Ben Howard's "MR. MULLIGAN," by HANK NIXON.

This month our "Gallery" features a plane that has been popular as a model for many years. Certainly Peanut Scale deserves a visit from this famous design. As usual, it's a great flyer . . . PHOTOS BY AUTHOR

● The Howard DGA-6, "Mister Mulligan," is without a doubt, one of the best known and most popular airplanes of all time. It won both the Thompson and Bendix trophy races in 1935. In the 1936 Bendix, it went down near Crown Point, New Mexico, when it threw a prop blade. In winning the Bendix, it averaged 238 mph, a great speed for an airplane of its type, even today.

Construction of the model is conventional, but the fuselage has some tricky spots, so this is where I'll be fairly specific. Begin by building two

sides over the cross hatched area on the side view. When these are dry, separate them except at the tailpost. Next add the cross-pieces at the cabin.

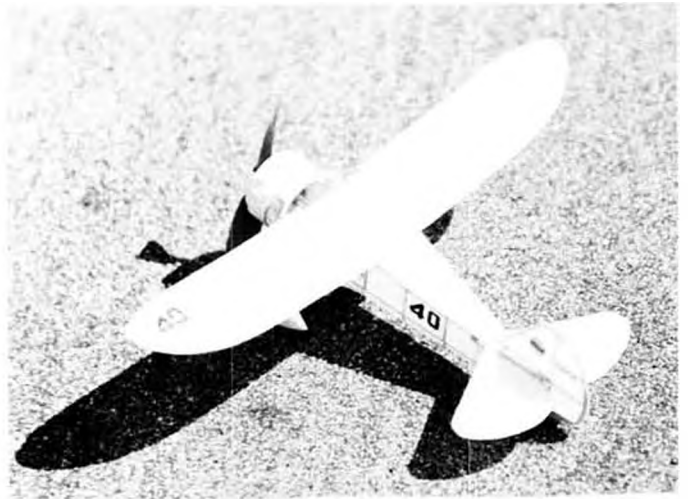
Now comes the tricky part. You will notice that the longerons and stringers curve sharply in front of the cabin. Mine were sliced from 1/16 sheet in order to get the desired curve. Place the fuselage on the top view and add these two sliced pieces along the thrust line, then add former D. When you can remove it from the plan, add formers C through K and the remaining upper cross pieces. Now install the 1/16 sq. bottom stringer with

the sliced front like the two at the thrust line. Check now to see that everything is straight. If it is, add the 1/64 wire landing gear. It's all downhill from here. Add the 1/32 sq. bottom stringers. I find it easier to notch my formers after they are in place but this is up to you. A thin, double edged razor blade (broken in half) makes this job much less difficult. Add the rest of the nose stringers and the window framing and you are ready to go at the cowl.

First, cut out formers A and B. Cut three pieces of 1/16 sq., 7/16 long. Put former B on a flat part of your work



Walt Mooney's Druine Turbulent is a going machine. Whadya know, a wooden prop for a change!



Moderately low aspect ratio of Mr. Mulligan allows a decent amount of wing area within the 13" span limit.



This 1913 E. A. C. Monoplane is by Bill Warner, for rubber or CO₂ power. Span 19-1/2". Design won Senior at 1967 Nats for Mike Mitsch, and CO₂ F/F Scale at the 1970 Flightmasters Annual (This ship). CO₂ engine fits inside dummy motor.

board (I usually find such an area on the third Tuesday of each month, between 7:00 and 7:15 p.m.) and glue the 1/16 sq. pieces standing on end. Glue former A to these so that it lines up when viewed from above. Wrap soft 1/16 sheet around these to form the cowl. After trimming this, add the 1/8 sheet ring to the front of former A and attach the whole thing to the fuselage framework.

Little needs to be said about the wing and tail surfaces. Pick light, straight wood for these and they will come out the way they should. *(If laminated outlines are preferred, check previous issues of MB for construction method. It's been explained several times. wcn)*

Sand the entire framework well and give it a coat of thinned dope. Cover everything with white tissue and very lightly water shrink. Give everything two coats of thinned clear dope, plus one extra on the fuselage because this gets most of the handling. I use Sig Lite Cote dope thinned 50-50. This helps prevent warps.

Build up the wing struts, wheels, landing gear, and fairings out of very light wood. There aren't any real tricks to this, but take your time and do a nice job on these things because they make a big difference in how the whole job looks when it is done.

Assemble the ship, beginning by gluing first the stab in place and then the rudder. The wing is next. Be sure to check how things are lined up. Add the windshield of very light plastic. Finally, add the wheels, pants, fairings, and wing struts.

I doped my struts and landing gear white, which made a nice accent. The wheels and inside the cowl are doped

black. My prop is a plastic one from a Delta Dart, trimmed to size and painted grey.

The wing license number is NR273Y and should be one inch high. These are of yellow tissue outlined in black ball-point pen. This is done before they are cut out with your trusty razor blade. Try laying these out over grid paper that has five grids to the inch. This makes it downright easy. The racing number is 40 and is black tissue. Make these about 5/8 of an inch high. These go on the upper left and lower right wings, and both fuselage sides. The Gulf insignias are 7/16 dia. orange circles outlined in black with GULF typed in capitals. These are on both sides of the nose and rudder. Many other details can be found by referring to the March/April 1972 issue of MODEL BUILDER.

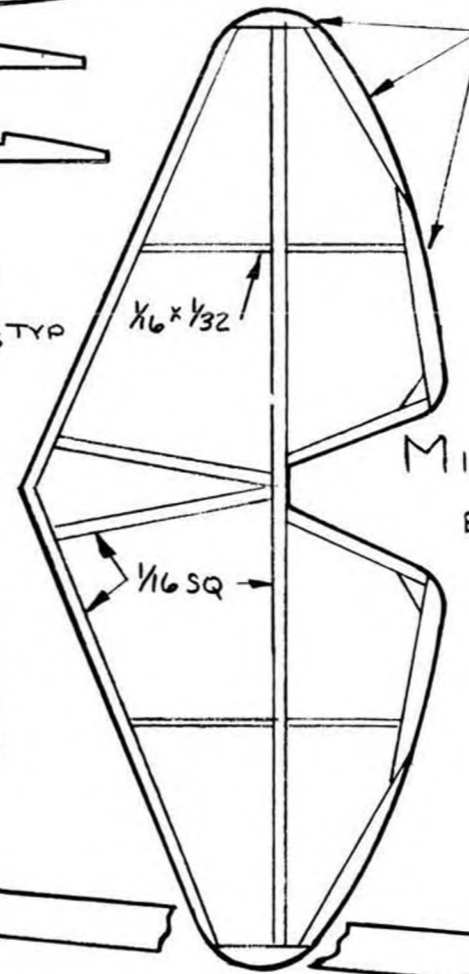
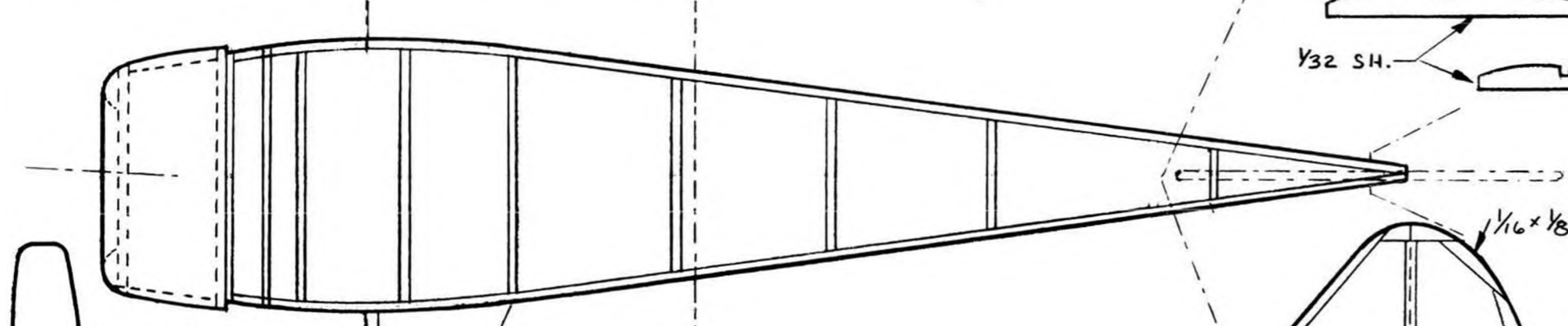
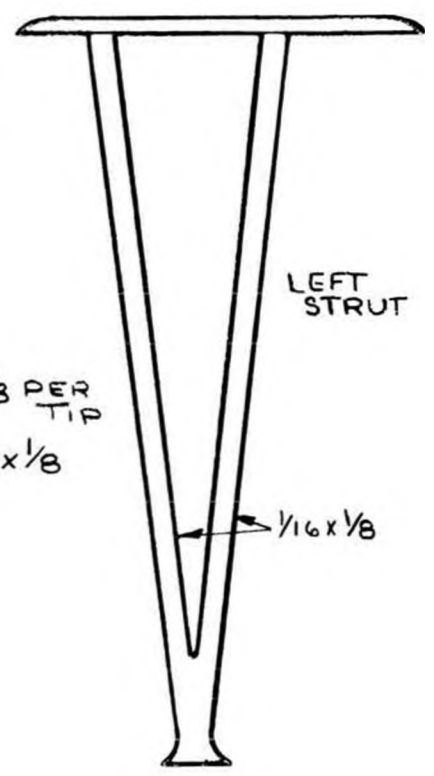
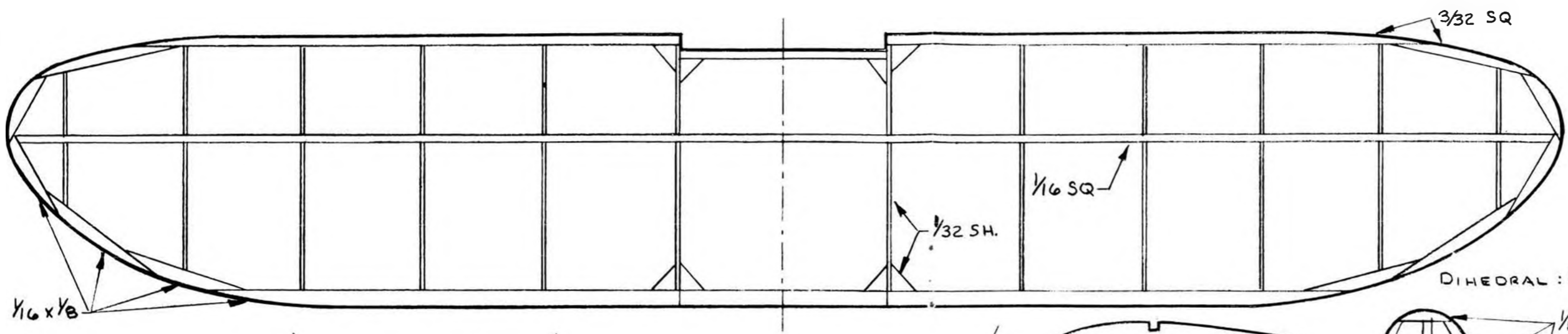
Flying is easy with this little bird.

The rudder has been increased in area to insure good directional stability. Balance 1/2 inch behind the L.E. Bend the elevator up a little if it dives in the glide and down a little if it stalls. Bend the rudder to give a slight left turn. If you got the down thrust as shown on the plan and have a little right thrust it shouldn't need too much adjustment under power. If it stalls under power, add a little more down thrust. My airplane uses a loop of either 1/8 or 3/32 rubber, depending on how much pitch I twist into the prop. With 1/8 Pirelli and lots of pitch, I get about thirty seconds on mine. Not bad for all of that detail.

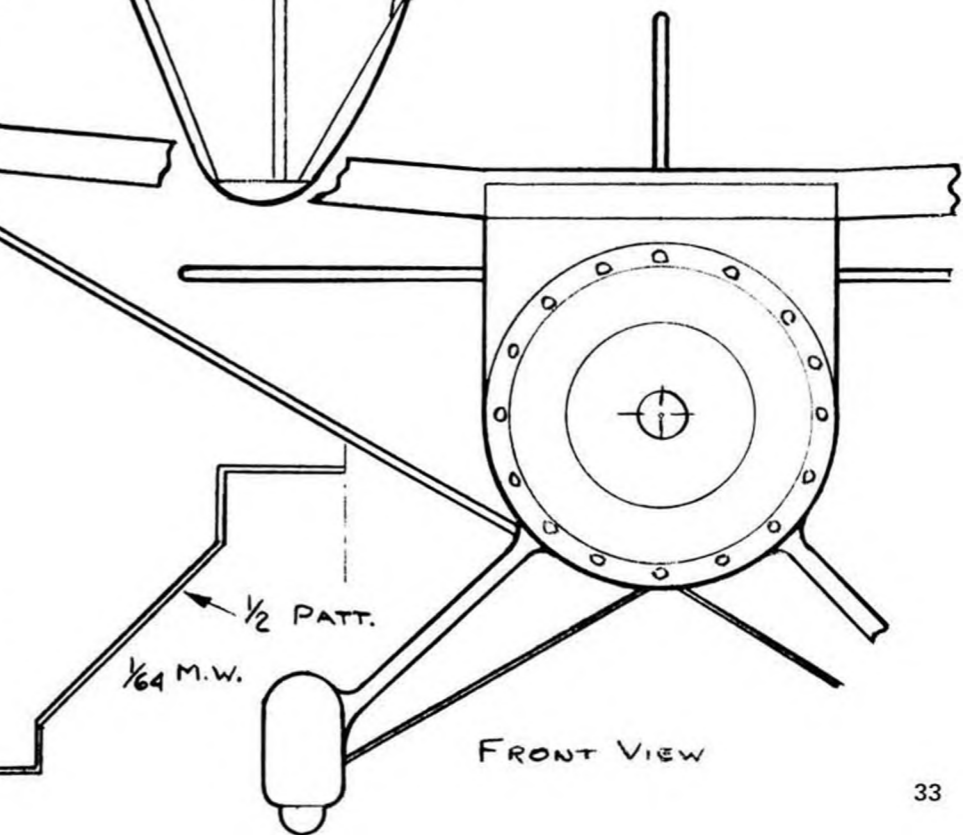
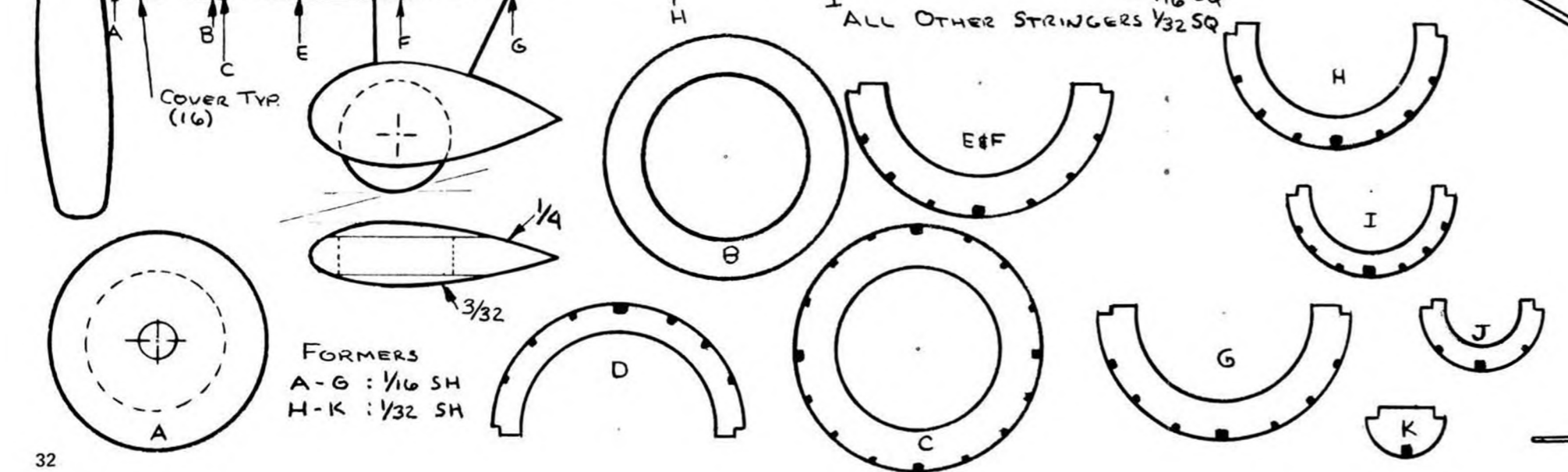
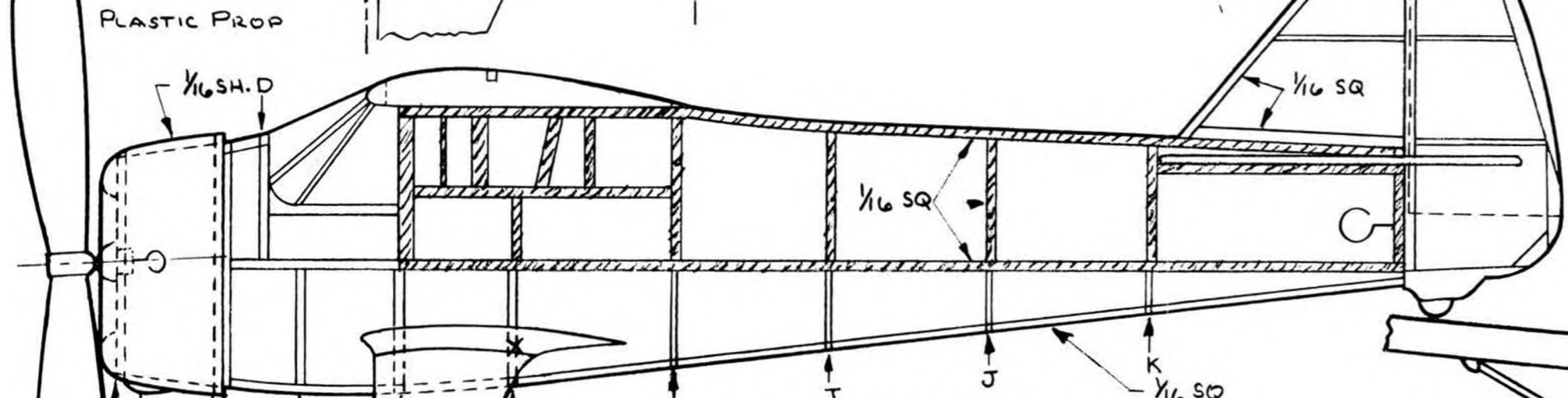
My Mister Mulligan has been a lot of fun and is in good condition even after hundreds of flights. I hope you enjoy yours as much as I have mine and I'm sure you'll agree that it is a DGA (Darned Good Airplane). ●



Hank's cousin, Sandy Nixon, releases the Mulligan for a short hop. It makes a good flying scale subject, as proved by Tom Stark at last year's Nats.



MISTER MULLIGAN
BY: HANK NIXON
2-11-73





The author, Lee Hunt, with the completed test ship. The Orbiteer, as kitted by Competition Models, sells for \$6.95.

PRODUCT\$ IN USE\$

COMPETITION MODELS' 1/2A-A "ORBITEER," by LEE HUNT.

● Some combinations seem just right; ham and eggs, gin and tonic, Sal and Denny.

Sal and Denny? Sal Taibi, a contest winner since 1939, has numerous winning free flight designs to his credit, including the Powerhouse, Brooklyn Dodger, Pacer, Racer, Spacer, and Star-

duster. Denny Bronco, 1971 Nordic team member, has been a longtime and top-notch competition free flyer.

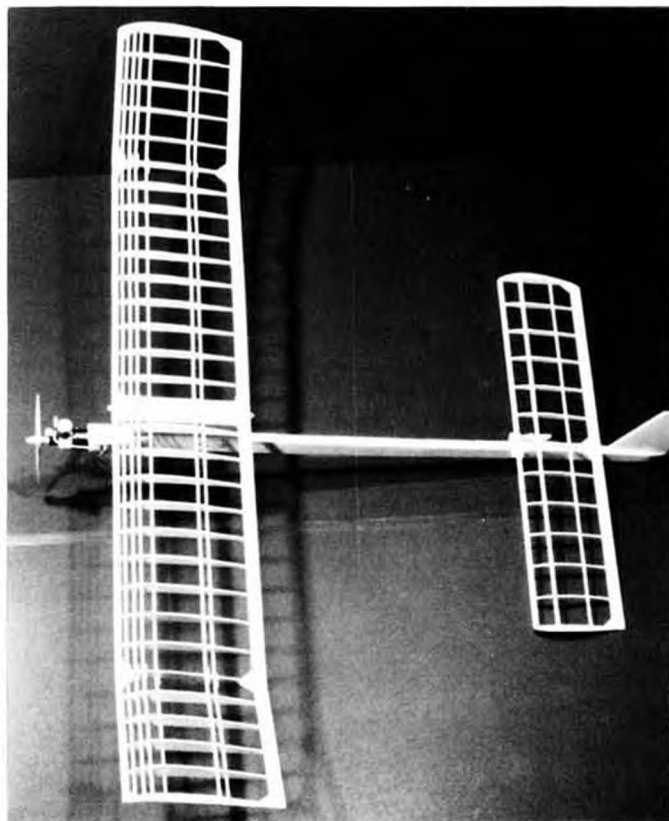
What could be more fitting than to have Sal and Denny collaborate to produce the latest Competition Models' offering for the contest free flyer, the 1/2A/A Orbiteer?!

Devoid of eye catching elliptical wingtips and without a variable incidence surface to its name, the Orbiteer is nevertheless an appealing dish . . . especially if there's a contest coming up and building time is short. Sal's designs are known to be straightforward and

Continued on page 55



The author's wife, Lois Hunt, makes a pleasing background for this plan view photo of the Orbiteer.



This photo of the Orbiteer's "bones" displays the simplicity of construction. It should please beginner and expert.



Mel Schmidt, District X AMA F/F Contest Board member, launches his 1/2A SHOCer at Max Men Annual. Wife Clara, and Lee Hunt stand by.

FREE FLIGHT

From the East, by RON EVANS . . . From the West, by Jean Andrews.

Ron Evans NEW F.A.I. PROGRAM

In the June issue of MODEL BUILDER, this writer made some opinionated remarks regarding the new FAI Semi's and (particularly) the new format and location of the Finals. My point at the time was that the next Team Finals were to be held at Taft, California, but

that no further plans had been announced to balance this non-central selection by appointing a similarly off-center Eastern Finals site. Shortly after release of that issue of MODEL BUILDER, Dick Lyons replied to my column, with a letter I have reproduced, in part, herein. Dick is, in addition to a top FAI competitor, the Chairman of the NFFS FAI Program Committee. This Committee used the results of an NFFS-sponsored poll to gather opinions from past FAI participants, and in turn, passed these results on to the AMA . . . The AMA then modified the Program as noted.

"Dear Ron:

Just received my copy of the June MODEL BUILDER . . . To set the record

straight regarding the FAI Program . . . (Dick enclosed a copy of the NFFS' Committee's recommendations to the AMA) The Finals Site rotation; East, West, Central, is, I feel, the only answer to the overwhelming vote for a single site finals . . . if suitable sites and sponsors are available. Taft is the choice for



Dan Domina, C/L flyer, is switching to F/F. He is showing his Arcturus to George Rivers.



Strange plant found growing at Caddo Mills FAI Finals. Maybe it's a "Proptunia."



Bob Hatschek lights up DT on Bill Dunwoody's "Soar Sam" A/1 at Galeville.



Scotty Harte modified his Galaxy 585, but designer Vic Cunyngham (left) is apparently still willing to be seen with him. Lake Elsinore.



Bob Gutai, with reel, getting his "Lively Lady" A/2 ready for a flight at Galeville. Made 3 maxes, was unable to return in time for round 4.

this next program in view of the vote and the last two finals disasters, which were due to bad weather and marginal site flyability under those conditions. It also gives the East Coast flyers time to come up with a site and sponsors for the next finals (1976)."

Further feelings on non-central finals: It doesn't take a computer to predict that a larger-than-normal percentage of ultimate 1975 Team members will be from the West. Home field advantage? Nope, that is an over-rated reason . . .

Continued on page 58

Jean Andrews

NFFS: YOU VILL CHJOIN!

For those die-hards who have been holding out on joining the NFFS, the latest issue of the "Digest", a journal of the NFFS, lists such items of prime interest as a standardized method of breaking in and testing rubber motors without fatiguing them, a break-down on the ten best models of the year, including notes by the designers as to how to fly them for best performance, a well-researched article on the selection of props for 1/2A engines (the Cox prop does NOT come out on top!), and the care and feeding of dethermalizers on hand-launched gliders.

The information contained in the Digest is priceless to anyone who truly wishes to compete in today's contests. Use the application form on the NFFS page elsewhere in this issue and JOIN.

ALUMINUM MOTOR TUBES

On the off chance that all are not aware of how it's done, herewith are instructions on how to chemically thin aluminum tubing for use in Wakefield

fuselages. This is from COMPETITION CANADA, a newsletter of Model Aeronautics Association of Canada:

. . . First, get a small trough (wallpaper water box will do), or dig a small trough, and line it with polyethylene plastic sheeting.

Prepare the piece of correct length tubing by lining the first and last 3/4" of the inside with a piece of rubber or similar material. This stops the material from being eaten away, providing extra strength where it is needed.

Fill the hollowed out trough, or trench, with water to a depth of 3 to 4 inches. Pass a rod through the tubing so that a method can be rigged up to keep the tube below the water level. (Glass tube will not be attacked by the chemicals, and rubber strip can be used to support the tube beneath the level of the chemical. JFA) Empty a couple of cans of lye into the water (be careful, it bubbles and burns), mix thoroughly, then place the tubing in place in the solution.

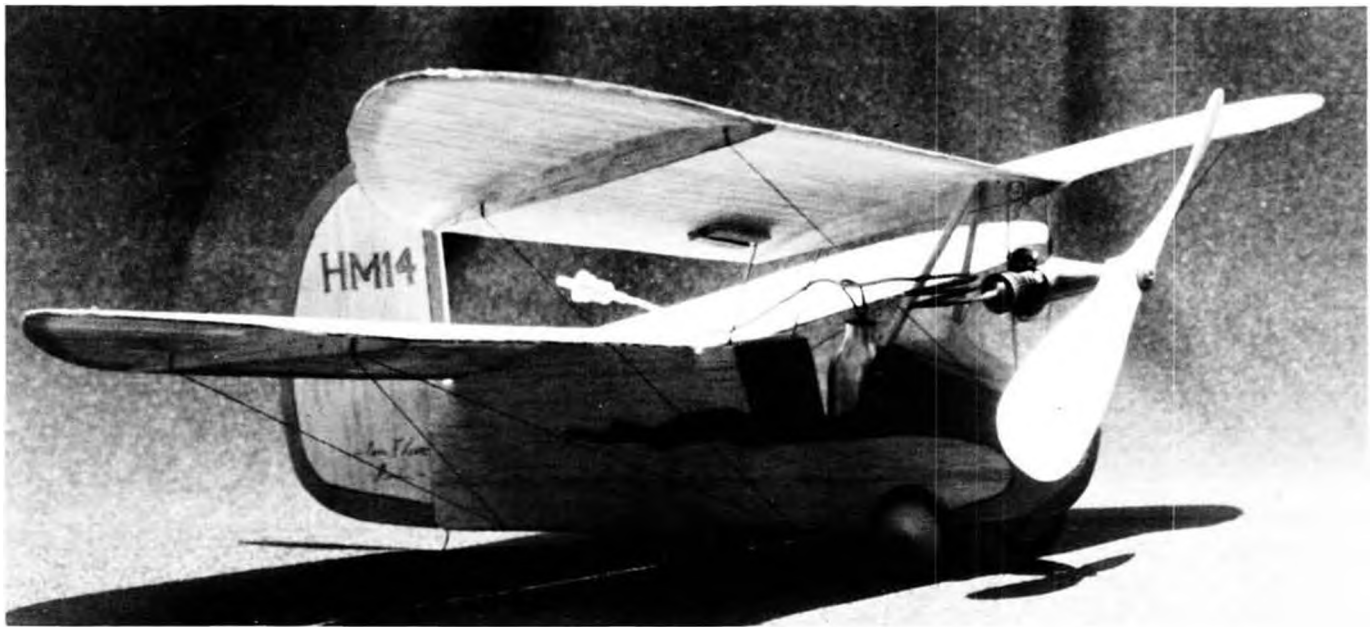
Continued on page 62



Jim Scarborough's graceful leaps lend class to any meet. This is Coupe at Lake Elsinore.



Team Hobby Fair at Lake Elsinore for Max Men Annual (l to r): Lois and Lee Hunt, Bob DeShields, Scotty Harte, John Misustin, and Scott Ewing. Dick Miller photo.



Le POU du CIEL (FLYING FLEA)

The "Pou du Ciel" translates from French into "Sky Louse," but this famous little home-built was mostly known as the "Flying Flea." This semi-scale version is perfect for the Brown Jr. CO₂. By DAN WALTON.

● The novel creation of a French carpenter, "Le Pou de Ciel" (means "Sky Louse", but popularly known as the "Flying Flea.") was intended as a home-built to put anyone with \$500 into the air. Among some of the unusual features incorporated into the design were one-piece wings in a tandem arrangement, no elevator or ailerons, and a huge flying rudder. The wing was pivoted for pitch control, while the rudder and unusual

curved dihedral functioned in place of ailerons. All in all a simple and unique approach to the homebuilt aircraft. Indeed, Henri Mignet's philosophy behind his creation was: "If you can nail together a packing case you can construct an airplane."

The model described was decided upon because it offered a way to pack as much wing area as possible into a 13-inch wingspan. Since no 3-views were

available at the time of construction, it was decided to make the project a fun-type airplane. Another dividend is the superbly adequate ventilation for the engine and tank.

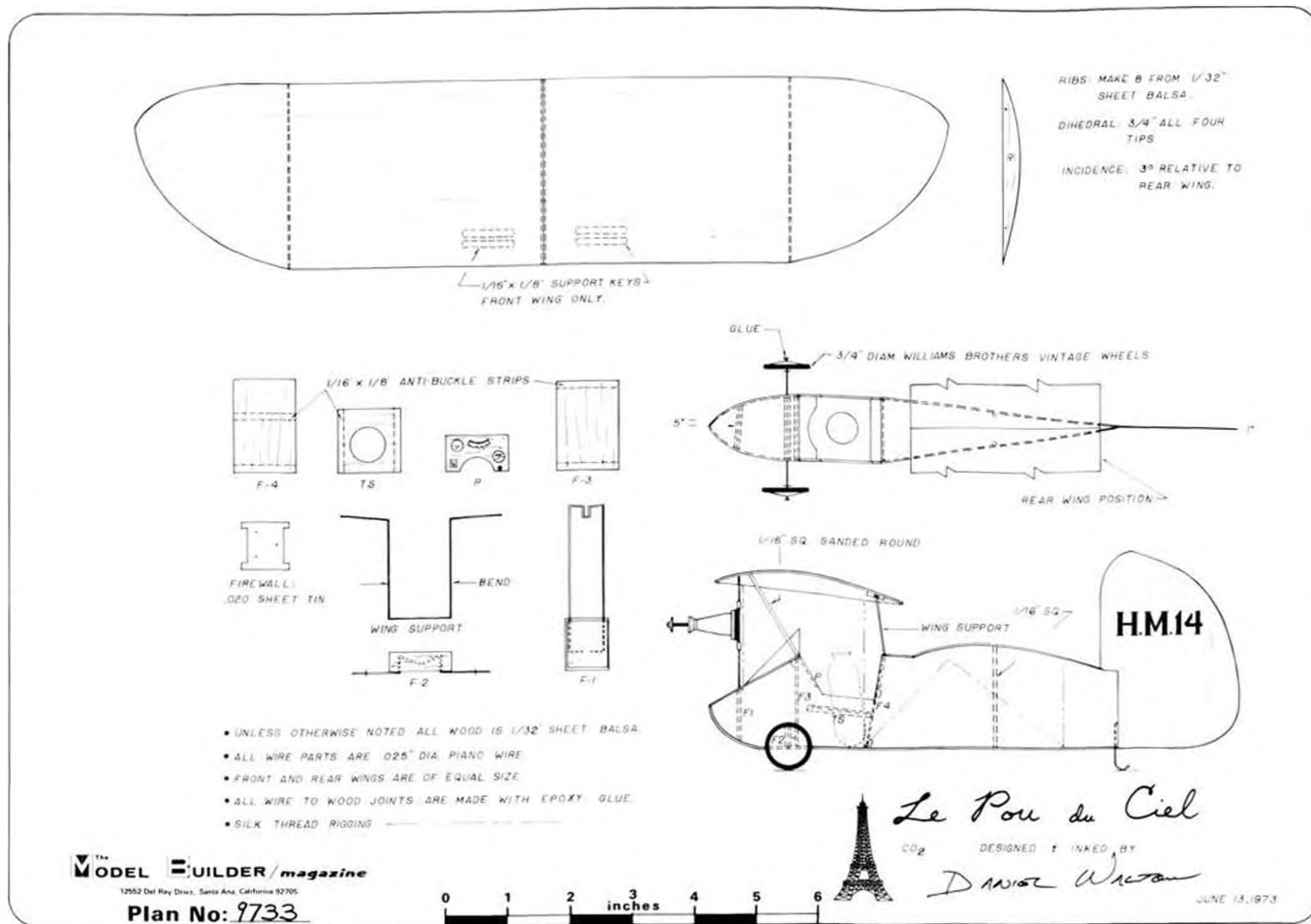
The plane shown in the plans differs from the original in only two major aspects. The firewall has been changed in design to give more support. Secondly, the amount of incidence in the front wing has been changed from five to



This photo is exactly life size, gives an idea of how small the Brown CO₂ engine really is . . . and for that matter, how small the Flea is too! Thrust adjustments should be easy.



Living up to its nickname, the Flying Flea heads skyward. It's very stable.



three degrees. The original required considerable nose weight to obtain a proper glide. The reduction in incidence along with the use of light wood should eliminate this need.

CONSTRUCTION

Mr. Bill Hannan and Mr. Walt Mooney have presented articles on the construction of all sheet models in the past issues and a rewrite will not be attempted. Only a couple of minor points shall be discussed here. First, all piano wire-to-wood joints are accomplished with epoxy cement. These include former

sandwiches and wire-to-wing support keys. Note it is also easier to first align the front wing once the fuselage and rear wing assemblies are complete, and then glue on support keys accordingly. Also, the firewall is .020 inch sheet tin stock, the ears bent around the support at F1 and silver-soldered in place. Finally, a rubber shock mount is made from six layers of an old toy balloon glued together with rubber cement. This is cut to fit snugly between the engine and the front of the firewall. Remove any unnecessary excess which might show or catch

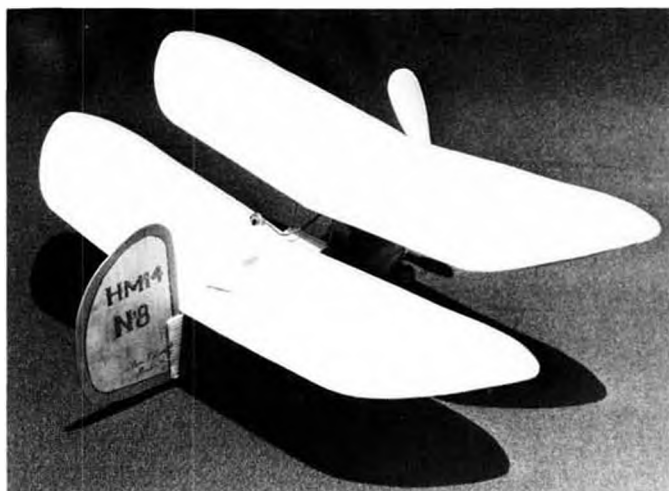
dirt.

Two props have been tried on this model so far and both work. The Williams Brothers prop, shaved down to a 4-inch diameter, gives a somewhat better performance.

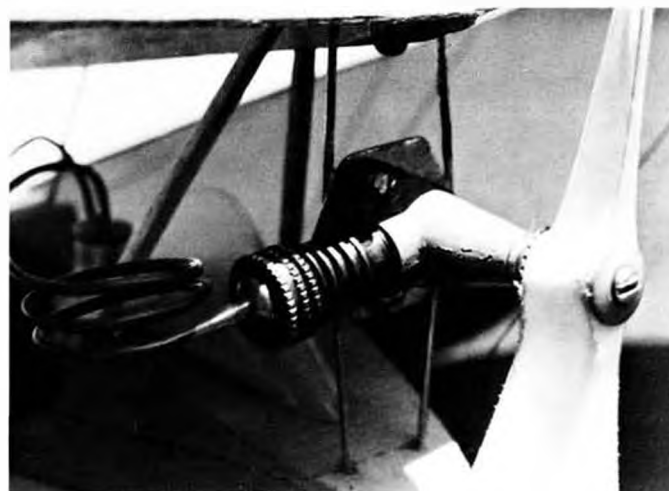
FLYING

This model is an exceptionally easy plane to trim and fly. Start by test gliding the model over the proverbial tall grass, on a calm day. If the model shows a further need for nose weight, remove the top sheeting from the area forward

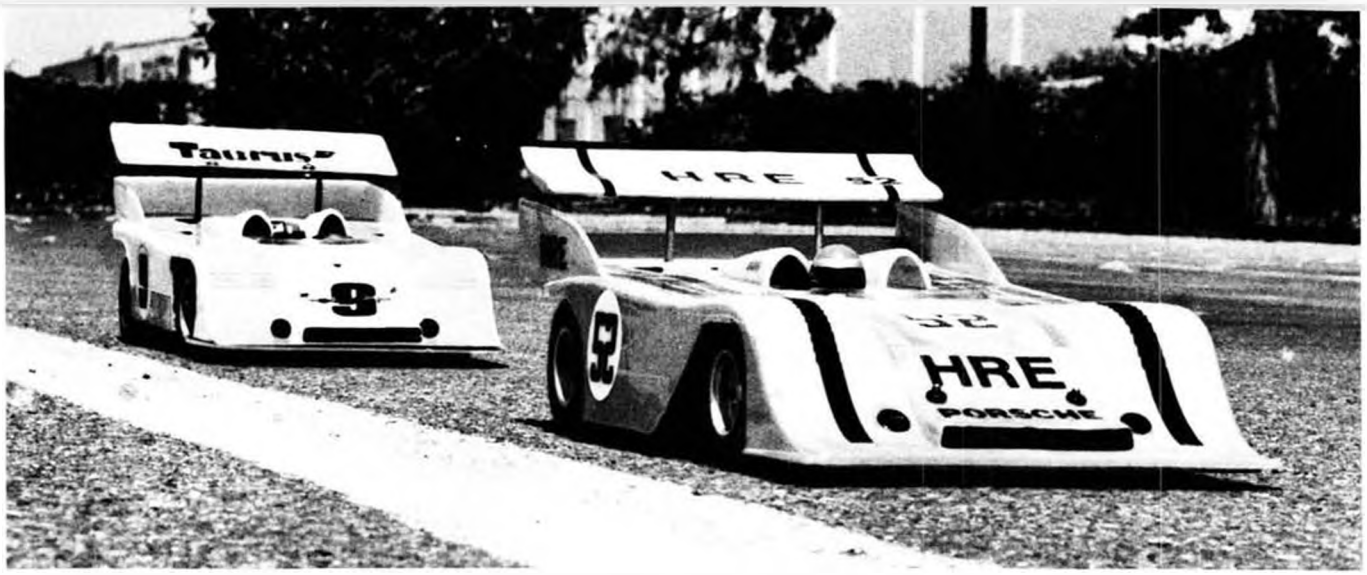
Continued on page 50



Look at all that area within a 13" wingspan! Idea for Peanut Scale; beef up rudder leading edge, add a hook, and fly with rubber.



Close-up shot of the engine installation, Simple, isn't it? Author gives a lot of good hints on CO₂ engine operation in this article.



The modern competition R/C race car is a very realistic and formidable machine, as indicated by these HRE and Taurus units.

R/C AUTO NEWS

PHOTOS BY JOHN CAMP

By CHUCK HALLUM

● Here's a quick look at the topics that we'll be writing about in the near future. If you have any comments or requests drop us a note.

A technical approach to R/C car design and racing makes a lot of sense. Car design has come a long way in the last few years. At first, the cars were too complicated, but simplification has made them go faster . . . more reliably. Now, small changes are improving the cars and allowing them to handle better and go faster.

There are gobs of things to talk about. The big problem is to pick out the subjects that are the most important and of most interest to the readers. I can pick out the things I consider important, but I'm not you. So what I'm going to do this month is mention several subjects which I think are important and what I will write about in future articles. However, I'd like your suggestions, comments and requests to guide me in my order of selections and topics. Write to Chuck Hallum, c/o MODEL BUILDER MAGAZINE, 1900 E. Edinger, Santa Ana, Ca. 92705.

One of the first orders of business should be articles on car adjustments. I make at least 13 different adjustments to get my cars going, yet I don't have some adjustments on my cars that others have. How tires work and the effects of weight and weight distribution (fore and aft) is one of the most misunderstood topics. Front end geometry and rear end adjustments are a couple more. Aerodynamics and weight, and

The tracks here in Southern California offer quite a variation of

finally, some simple engine adjustments of carburetor size, fuel and clutch, round out the car adjustments. Some facts and operation of the "chicken hopper" tanks might let you understand why all (well, almost all) the Southern California drivers are using them. I guess a few comments on 1/12 scale cars would also be in order. Some interesting things are being done to these little hot shots.

It's kind of interesting that I just finished up an article on controllable brakes (August 1973 MB) and now several new ones are showing up. These drivers have now seen or driven cars with better brakes and know what they can do. I'll probably have to go back over the brake situation in the near future. design as far as the course layout and driver/pit arrangements are concerned.

Conduct of the races is also interesting and different from one track to another. An article on this topic might give your clubs some ideas on how to set up a track, or types of races to run. Maybe you could give me (and other clubs) some ideas, because I think we need some new events to increase the general interest in R/C cars. Let's hear what's happening in your area!

I even have a few comments on rules which I think might be worthy of presentation or discussion. R.O.A.R. is doing a good job, getting good support, and is providing a necessary function. So, if we have rules we should enforce them. If there are rules which we don't like, then let's get them changed the right way, through R.O.A.R.

Well, I've had my little say. Now what are your comments? ●



Aerial view of the 1972 race course layouts at the Briggs Cunningham Car Museum track, located in a parking lot behind the museum (out of sight at bottom of photo)

Franny's Engine Forum



By FRANNY WOLF

513 Vesta Place, Reading, Pennsylvania 19605

"Dear Franny:

I race R/C hydro boats and, as you probably know, this is hard on engines. I race mostly HO's and have been using K & B's and ST's. The latter seem to hold up better but I get better performance out of K & B. Can you help me with some ideas on how to make my K & B hold up better? The cylinder sleeves don't last at all and I'd like to get better performances so I can keep up with the real hot ones. I've been running mostly stock with the squish head and 50% nitro. I've heard that changing the port timing and maybe adding a tuned pipe may help. What do you think? Also, what can be done to an S.T. 71 R.R. to make it perform? I've tried adding a by-pass port, but that didn't do too much. Any suggestions here?"

Ronald F. Selk
Saginaw, Mich.

Let's face it, you're endeavoring to beat your competitors. That's the name of the game! Let me assure you, you're not alone, as these little jewels do let go occasionally. Reasons for such problems are numerous, such as the con-rod being too sloppy or the piston touching the cylinder head. You will find the fellows in the Champs Circle are the ones who check their engines from time to time . . . in other words, preventative maintenance. Having your Torp cylinder liner chromed by a reliable firm will definitely give it longer life, less friction on the entire inners, coupled with more speed.

Let me assure you, K & B and S.T. are both good competitive engines. A tuned pipe will definitely help and is a must. As you'll find more in each race, tuned pipes are tricky. My advice is that you look into the E.D. brand of tuned pipes, as they are designed to be used without any alteration to the engine.

As to your S.T. 71 R.R., you didn't mention if it was an ABC. If it is, you should have lots of power. As to your adding an extra by-pass port, that involves quite a bit of know-how. I'd leave that up to an expert. Ports on your particular engine are plenty large as is. A Kavan 1/2" I.D. pressure carb will help.

Before I sign off, you forgot to mention percentage of oil used in your .40 engines. I would suggest 20% as a real good compromise. One last word . . . the larger the venturi the more fuel consumed.

"Say, Franny:

Perhaps you might put some light on a problem. I just can't understand. I've been having glo-plug trouble. Some hold up, some just don't. It aggravates me to spend money on an item that no manufacturer guarantees. HELP!!"

Bill Carly
Ontario, Calif.

Your frustration is understandable, but, let's get to the meat of the problem. That tiny coil inside is made from a very expensive precious metal, usually a platinum alloy. As a consequence, the guy who foots the bill can't possibly discard or waste any. Impurities that may be found are just passed on to the market. Were he to check the entire lot and discard any, you'd be paying a heck of a lot more for your glo plugs. I feel that most manufacturers give modelers their best and none want to receive nasty complaints. Suggest you write company and explain short and sweet. I'll bet you'll get results and an explanation. Since you didn't mention brand name, it's now up to you. You'll most likely be helping them. Nothing wrong with constructive criticism. Everybody can benefit from it.

"Say, Franny:

I'm a beginner in control line speed. My budget being limited, I am thinking of buying a "Kosmic 15" engine, because of price. I've heard rumors that they just don't put out. Please forward your views."

G. Fix
Spokane, Wash.

Go ahead and buy the engine you feel fits your pocket book. That particular engine is plenty good for your purpose. I have statements that indicate they are getting right up with the best. Rumors of all kinds have been around

for a long time . . . guess they always will. I never take rumors to heart. Some guys are pros at spreading rumors, nuff said.

"Say, Franny:

The rotor shaft on my S.T. .40 came loose, worked inward, resulting in a damaged con-rod. Up until this happened, the engine really put out. How can I remedy this situation?"

D. Washington
Baltimore, MD

Get a hold of a tube of "Loc Tite", sold at most auto supply houses. If there's a "Bearing Inc." shop nearby, they also handle it. While you're at it, also buy a spray can of cleaner.

Assemble rotor to rear cover, spray clean set-screw hole, together with set-screw. Put a drop of "Loc Tite" in hole and install set screw. You won't ever have that problem again. It's also a good idea to "Loc Tite" your motor mount screws if mounted in a metal pan. A little goes a long way. Your initial outlay will pay in the long run.

"Say, Franny:

Being strictly a 1/2 A flyer, I'm continually on the lookout for special parts to improve them. If you have, or know where I might be able to buy these parts, I'd like to know."

T. Heistand
Bridgeport, Conn.

As a matter of fact, the June issue of MODEL BUILDER has a very nice story. Page 39, under the heading "Control-Line", well written by Dale Kirn. Suggest you contact Dale at: Kirn-Kraft, P.O. Box 224, Anaheim, Calif. 92805. Incidentally, Dale lists a few Cox 1/2A products in his ads seen in the same magazine.

"Say, Franny:

I've been hearing quite a bit about "Ultra-Sonic" cleaners. How do they work and what are the benefits in using them? Have you any idea where I can get info such as size, price, and where they are sold?"

H. Howard
Boyetstown, PA

Yours is the kind of letter I like as it gives me a chance to get in a free plug. Here's how the U/S cleaners operate. They convert electrical energy into high frequency sound waves; in fact, so high as to make them safe to human hearing. It seems these waves cause cavitation in the cleaning solution, resulting in formation and collapse of billions . . . yes billions of tiny bubbles. These minute bubbles scrub things space age clean, in fact, these gadgets are used extensively in the space program.

Continued on page 63

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

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

CITABRIA



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

ABOUT THE KIT ITSELF

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

* Can be flown Control Line too—instructions on plan

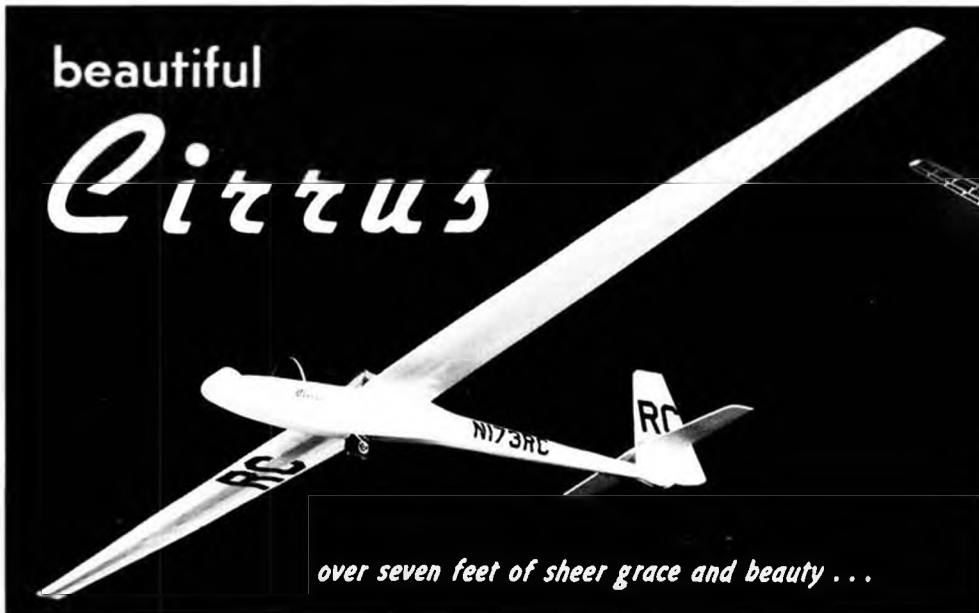
THE FUSELAGE

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

WING AND TAIL SURFACES

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

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



STRUCTURE

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

SPAN: 87 $\frac{1}{16}$ "
LENGTH: 37 $\frac{1}{4}$ "
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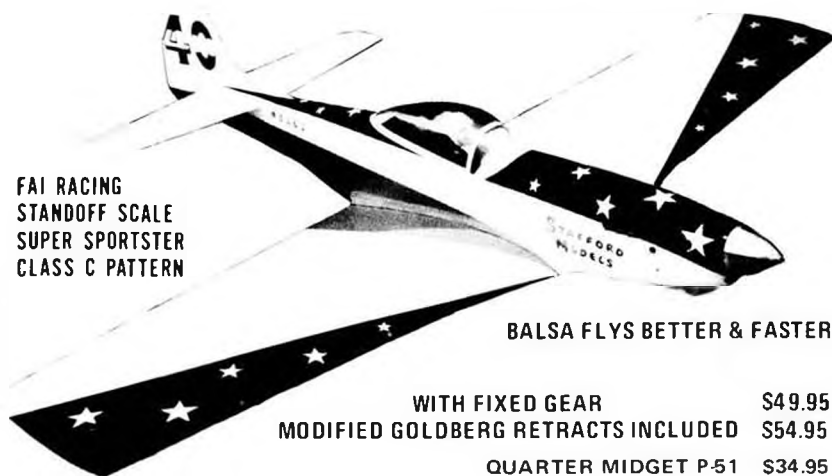
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Soaring *Continued from page 21*
is hardly important. The point is that a lot of people spent much time and some money, and had a great time doing it, creating the equipment we all enjoy and take for granted today as so reliable and dependable.

Not everyone agreed on how to do what, thank goodness. In the beginning there was a strong contingency pushing for gasoline-powered winches. Most of these advocates, on both East and West Coasts, flew the larger and heavier ships. The early electric winch configurations didn't provide adequate speed or power.

But even the best gasoline-engined winches had serious shortcomings. They were heavy, noisy, complex and expensive. Though they offered infinitely variable line speeds, the coordination of engine speed and clutch engagement, and a sound level that didn't necessarily correspond to drum speed, was difficult. The true mettle of sailplane spar integrity had gone untested until subjected to the twitches of a gas winch operator such as Lloyd "Crazy Clutch" Weaver of the Harbor Soaring Society. Launch accelerations from 0 to Mach 1 within the distance of a single wingspan's length were hardly a challenge for ole Crazy Clutch.

As electric winch development progressed, gasoline-powered units were seen (and heard) less frequently, and except for an occasional special purpose design, are all but nonexistent today. This "go electric" stampede may have been a mistake, but it's history.

Three or four years ago, considerable

activity was directed toward correction of what was believed by many to be a serious fault in the electric winch system: lack of speed control. The DC motors used to drive the winch drums offered only two speed variables, off and on. This left a rather wide range of intermediate speeds that were not directly available.

The attempted solutions to the problems were almost as varied as the proposers. If the inventor had an electronic background, all sorts of fancy circuits were devised. The mechanically inclined went for intricate clutch arrangements, variable speed pulleys, slip belts, and such. Those with neither talent nor inclination toward hard work continued to perfect a toe-tapping technique for switch manipulation which became popularly known as "winch pulsing" (Not a subtitle).

Of all the ideas built and tested, the variable voltage winch concept probably enjoyed widest acceptance. It was relatively simple, requiring battery cell taps in 2-volt increments from 6 to 12 volts. Thus, a pilot could select a desired voltage, 6, 8, 10, or 12, merely by pushing the appropriate button or plugging the appropriate jack.

One serious disadvantage to the multi-voltage winch reduced its popularity. The tapped cells usually were discharged unevenly due to repeated utilization of voltages less than 12, and then were recharged in a similar unbalanced manner causing early destruction of the battery. Further, even with controlled selection of maximum winch power output, speed

still had to be reduced to obtain top-of-the-launch slowing for optimum altitude. This still necessitated pulsing or some more sophisticated type of speed control.

During development of the LSF Standard Tournament Winch configuration, a rather complex electronic pulsing device was considered. As explained by its designer, the winch speed would vary by automatic pulsing, provided by his black box, at a linear rate which corresponded to foot pedal depression. Thus, speed could be varied from zero (off) to full 12 vdc (on) in infinite steps.

When field test time came, hardly anyone seemed to have a sailplane available . . . but me. As might be suspected . . . now . . . the system went into full 12 vdc (on) the instant the switch was touched. Of course, this little trick had never occurred until a sailplane was hooked onto the line. The model on tow was a 9-foot span, 3½-pound "Soarceress" and on 12 volts, it moves.

Old Flying Buddy Bill Whitney, who was ramrodding the winch field tests, immediately released the switch. The winch didn't know it. It was still getting a "full 12" signal from somewhere and responding accordingly. In just a couple of seconds after launch . . . make that "lurch" . . . the wingtips of that Soarceress were starting to smoke. We suggested, "For Heaven's sake, Bill, perhaps we had better take some sort of corrective action to reduce winch power." Or words to that effect.

But the electronic wonder had a mind of its own. It only knew "go".

The Soarceress utilizes three, 3/16-inch-diameter wing wires that run through the fuselage from one wing panel to the other. And they were bending . . . a lot. As the sailplane arched over the maximum altitude point, the dihedral angle must have approached some 30 degrees . . . in each wing.

Twelve volts were still on and A-Number-One, Prize-Competition sailplane was on its way down and just a couple of instants from being strained through the turnaround ring. Now at one time or another, our sailplanes have hit at least one each of every type of obstacle west of the Mississippi . . . but never "strained."

Once more we called to OFB's attention that it was time to quit clowning around and in some way help reduce the on-going flying speed as expeditiously as possible. He pulled a wire from a connection . . . Cool . . . The winch stopped. Soarceress made a nearly audible "ugh." The wings unloaded and the wing wires sprung back giving one huge downstroke

that shot that turkey skyward about 150 feet as if an afterburner had cut in.

The electronic unit under test was returned to its designer with the suggestion that more field development might be warranted . . . with his sailplane.

Current winch designs have been fairly well standardized to offer either full 6 or full 12 volt power. No battery-eating cell taps, just simple alternate cabling for power selection. Most sailplane designs flying today, and all current kits, can get adequate launches with a strong 6 volts on a good winch, assuming that a wind shift doesn't require a downwind launch. Heavier and faster machines need 12 volts, and undoubtedly more sailplanes in this category will be seen in the future. A fairly good rule of thumb is that if a sailplane needs 12 volt power for launch, it should be structurally adequate to handle the speed and power. Should it start shedding parts after takeoff, the extra power probably wasn't such a good idea.

The LSF Standard Tournament Winch, which was featured in the May 1973 Model Airplane News is a good basic design . . . simple, rugged, and thoroughly tested. So is the ECSS design described by Clive Sadler in its journal, Sailplane. The designs are quite similar, each resulting from independent development and practical experience. Interesting that the same answers were derived. Great minds . . . and so forth.

A rather unique torque-speed control winch design by Dick Beurrier was featured in the July 1973 issue of R/C Modeler. It may be the winch of the future. Only time and much use will tell. Or maybe that electronic pulsing device will get worked out. But whatever improvements are to be made in the years to come, operator technique always will be the final element in optimization of sailplane launch performance.

There is nothing inherently dangerous about a winch or a winch launch. A poor operating technique can destroy almost any model. Proper operating technique can provide a safe and successful launch for almost any model sailplane under most any wind conditions. Winches do not automatically break wings: there's an operator involved.

A few notes on the various phases of winch operation might be of interest.

A. TAKEOFF

1. Hold model while winch is running to pull slack out of line and develop line tension. The amount of tension desired will vary with the wind speed and weight of the model. A light model is ready to fly almost instantly . . . even with no head wind. Too little tension can permit

the model to hesitate before moving forward, allowing a wallowing or even wing-dropping action. Too much tension can provide a sling-shot reaction upon release. Only practice will get it just right, but it's not critical . . . and there's plenty of room for "safe" variations.

2. If ROG'ing, hold model by rear of fuselage. Let no one touch the wing tips since resistance at this extremity could cause a yaw on release. The wing tip would dig in, resulting in a cartwheel. Do not push model forward. This could cause model to override tow ring for premature release. Some pilots ROG by balancing model on ground, unattended and unrestrained. A dangerous practice. Think what just a breath of wind could do.

3. If hand launching, get a helper if there's much wind. Two hands are definitely better than one. This can be the most dangerous R/C sailplane launch condition.

4. In crosswind, hold upwind wing low. Be ready on rudder immediately upon release. Keep sailplane turned into wind. Never let crosswind "see" the underside of the wings. That can mean really big trouble, very hard to correct.

5. In downwind, don't launch. If you are in competition and you can't sand-bag any longer, request higher voltage than normal, if it is available. Start a protest movement if it'll delay your launch time. If nothing works, go ahead and launch but don't try to climb immediately. Let the drum diameter grow by reeling in line for a bit, thereby providing a faster line speed.

6. Check the air for traffic around, above, and behind you. Check trim setting on transmitter and sailplane surfaces. Check control actuation . . . direction, speed, and amount.

B. CLIMB

1. Get the nose up fast. Hook position is important, and if proper, a steep climb should require very little up elevator control after initial rotation. Don't get greedy and pop off the line. In a stiff headwind, down elevator may be needed immediately following release to stay on the line and not overstress wings. Sailplanes can be safely and successfully launched in winds of 25 mph or so with good winch technique. But it can get pretty dicey . . . and it's not much fun.

2. At the outset, climb as steeply as possible. Load up the winch. Listen to its speed reduce because of the pull imposed by the sailplane.

3. Load up the sailplane's wings. Watch for increased dihedral and panel bow. Watch for covering wrinkles. If

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they're not about the same in both wings, one panel is weaker. Check for cracked spars, even hairline cracks.

4. Crab sailplane into wind. Fly a path directly over the ground winch line, if possible. Keep wings headed into wind. Crosswinds of 45 degrees and more need not be dangerous, with good technique.

5. Winch up slowly, but keep climbing. Fast winch speed does not give best altitude. Read Lawrence's discussion in the July MB again.

6. Be conscious of the line length. A short line can break wings by developing loads earlier and at lower altitudes than normally experienced. A line longer than normal may fool you into releasing too early. Watch for "round out" indicating approach of maximum altitude. This will occur prior to sailplane being vertical over turnaround ring.

7. Slow winch speed by pulsing switch after initial steep climb. Listen to winch. In a good head wind, the sailplane may be able to take line out due to kiting action. In this case, the switch acts as a brake on the line rather than a power source for climb. Pulse just enough to assure tension on line to retain tow hook. A "pro" can release from more line than he took off with . . .

sometimes.

C. RELEASE

1. As release point is approached, the winch should be slowing. Model should "float" off of the line with winch stopped or nearly stopped at time of release.

2. Release of sailplane with winch running is bad form and indicates novice technique. Further, release with winch running usually means altitude has been lost and almost always results in a fouled winch, most often from drum backlash. It's completely unnecessary.

3. If sailplane driver ignores immediately preceding admonition and comes off line at a high speed, the sailplane will probably do a zooming climb. This will result in a stall unless controls are slammed into a hard turn condition. Just down elevator control probably won't save the gained altitude.

Guys who know will usually drop a winch line within 10 or 20 feet of a waiting retriever, assuming the retriever knows where he should be.

Now a couple of notes on winch launch safety, and we'll wrap it up for this session.

A. LAUNCH

1. Don't hook up until you're ready to launch. Look at and check tow hook and ring for security and freedom to release.

2. If launch is delayed for any reason, unhook the sailplane.

3. Suspect any activity out along the line to be valid reason to delay launch. Remember, a moving towline will cut flesh . . . deep.

4. Take precaution not to inadvertently start winch. Keep others away.

5. Check controls and check traffic.

6. Keep upwind wing low.

7. Keep wing out from under ground winch line, assuming ROG. This can make for a fast taxi run with little altitude gain.

8. Keep tail of sailplane clear of switch cord, etc., assuming ROG.

9. Know where controls on transmitter are without looking.

10. Hold sailplane against tension at a secure part of fuselage. Aft structure, immediately forward of fin is recommended.

B. CLIMB

1. If the sailplane pops off the line, slam in full up elevator and try for a loop. This ain't grandstanding. Most of the time, this is much more effective than fighting the on-going forces to get the nose down. If you're too low, under 25 or 30 feet, use your own ideas.

2. If line breaks, loop. You may save the model at low altitude, and you'll save launch altitude if you're higher up.

3. If you get into trouble on a launch due to wind gusts or otherwise, DO NOT cut winch power unless the sailplane is in a safe attitude. Safe means nose TOWARD towline, not pointed and pulling outward. Slow winch by pulsing until situation improves. This is difficult advice to follow. The automatic reaction is to cut winch power when a model gets into trouble, but in most cases an immediate reduction in power only aggravates the situation by imposing zero air speed on the problem.

4. If winch is running too slowly, or if model is oscillating from side to side during climb, get the nose down FAST. Whip stall is imminent. If winch or line is fouled, don't try to force a climb. Sailplane may whip stall or break up due to heavy loads imposed. Get off line and glide out. At least you'll have a sailplane to take home. Some days that's coming out ahead.

C. RELEASE

1. If towline doesn't release immediately, don't panic. Wait a couple of seconds . . . then panic. Continue on course over the turnaround ring anchor point. Don't hurry. Stay cool. It'll probably come free.

2. If line doesn't release, try a mild nose-down path to pick up speed and overfly the tow hook. This also will cause more drag on the line flag or chute, which can only help. Don't make violent control movements. A full bore dive isn't required.

3. If you're really locked on, think "U-control." Fly large circles around the turnaround ring anchor point. Try to keep the sailplane working away from the line. Tow lines over wings or around fuselages or tail surfaces can spoil your whole day. Just before touchdown, fly toward line to relieve line tension that might cause tumbling or cartwheeling due to unlevel wings.

4. If you get the sailplane down safely, fix the damned tow hook. Hooks

have a tendency to close-up due to repeated landings on hard surfaces such as asphalt runways.

To sum it all up, the very best safety suggestion of all is "Do it yourself." Makes for longer friendships, too. ●

C/L Continued from page 19
E-1. She did a fantastic job of flying it. Her antique plane was matched with equally vintage power - an Arden 19. Believe Becky's dad, Sam Snyder, had something to do with the engine selection.
SPEED

So many speed records set in the past few weeks that they are hard to keep track of. Also, several records were surpassed, but the flyers were unable to back up their flights with the required supporting speed (within 5 MPH of record flight.)

Let's start off with the 1/2A records. John Westbrook, Los Angeles, set a Junior 1/2A Proto record at 90.46 MPH (back up flight of 89.61 MPH). His Mono-Line plane had an upright engine enclosed in a Kirn-Kraft fiberglass fuselage. Engine was run on crankcase pressure/metal tank. A left hand prop (single blade) did the pulling on his old style Tee Dee .049 which had been fitted with a 1973 type left hand crankshaft. Incidentally, this shaft was a bit "under size." The stock stroke for a Tee Dee is .386, but John's engine checked out at .382.

Up in WAM territory a new 1/2A speed record was set by Jerry Bradshaw, Sacramento, at 104.49 MPH (back-up of 100.74 MPH). Jerry had just test flown this plane the night before the contest to see if his home-made tuned exhaust would run in the air. It ran fine, but he wasn't prepared for the hot, dry air in San Jose. His record flight was made with a 5 inch diameter Kirn-Kraft left hand prop with a lot of blade area and about 4 inches of pitch. Once he gets the right prop worked out, that plane is going to go.

Back East the speed team of Comerford and Langlois, Greensboro, N.C., turned in a 97.79 MPH flight in Senior 1/2A Proto. But they were unable to back this flight up. No problem though, as they hold the existing record at 97.26 MPH.

In Class A Speed (Open) the speed team of Bartley-Garner-Huff clocked a super swift 176.06 MPH flight (back-up of 174.18 MPH).

Now back to the West Coast for the remainder of the records/near records. Max Snyder got an extremely good flight in Class A Speed (Junior) at 154.31 MPH but was unable to back it up. The existing record in that class is 148.95 MPH.

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2 HEF 440	1/8	3/8	female	steel	hardened steel	4-40	1.53	\$1.25
2 REM 256	1.0	3/8	male	steel	hardened steel	2-56	1.68	\$1.25
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In FAI Speed, Scott Snyder, Imperial Beach, Calif., turned 112.52 MPH for a new Junior record. Chuck Schuette, Santa Monica, Calif., exceeded the Open FAI record at 143.76 MPH, but wasn't able to back it up. He holds the present record at 143.39 MPH.

Back to the Juniors now. Max Snyder shattered the air with his short stacked Super Tiger/Snyder .29 for a new record in Class B Proto (Junior). His speed was 133.03 MPH (back-up of 131.82 MPH).

Now let's get down to the FAST flights. The Senior Jet record was broken by two flyers at the San Diego contest. First one to exceed the existing record of 184.74 MPH was flown by Donny Rhoades, Phoenix, Arizona. He turned an impressive 188.80 MPH flight but on his second flight had control problems and bent a few things up.

Jim Wade, Anaheim, Calif., really turned the air blue with an incredible 196.21 MPH flight (back-up of 194.94 MPH). This was a brand new all metal ship designed by Jerry Thomas of Tacoma, Washington. No take-off dolly was used. Just skidded it off with no trouble at all. Sure a lot safer that way for the judges, other contestants, and spectators.

Jet interest is quite strong in the San Francisco area this year. The San Jose contest had nine entries in Beginner Jet. Marv Wentz, Santa Clara, Calif., took first at 163.13 MPH. In the Expert class, Ron Ivaldi won at 183.92 MPH.
ENGINE HOP-UP

Veteran speed flyer Jim Nightengale has started an engine hop-up service. Besides engines, Jim also makes fiberglass speed props. Write him for your specific needs at: Nightengale Mfg., P.O. Box 603, Vista, California, 92083.
STUNT

WAM really has stunt entries. Over 60 at the San Jose contest. And eight of these were in 1/2A stunt . . . one of their

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regular events. Arlie Preszler won 1/2A with his Tee Dee .049 powered Wildcat. Sure was a cute little plane.

At the San Diego contest Bob Whitely earned first place with his "Miss Kell". It has a 54 inch wingspan and 580 square inches of area. Weight is 47 ounces and is powered with a O.S. 35 engine. He had a unique offset rudder device. With the control in "neutral", the rudder turned out 3/8 inch. In "up" there is no offset, and in "down" the rudder kicks out 9/16 inch. He says this works out quite well during flight.

SLOW DOWN

In Phoenix, Arizona, the Cholla Choppers MAC has been experimenting with a different sort of contest, which they call Slow Fest. Basically, the rules specify 300 sq. in. wing, profile fuselage, at least one-wheel landing gear, a minimum of 5 inches from the wing trailing edge to the stabilizer leading edge; engines 29-40, one oz. tank max., no pressure and no quick-fills.

Events are proto speed, stunt, rat race, balloon bust, and combat, and the idea, according to the newsletter we received, is " . . . to provide a leisurely, but efficient contest in which one airplane MAY be used for all events without changing to the complete airplane other than fuels and/or props." ●

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FAlman 7... Continued from page 17 age-group son, Ted, who has had some good contest experiences with ½A and feels he is ready to move to something bigger. Having a good Cox .09 for motive power was the basis for constructing number 7. It is a simple ship for the modeler with limited experience. The only difficult parts are the metal work around the firewall and the fibreglass cloth application. Because a model this size (it would be an average sized ½A) could be very hot to handle, the airfoil thickness was increased to 10% and the stab area upped to 37%. The result is a reasonably "goof-proof"

model that can perform respectably in the hands of an FAl neophyte. Especially important for a beginner is its reasonably low-cost (in comparison to the all-out super FAl competition models.)

The plans are self-explanatory, with a few exceptions. Taking these in order, they are:

WING

The wing is completed, including covering, before building anything else. Notice the leading edge shape... this is important. Also don't leave out the plywood gussets or the stated wash-ins and wash-outs. All construction uses epoxy or Titebond. Cover with silk put

on damp. Apply one thin coat of clear dope over the entire covering, then brush on a coat of Knox Unflavored Gelatin and water (follow directions in the Knox package). This one process will save you four to five coats of dope and around an ounce in wing weight. After the gelatin has dried thoroughly, finish doping as usual.

STABILIZER

It is conventional in construction and should be covered with tissue.

FUSELAGE

It is a balsa box, rounded at the front to fit the Tatone .09 mount. Since the bottom of the fuselage is flat, there is a building sequence that should be followed for ease of construction. The bottom is cut to shape and pinned to the plan. The sides, complete with plywood doublers and longerons, are glued in place to the fuselage bottom. Then comes the firewall, formers, fuel tank, pylon, and fuselage top. The fin is added last and the whole model is shaped and sanded.

A Perfect brand wedge tank of ½ ounce capacity was used on the original. Although set up for suction feed, it could be converted to pressure for less critical launching speeds.

A metal firewall face is a must for good thrust adjustments. The landing gear mount is hacksawed and filed from a piece of 3/16 aluminum, drilled to take the 3/32 inch coiled landing gear, drilled and tapped with a 4-40 tap so that a grub screw can be installed to hold the music wire gear in place. This unit is held to the firewall by the bolts fastening the Tatone mount to the fuselage.

The wing mount, though it doesn't show on the plans, is reinforced to the pylon top by using two strips (one on either side) of 1/8 x ½ inch trailing edge stock epoxied at the joint of these two pieces.

The SHOC mount is the most effective D.T. stab mount I've ever used. It's installed next. A short length of Nyrod (small diameter) or plastic tubing is inserted through the fuselage bottom just below the stab trailing edge as a D.T. line guide. It is epoxied into place.

The entire fuselage is given a coat of Hobby epoxy Quick-Prep resin and sanded. Cover the fuselage with lightweight fibreglass cloth from the firewall to just behind the pylon. Two or three coats of resin are applied over this and the remainder of the fuselage. Finish with epoxy paint.

FLYING

The whole model should now be assembled. The wing should be keyed,

prop installed, etc. Weigh the model and check the center of gravity. The original model was 2½ ounces underweight. Add lead through the timer opening so that the model balances at 80% to 85% of the chord. It should balance not more forward than 80%. The closer to 85% the better. Do not test fly until the C/G is correct.

Now, hand-glide the model. If it dives, which it will probably do, block up the stab trailing edge no more than 1/16 inch. If it still dives, move the C/G back until it glides smoothly (The above comments assume that the wing and stab angles of attack were built according to the plan). Shim the stab for right glide.

The power pattern is a right power circle of about 1½ to 2 turns in 10 seconds. This is obtained by using little or no left thrust and some right rudder tab if needed. The glide pattern is to the right using stab tilt.

The original is flying with a 7/4 Tornado prop, but after some more experience with the model, the plan is to change to a Cox grey 7/3½ to zip up the climb a bit more.

The plane is not an all-out super competition machine. It was designed to provide experience for the beginner and as a first step in to FAI power flying. It is a competent no-nonsense model. To the ends to which it was designed and built, it has been pleasantly successful. ●

R/C Report . . . Continued from page 14 dust with the flyer firmly convinced that he was shot down or somebody turned on, when it was actually the battery pack. Kraft appears to be on the road to a solution to this weakest link in our R/C equipment. They have some cells that, as I understand it, were developed for power tools that have a lot of vibration and they are perfect for our R/C usage. Looks like they are in all of their new equipment . . . Pro-Line offers them as well.

Got some R/C stuff from Buck Peck of Custom Control in Norfolk, Virginia recently and sent off a check to him. Got a nice note back that I should explain in detail how I manage to get my wife to make out the checks to pay my modeling bills! He says most fellas don't have the guts! Well, let's just say that Sweet Emily is very understanding. I'm lucky, I guess, she doesn't complain when I'm down in the basement shop or out flying . . . she says she's just glad to know where I am and not have to worry about me. At least I'm not down at the corner tavern or such as that. Besides Sweet Emily collects antiques (which might include me) and it is a give and

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take proposition.

I was all fired up to go to the World Championships in September with Sweet Emily and dig all of Italy along with it, but it kinda fizzled out. First, the trip was to go from Washington and there was barely enough time after the contest (which didn't start until four days after you arrived) to get to Rome and Florence for some sight-seeing. Unfortunately AMA didn't get enough of those who were so excited about going to come up with the really small amount required for the trip. In order to take care of those remaining they had to make other arrangements . . . now the trip leaves from Boston and returns to New York. Too far for me . . . I could drive to Washington and even take an extra day and see Williamsburg . . . but Boston is too far to drive easily and plane fare is not cheap either. Then the fare is greater this new way and they lose a day getting to the World Champ site since they land in Switzerland and they leave a day early. No way to get anywhere to really sight-see. The way I figure it, although AMA has done a heroic job of making a trip available, we leave and arrive too early . . . and too soon. Instead of getting there just about when the Champs start and then having a

week . . . or having a week before they start, it is placed right in the middle. Too bad but the only way it could be arranged. Easy to sit here and tell how it should be, isn't it? Besides all that, the dollar in Europe (and elsewhere) is shrinking and last time I was there things weren't cheap. All those dollars we gave away . . . wonder if we should ask for some of those rich countries to pay their war debts to us . . . from WWI and WWII. I'll be satisfied with getting my deposit back from AMA which most surely will be in the mail any day.

So that leaves the Nationals . . . good enough for me . . . and I always enjoy it anyhow. Think we will have pretty much the same pattern crew to handle the event as last year. Also we expect to use the simple cheap clothespin for frequency control . . . what happened last year just shouldn't have happened and it won't happen this year. See you at the Nats!

Heathkit R/C outfits seem to be always coming out with something new. Their tremendously popular systems can be updated, if you like, with some new servos. They offer a three wire servo available in the KPS 11 type case (GDA 405-44) and the small KPS 12 type case (GDA 505-44) . . . both for

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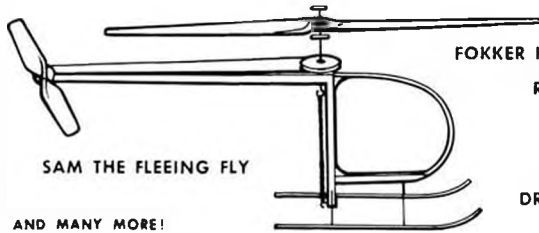
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the same price of \$24.95, your choice. The GDA 405-44 and 505-44 use the Kraft Integrated circuit chip and offer more torque, tighter centering and faster action. Heathkit does say that you shouldn't mix these servos with the older ones, but if you need to "upgrade" your flight pack you can do well with these new servos. They are, of course, included in the new systems presently offered . . . that is, the three channel and the eight channel. Incidentally, the three channel is easily converted to four channels and is a good way to start in R/C for those of you who like to build your own radios. Heathkit has the four channel conversion kit at a very modest price, too. I have one of the older systems and it has always given good service and little or no maintenance problems. What I have always liked about it is that I could fix it myself, if necessary, without worrying about "breaking factory seals" and voiding warranties and such.

Notice the photo of the cockpit of Walt Moucha Jr.'s plane. It's his Waco Meteor and the canopy is removed so you can see the nice instruments by JP Products, P.O. Box 58, Harrisburg, Ill. 62946, or at your local hobby shop. These are actual photographs of real instruments for Private Aircraft, WWII fighters, Placard assortments (maps, air worthiness certificates and the like) and radio equipment (aircraft) front panels. The instruments come in a number of scale sizes and also black and white or green for the illuminated ones. Prices run from a buck a set to one seventy-five and included are instructions on how to make your own panel of instruments like the one pictured. Easy to do, too. Saw these displayed this winter at Toledo and was impressed with the detail and the realistic panels they showed.

Flyers: drop us a note if you have

any hints or kinks or anything related to sport flying . . . Manufacturers: we want to keep our readers informed on new items . . . jot down our address and pass along your advance poop.

Frank Schwartz
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So until next month, watch that battery pack . . . good flying!! ●

Pou du Ciel . . . Continued from page 39 of F1 and add the necessary ballast. When a flat, floating glide is obtained, replace the sheeting and prepare to make the first powered flights. The model should climb steadily in left-handed circles 25 feet in diameter. Use the rudder to adjust the amount of turn, as no thrust adjustments should be necessary. The original model flew well from the start and so there are few trimming hints that I am able to pass on. In view of this fact, I should instead like to discuss a crucial, yet often neglected subject . . . that is, the care and handling of the powerplant itself.

As compared with most other powerplants, the Brown Jr. CO₂ engine is a relatively new product on the market. Admittedly, CO₂ engines have come and gone before this, but they are still quite mysterious to many modelers. Only recently have they begun to gain wide acceptance due to the Brown Jr.'s quiet nature. Also, the practicality of its small size and light weight haven't hurt it any either. Note that the cost of airframes is measured in pennies and not dollars.

Unlike the internal combustion engines available on the market today, the CO₂ engine is instead related to the steam engine . . . an external combustion engine. The only difference is the use of CO₂ as a working medium, and the absence of a furnace. Because of CO₂'s low boiling temperature at high pressures, this engine has a neat little trick. To

keep the process moving, the engine absorbs heat from the atmosphere through its structural surface to change the liquid CO₂ into a vapor. This is why ventilation is so important. Indeed, if the engine were perfectly insulated from its surroundings, the process would soon stop.

Since this engine is so different in concept and habits, it makes a break-in period imperative . . . not so much for the engine, but for the proud and unsuspecting new owner. This is why a good, simple training plane is of utmost importance to the uninitiated. By all means don't start with a sophisticated scale model which will produce nothing but grief and frustration. The author built as a first project a Curtiss JN-4D and nearly destroyed the engine because of sheer inexperience. So pick a model with adequate ventilation and protection of the engine.

For the benefit of all concerned, the following mistakes should be avoided:

1. Never fuel or install the pressure vessel in an inverted position. This will force liquid CO₂ directly into the engine, producing a frozen or ruined engine.

2. Piston should be out of compression position (top visible in ports) when fueling.

3. When flying in conditions such that a layer of ice builds up on the pressure vessel (during engine run), wipe ice and moisture off engine. Let engine sit and warm before fueling and running again. Ice is 100 times poorer a conductor of heat than is aluminum, and this condition allows liquid CO₂ to get to the engine.

4. When selecting a model, or designing your own, ventilation of the engine and tank should be a primary consideration. The Brown Jr. CO₂ engine is easily encowled but to seal it in com-

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pletely and paint on air ducts is sheer folly.

5. Always use silver solder to repair damage to joints. It's stronger and localizes better. Disassemble area being repaired to prevent heat damage to seals or gooping up the ball valve with solder. Disassembly also gives one a better feel for the engine and the concepts behind it.

6. On the matter of oiling this engine, follow the instructions. If it has been sitting a couple of weeks, and appears dry, oil before running. I like to completely disassemble my engine every few months and clean out any old oil, and clean the pipes and tank too. A dark yellow oil sometimes accumulates in the tank over a period of a few months. Always oil both the piston and crankshaft bearing.

7. As with any type of engine, always make sure prop and engine are firmly affixed to their mounts. There are many ways to mount the engine without reworking the engine mount. Use 00-90 brass screws and nuts, or screws from an old watch. Brass 00-90 screws are available from the model railroad counter at better hobby shops.

8. Periodically check condition of seals and replace those which are worn or cracked.

9. Don't remove a near-empty cartridge from the load-n-launch gun by loosening the holding screw. If one does this, one stands a darn good chance of blowing a seal. Instead, loosen the front nozzle by giving one turn and allow the last of the gas to escape. Now slowly loosen the hold-down screw and if more gas starts to leak, stop. Finally, when the cartridge is removed, tighten the front nozzle and load gun as per instructions.

So, the next time things get dull at the flying field, why not unleash this cousin to a Volkswagen Beetle? But be

careful! You could find yourself hooked on CO₂ for life. ●

F/F Scale Continued from page 27

I placed a 6/3 wooden prop on the Pee Wee and fueled it up, using a syringe to measure out the fuel. A Pee Wee with a full tank of gas is good for almost five minutes of running. Needless to say, this is about 4 minutes and 45 seconds too long for any test flight. I put in .3cc of fuel which provides sufficient running time. Much more than that and you're liable to be caught in a thermal.

The area where these test flights were made had weeds six feet tall! It was tough finding an area low enough to hand launch the model. With the engine running beautifully, I launched into the wind, and the Piper Super Cruiser was off like the proverbial "Homesick Angel". The power flight was simply outstanding, the plane going in large left-hand circles. When the engine quit, it then circled to the right. The glide however, was just a little too steep, so an adjustment would have to be made. I gave just a tweak of left rudder to compensate for the steep turn to the right. All adjustments have to be very gradual.

The next question would be, will the turn to the left under power now be too steep? Refueled, I started the engine and gave the model a gentle toss. The power pattern was perfect. When the engine quit the glide to the right was just the way it should be. After the second flight I epoxied the front cowl into place. This, of course, finished off the model, giving it that final touch of realism.

The question in my mind while the cowl was drying was how would the engine run completely enclosed like it was? I didn't have to wait long for my answer, because it started right off with no signs of power loss. It did have a neat muffled sound, though. Every flight thereafter

was a sheer delight and pleasure!

I did manage to knock off both wing struts in the high weeds. (Incidentally, I tried to fly the Cruiser with only one strut attached and the model repeatedly tumbled into the ground. I finally realized that the additional drag on one side was acting like a rudder. As it turned out, I lost the remaining strut on that last flight so I tried another one with no struts. The model flew just exactly the way it did with both the struts on. Of course, the model doesn't look as good in the air without the struts.

I would recommend that anyone planning to build the Cruiser incorporate the following wing strut attachment. Where the struts are attached to the wings, lace some 1/16 inch O.D. aluminum tube about a quarter inch long with thread, followed by epoxy. Where the struts attach to the fuselage, insert a 3/16" O.D. aluminum tube all the way from one side of the fuselage to the other, making it flush with the sides. On the top of the struts, bend some .032 music wire at right angles so that this will go through the tubes located under the wings. These can be wrapped with thread followed by a couple of coats of cement. At the lower end, bend a wire forming a small hook that is small enough to go through the aluminum tube in the fuselage. Make a bend so that it follows the wing strut angle, then wrap the other end to the wing strut. When completed, a rubber band is stretched between the two hooks inside the tube. This is really much better than just glueing the struts in place.

One suggestion that may be useful in making your first powered flight is to use more down thrust than would normally be required. Your model, this way, will either fly like it should or make a gentle power landing. This is far better than not enough down thrust, which could cause your model to climb steeply

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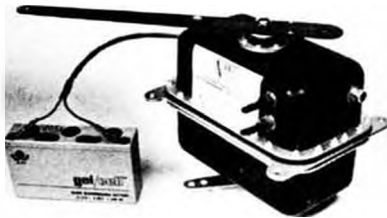
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then begin a series of heart-rendering loops close to the ground. These usually end up in a serious crash. The beauty of the "0" ring is that thrust adjustments can be made easily, a turn at a time.

Sterling's Super Cruiser is an excellent model, both easy to build and to fly. I am very pleased at the realistic way it flies, and I definitely plan to build another and really doll it up with plenty of detail. Try one, you won't regret it!

The following building hint was sent in by Richard Palace, Upper Marlboro, Maryland:

"Being a fan of your column, I'd like to pass on this hint to you and your readers.

When framing a stick model, most builders, including me, lay in the longerons, then carefully cut the uprights and glue them into place. I always considered this part of model building to be a pain in the posterior. The cuts were almost never square and usually putting in one upright would spring the one next to it, etc.

"Several months ago, when I was preparing to build a Tern Gone Goose and I was looking at the plans, the thought struck. Why not put in the uprights first and then the longerons. So, using 2 sequin pins per upright, through

the wood of each upright, I pinned them to the work board. Next I cut them slightly long, and taking a sandpaper block with the paper at exactly 90°, I carefully sanded the ends down to the plan outline. At this point I then preglued the ends with thinned glue. As this was drying I soaked the longerons in water. When ready, I placed a drop of glue on each upright, on either top or bottom, then slid the longeron against the uprights and held it against the uprights with pins. The pins need not (and should not) go through the wood, but against it. Now do the other longeron and you're finished.

"This method works extremely well, and oh, so fast, and I find I can build two identical sides without building one over the other. I have since built 3 more models with equally good results.

"This method works on wings, too. Lay in the spans and ribs, then, using the sanding block, trim the front end rear of the ribs, preglue, allow to dry, then glue again and slide leading and trailing edges against the ribs. Add tips and you're done.

"I hope this hint will help someone. Keep the good advice coming on flying models."

Sincerely,
Richard Palace 12020 Hunterton St.
Upper Marlboro, MD 20870

I welcome photographs of our scale models, suggestions or criticisms, or new ideas that may help the flying scale fraternity. Fernando Ramos, 19361 South Mesa Drive, Villa Park, Calif. 92667.

Plug Sparks . . . Continued from page 25 JUNIORS

Who said the Old Timer Events were for old men? Guess who set the boys on their respective ears with a good flying Comet Clipper? None other than that enthusiastic prop cranker, Greg Rasmussen. Not only did he win the Class C cabin event, but Greg easily outdistanced the rest of the Junior entries, winning the Junior Sweepstakes award with apparent ease. It's easy when you know how!

STUDY IN DETERMINATION

After looking for John Drobshoff, of San Francisco, on the first day of the competition and not finding him, imagine the surprise caused by the sudden appearance of a white-faced apparition answering to his name! Poor John had attempted to open the pressure cap on a hot radiator system and unfortunately got his face in the way. Needless to say, he spent the next few hours in the emergency hospital getting the raw skin attended to. Modelers are made of tough stuff, as John persisted, drove on to the contest, and flew and won several places. For sheer grit, John has no peer, as the hot sun was unmercifully grilling his already roasted face.

Another facet of John became known when his original "Eight-Ball" model was returned with one quarter of the wing sheared off by a telephone pole guy wire. On reviewing the times, John stated if necessary he would fly the model with the remains of the wing. What determination!

CONTEST SIDELIGHTS

How about the bean feed put on Monday night to welcome the contestants?? One complaint, we ran out of beer! Guess who moaned? Real credit is due to Sal and Nan Taibi who hosted the group.

The MECA COLLECTOGETHER held on Tuesday night was one of the best!! Surprisingly enough, the meeting was dominated by Northern California and Washington collectors. Best show yet! For the best display, George Finato, Fremont, Ca., walked off with top honors, closely followed by Bill Tucker of Zillah, Wash., and Tom Cope of Issaquah, Wash. Trophies were handed out at the Victory Banquet to these winners.

As is customary, the Beauty Event judging was held in the Women's Auxiliary Hall along with the MECA doings.

After considerable scowling and wrinkling of brows, Phil McCary was selected the winner with his highly decorated, eight foot Cumulus. Ben Sheresaw should have seen the polish, cowling, and wheel pants! Old Timers should look so good! As per the rules, it had to fly (or have been flown) the next day! McCary was a mighty nervous man for the first flight. All for nothing, as it flew well enough to be entered later in the Antique Event! How about that??

S.A.M. ANNUAL BUSINESS MEETING
Held on Wednesday, the meeting was successfully chaired by Woody Bartelt, present prexy. Very surprising, there were very few rule change proposals offered. The new printed rule books were displayed at this time, with their attractive red, white, and blue covers. Full information on these books and how to join S.A.M. can be obtained by writing this magazine.

The main purpose of this meeting was to determine the location of the next Old Timers Champs. The motion to hold the 1974 Nats in Denver was tabled based on the request by the Eastern contingent headed by Jack Whittles of SCAMA, Connecticut. Final decision will be made at the Oshkosh National Model Airplane Championships. Announcements will follow shortly thereafter.

VICTORY BANQUET

This occasion represents the wrap-up of the Champs and continues an ancient custom that used to be held at the Nationals before WW II. Truly a shame it was discontinued. The outstanding winner was Gene Wallock, who entered all but two events! The collection of hardware in front of the Wallock family was big enough to elicit several offers of truck loans.

Although the banquet is primarily devoted to handing out the hardware, some fun was introduced by the Northern California boys, spearheaded by Spiro Nickalow, with the "King of the Year" award. The award, shaped like a giant firecracker, was presented to Otto Bernhardt for his untiring and willing efforts to help everyone. When taken apart, the giant firecracker was found to contain a real jewel of a Forster 99 engine, complete with 20 inch propeller. Otto was completely overwhelmed, as he highly prized a Forster 99 but was unable to obtain one. It was a great occasion for one and all.

Might also comment at this time, it pays to work hard for the Sweepstakes award, as Gene Wallock also walked off with the two channel Kraft radio. That kinda made the boys sit up and take

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notice. While on the subject of awards, Bruce Chandler put up a special award for the best out-of-state performance. The SAM prexy, Woody Bartelt, took this without hardly breaking stride for the podium.

CONTEST NOTES

Credit the Event Directors, with a big plus for the assist to the Contest Director: Chuck Partch, Jack Transue, and Sal Taibi . . . take a bow!

Inferences that too many beers were being consumed . . . never happen!

Larry Boyer flying at 4:30 in the afternoon . . . what else? Everyone else with any sense was back at the motel swimming pool.

Dust devils were no help, sweeping periodically through the officials tent. Almost qualified all officials as minorities . . .

Well, if you thought this meet was great, wait until you hear about the Old Timer Events (unofficial) that are going to be held at the National Model Airplane Championships in Oshkosh, Wisconsin. Thursday, August 9, will feature the R/C Old Timers, while Friday will be the classical Old Timers. Of course, a Victory Banquet will follow. More fun, what else? Keep your eyes on this column for the report, it'll be kicks! ●

Pylon Continued from page 12
by K & B. Second place went to Lou Governale with his scratch-built Miss DARA, K & B powered. Third was Tom Christopher (that's me!) with the fastest time of the day at 1:32.2. Christopher flew a Stafford P-51, ST powered. Ken Holden took fourth place with his own-designed P-39, ST 15. Bob Johannes was fifth with his beautiful scratch-built Minnow, K & B. Dick Rebenstorf was sixth with his scratch-built Brown Special, with motivation by ST. With the exception of our P-51, it looked like a scratch-built race all the way! The competition during this race was exceptionally close, with only a one point spread between the first four place finishers.

The June race also brought to our attention a rising young QM racing star by the name of Clyde Bracey. Clyde flies a Stafford P-51 very well, and is improving with each race. He probably had the fastest K & B at the June meet. It was really sounding off. We predict that in the near future, Clyde will really be in there all the way.

At present, QMRC probably has the widest range of competitor ages of any QM racing club. We have young Steve Sica, 12, and really young Clyde Bracey, 64! If there are any Racing Clubs that

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can top this, please let us know. Talk about fun!! QM Racing is booming!!!

We would like to pass on a few tech tips that we have acquired through our experience with QM racing. These suggestions may work for you and they may not . . . we only ask that you consider them and give them a try if you are so inclined.

EQUIPMENT SELECTION

If you are a newcomer to QM racing, first let us assure you that QM aircraft are bonafide racing machines! There are a number of excellent selections available to you in the way of kits, engines, radios and accessories. We would like to suggest that if you are interested in QM racing, contact either a QM racing club or an experienced QM racer, and start asking questions. Find out if you are ready to handle a racing machine. Contrary to what I have read in other so-called "Racing Articles," these are NOT trainers. Believe us when we say that they are extremely hard to fly correctly!

The only way to properly select equipment that is right for you is to select what turns *you* on! We would suggest, however, that you attend a few QM races first and carefully observe what happens. If possible, try to assist the officials by being a pylon judge, a timer, or maybe even call for one of the contestants. Just get in there and do something. We promise you they will welcome the help. While you are doing this, note carefully what equipment the front runners are using and the techniques that put them out front.

As to the actual selection of your equipment, you will probably select something that another racer suggests to you. No doubt you will definitely have

to find out now if you will be pleased with your selection by building and flying your QM racer.

For the experienced QM flier, we would suggest the P-51, Shoestring, El Bandido, Rickey Rat, P-39 and the Minnow. For newcomers, these designs will also work equally well, if one builds straight, light, and accurately . . . and maybe adding a little extra wing area, making sure that the aircraft balances exactly on the recommended center of gravity.

At present, there are only two QM engines that you can select and be competitive. Remember, in QM racing as well as any other type, you have to finish to win! Remember that! Preparation, practice, consistency, and luck are what you must have to win. The engine choices are K & B and Supertigre. We have tried and tested both engines thoroughly.

If you take five K & B and five ST engines and break them in correctly, the K & B will consistently prove to be the stronger of the two. This does not mean, however, that it is the best! From our own experience, what the ST lacks in horsepower, it makes up in reliability. It is truly a quality product, but requires a very light aircraft to overcome the lack of torque it displays. The K & B however, is a real torquer from the word "go". It has been our experience with the K & B to see a multitude of problems in idling as well as reliability.

The K & B is easy to install and will produce a much cleaner front end for your racer due to the rear-mounted Perry carburetor. On the other hand, the ST can also have a clean front end, but never quite as slick as the K & B installation due to the front mounted carb on

the ST.

Our conclusion on engine selection is, that if you can build a super light model and you want a quality product that will give you many many races, try the ST. If you want an engine that sounds like a "Little OFFY", one that puts out gobs of torque . . . and you build heavy airplanes, your best selection would be the K & B. They are both good, and at present, they are equally competitive!

Concerning propellers, we have tried them all! We have stated before, that if you take ten props of the same make and size, you will be amazed at the RPM differences in props. The Top Flite Power Prop and Paddle Blade 7 x 6 are our choices. The 400 series REV-UP would be next. We wouldn't recommend nylon or glass filled props because of safety problems. Boiling them may help, but why take the chance? Props of 7 x 5 dimensions have been used, but they allow the engine to reach an RPM range that is detrimental to the life of the engine, as well as airframe structure.

PREPARATION

When we reach this stage, we take for granted that everyone is an accomplished builder. Ha! When building your racer, remember to build it straight first, light second, and don't use any paint primer. We have talked to many modelers who just do not seem to be able to build a 2-1/2 pound QM racer. The big secret is to sand a lot, use only two coats of surfacing resin, sand a lot, and then paint with either one coat (light) of Hobbyoxy or Super Poxy. You will be surprised! Both of these finishes will adhere to the sanded resin surfaces beautifully. Our P-51 has completed 12 races, still weighs only 2-1/2 lbs. and is finished

with two coats of Francis Resin sanded well, and one super-thin coat of black Super Pox. It still looks new!!

When breaking-in your engine, remember that you will have to take a little time. Install your earplugs, and run the engine in your plane or use a good break-in stand. Keep the engine up off the ground while running it! This will prevent the engine from ingesting dirt and other foreign matter. Use the fuel that you will be running in the engine, normally K & B 500. For a break-in prop, we recommend trimming a 7 x 5 Power Prop to 6 x 5, with squared tips. This will allow good cooling during the break-in without imposing too much of a load on the engine in its early life.

The first run should be extremely rich and of only two minutes duration, allowing the engine to cool completely afterwards. Put a total of ten two-minute runs on the engine, with progressively leaner mixtures each run, only slightly above four cycling. Remember, let the engine cool completely between each run. Now, run four four-ounce tanks of fuel through the engine at needle settings slightly above the four cycling mark, pinching the fuel line momentarily to keep the engine speed variable.

Now, if the engine will hold a rich needle setting, put the plane in the air for four flights at the same rich setting. Fly at a large field so you can dead-stick it in. It is almost impossible to set the idle correctly until the engine is completely broken in. Don't just fly a race course, but rather, put the plane into long screaming dives and steep pull-ups . . . keep it variable. All flying should be done with 7 x 6 props. After each run, always put a few drops of light machine oil like 3-in-1 or Marvel Mystery in the exhaust and intake to keep down corrosion.

When you go racing, plan ahead. Don't carry items in your tool box that you do not use! Use a check list if necessary. There have been transmitters and even complete tool boxes left at home on the workbench! After each heat, check the plug, head bolts, throttle connection, hinges, and overall condition of your racer. Get it ready for the next heat NOW! Make things simple and straightforward by eliminating as many variables as possible. QM racing is unique in that it contains more variables than any form of Pylon Racing at present. Once again, it is not a beginners event and it is not cheap. Any RC flying is expensive. Racing just requires more attention to detail than some care to admit!

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Citabria *Continued from page 28*
motor. The only other mods to the fuselage were; extreme scalloping of the kit formers, re-location of the rear motor peg, and mounting of the gear completely outside the fuselage to minimize the damage on hard landings.

The airplane was fitted with a fuse-type dethermalizer, using the leading edge of the vertical fin for a stop and the tail-wheel bracket for the fuse mount. We thought we were being unrealistic when this accessory was fitted, but it has saved the model more than once.

Struts are 1/16 x 1/8 inch spruce sanded to an airfoil, and power is supplied by six strands of Sig rubber 15 inches long. The prop utilizes a 3/16 inch square spruce hub, and fairly low pitch paddle folding blades; six hundred winds yields a motor run of about thirty seconds and results in about two hundred feet of altitude when the blades fold.

Adjusting the model, with its short tail moment and high torque motor, was rather exciting. I had to add about an ounce and a half of ballast to the nose, and increase decalage by shimming up the trailing edge of the stab 1/20 inch. With the high amount of power being generated, and the lightness of the

structure, all struts must be firmly in place every time the model is flown, or it will warp a wing panel and dive into the ground. (*Compare with Fernando's diagnosis in "F/F Scale" column. wcn*)

After about two months of testing and fooling around with it, the Citabria is now what I can finally call "fully adjusted," if that can be said of any high-powered rubber model. The flight path is almost vertical for the first fifty feet under the initial power burst, but then the airplane settles down to a wide right climbing turn with two complete circles before the prop folds. The glide turn is to the left, and is slow and stable enough to soar on any thermal.

Conclusions? It was a fun project. The airplane certainly performs beyond my hopes when construction started, and somehow the sight of my chubby little Citabria circling in a thermal, alongside a couple of pencil-slim Nordic gliders or a power model, makes it all worth while.

Prod. in Use . . . *Continued from page 34*
functional, resulting in models which are both easy to build and capable of giving the novice a fighting chance against more experienced flyers. The Orbiter is no exception to this tradition; if you've ever built a Starduster (and who hasn't),

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you'll immediately feel at home with this ship.

More in conjunction with contemporary thought regarding free flight design than the 'Duster, Sal and Denny's recipe for winning calls for a pylon configuration, rear fin, remote dethermalizer location, and the builder's choice of a Category I (370 square inches) or Category II (300 squares) ship.

Since my Orbiteer is to be flown primarily in California, I chose the Cat. I model. However, the kit contains the materials for either choice. As 370 square inches is large for 1/2A by most standards, wood selection becomes an important factor. Your \$6.95 will buy you a kit with wood very nearly equal to what you would select for yourself if you were scratch building . . . assuming you have a well stocked hobby shop at hand. Most 370's come out at 8 ounces or a fraction over (including Sal's), so anything under this (and a smug look) is justifiable.

Don't skimp on the sandpaper, especially aft of the pylon. If you end up with a tail heavy ship, that lead you'll have to add to the nose to get the correct C/G will come back to haunt you when you're 20 feet up and 30 seconds short of a max.

Another place it would be unwise to skimp is on the multiturbulator-spar wing. You'll appreciate the fact that you took the time to reglue those spar doublers the first time you either DT under power or a Taft "trash mover" flips your ship over on its back. Also, if you're hopelessly addicted to ironing on pretty plastics, fine. However, I think the additional rigidity and lightness tissue gives should make it a major consideration on this model. *(Better have a talk with this gentleman, Sid. wcn)*

The Orbiteer's fuselage reflects further attention to detail, and years on the contest field. For light weight and rigidity, the 'Duster type of fuselage construction is hard to beat. The remote DT setup not only permits easier adjustment of the fuse before launch, it also gets a bit of weight near the C/G . . . a far better place for it than at the end of a moderately long tail moment. To insure that all-important first flight's success, a gague is provided so the firewall has the proper amount of left thrust. If the amount looks excessive, weigh your experience against the designer's, then decide.

A further advantage of the profile, sandwich-type construction is that your incidence angles should be close to correct, assuming reasonable care in cutting out the pylon and in building over the

printed fuselage side. Using a TD .049, a Competition Models tankmount, and tissue covering, my Orbiteer balanced exactly on the indicated C/G. If you should choose Solarfilm or Monokote, you might wish to cut lightening holes in the rudder and the trailing edge stock used to fair the rear fin into the fuselage.

So all the winning ingredients are there, you say, but does the Orbiteer win? In the few months the kit has been out, it's been running up an impressive list of wins, including firsts at the Southwestern Regionals, the SHOC annual, San Valcers Winternationals, and the Max-Men annual. More impressive, perhaps, than just a list of wins is the fact that the vast majority of Orbiteer wins have been at the hands of persons other than the designers. That first-rank free flighters can win with their own design is not unusual; but that less accomplished modelers can also win with someone else's design is. Both the novice and the guy with more than a few pieces of hardware on the mantle will find this kit to their liking.

The hors d'oeuvre's great, Competition Models, so how about the main course? In fact, how about 900 square inches of main course to give the Satellites, Condors, Texans and Witchdoctors a touch of heartburn? ●

Hannan *Continued from page 29*

buret or within the cockpit, while others featured a manifold with the carburetor forward and below the engine cylinders. The engines themselves were mounted by metal clamps, which surrounded the engine cylinders. The clamps were affixed to extensions of the wooden fuselage longerons, providing a truly unique system of retention. A certain amount of confusion seems to exist regarding these engines, and it is possible that individual aircraft may have been flown with different powerplants. A Nieuport entered in the French meet at Reims in 1910, was announced to be "Nilmelior" powered, but in the words of one reporter "having all the ear marks of a Darracq".

Somewhere along the line, Nieuport evidently tired of other people's engines, and began to manufacture his own. These were literally works of the machinist's art, and would compare favorably with any engine ever produced. Using one of these units rated at only 28 horsepower, Nieuport officially bettered every single-seat record, and on a closed course averaged over 74 miles per hour. We can safely assume that over a straight line course, his speed would have been close to 80 mph.

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Other Nieuport monoplanes were powered with the all-pervading Gnome rotary engine, and in fact, an American, Charles Weymann, used one to win the 1911 Gordon Bennett race.

WHAT'S IN A NAME?

Sometimes, a license plate! Mention of the custom plates available to California motorists brought forth an avalanche of suggestions from as far away as Scotland. Here are a few that caught our fancy: AVION, I FLY HI, A FLYER, MODEL 1, CRASH 1, SKALE, FLY ONE, VTO, ROG, NO RC, HANGAR, AVIATE, P NUTTY, CANARD, FLY FF, FF FUN, GYRO. Imagine our surprise when a check with the motor vehicle bureau disclosed that the majority of them were already in use! Incidentally, Mr. Old Timer, John Pond the "founder" of the Society of Antique Modelers, has SAM 1 on his plates.

HANG GLIDER PIE?

During a recent visit with author/publisher John Underwood (*Acrobats in the Sky, Monocoupes and Men, etc.*), we enjoyed some pie prepared by Mary Underwood. It seems that the lemons in it were from Volmer Jensen's trees, and considering that Volmer's hang gliders are of the airplane type, it seemed odd that the pie slices more nearly resembled Rogallos! ●

NFFS Continued from page 37

Anyone meeting these requirements must submit an affidavit stating AMA Sanction Number, time of day, actual speed attained, names of witnesses and their signatures, plus the signature of the Contest Director. This affidavit must be sent to the current Executive Director of the National Free Flight Society. ●

P-40 Continued from page 10

Shape the fuse to fit the spinner with the engine installed. Next build the cowling as shown and glue the blocks of hard wood into place for the cowling hold-down screws. Put the cockpit details in and build the canopy from medium celluloid. Put any other details on now, such as the scoops, etc. Set the wing into the saddle and drill it for the wing hold-downs. Sand the ship and finish anything I have forgotten to tell you about.

MonoKote or paint the ship next. Bend and install the landing gears, along with any other tid-bits you wish . . . such as the radio!

Set the controls up for very little deflection of the elevator and rudder, at least to begin with. This will help you get used to a small ship that is quick. There are no bad habits in the flying of the ship. It grooves well and is very stable, so have a ball and we'll see you at the races. ●

Counter Continued from page 7

are 1½ inches in diameter and take 1/8 inch wire axles. Formula 1 wheels are 2¼ inches in diameter and take 5/32 inch axles. On both wheels, the axle boss is built up to avoid wobble, but is still only about 11/32 inch wide, so that built-up pants only require a 3/8 inch balsa core with 1/16 ply outer plates, for a total of ½ inch outside width. Prices are only \$ 1.49 and \$ 1.98, respectively.

The second item is a really well thought-out manual throttle actuator for R/C installations. Permitting manual operation of the throttle without turning on the radio, this accessory, which mounts on the fuselage side, also permits 90 and 180 degree change of motion in

relation to servo movement. This eliminates any need for reversing servo direction in order to get desired relationship between throttle lever on transmitter and actuator arm on carburetor. Pulling out the knurled button, which is on the outside of fuselage, disengages the actuator from the servo, allowing movement of the carburetor actuator arm. When released, the sprung button reengages, returning control to the servo. Price of the unit is \$2.49.

* * *

The famous Cox .049 Golden Bee is back, but you'll hardly recognize it! Now called the "Black Widow," the new Cox release has the outward dimensions of the Golden Bee, featuring the larger tank-mount, but here the similarity ends.

The most obvious "first-glance" change, suiting the new name, is the black anodized crankcase and tank. Closer examination explains the company's claim that the new reed-valve engine is more powerful, producing 2,000 more RPM than the previous model . . . a twin port cylinder! An ideal engine for .049 C/L Combat and small sport R/C, the unit is priced at \$9.00. Black IS beautiful!

* * *

While visiting our office not long ago, Hi Johnson attempted to explain the principle behind those fantastic auto-balance spinners which his Hi Johnson Model Products Co., 1669 Twelfth St., Santa Monica, Ca. 90404, is offering. We give up!

Briefly, a series of balls (there must be an uneven number!) will seek the *light* side of an unbalanced wheel, thus balancing it. When the wheel, or in this

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case, a spinner, stops rotating, the balls continue running around their race until out of steam and then simply settle to the bottom. The principle has been applied in many industrial situations.

For the modeler, a smooth running engine means less wear and tear plus the addition of a few hundred RPM, especially appreciated in pylon racing!

We described Hi Johnson's ball joint rod ends previously, but urge you again to pick up a couple of these items to experiment with. Just take a look under the engine cowl of any modern aircraft and you'll see large size examples of these things all over the place.

The applications for these rod ends in models are limitless, and once installed, the linkages are fail-proof. Related items available include heat treated stainless threaded-end rods (tough, but not difficult to bend to desired shape), spring steel dual bellcranks and horns, swivels, rod couplers, nylon pins to fit dual horns, and stainless threaded rod stock. Write to the company for illustrations of suggested applications, and complete list of items.

* * *

Competition Models Inc. has two new airplane kits to offer. One, the 1/2A-A Orbiteer, \$6.95, is completely described in a "Products-In-Use" article

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in this issue.

The other new kit is a catchy sort-scale Rumpler Taube of 40 inch wing-span for .020 to .049 engines. Suitable for a multitude of uses; sport free-flight, pulse rudder-only, or mini-multi radio, it can be flown in stand-off scale or for just plain fun. Price is \$8.50.

* * *

Bill Hannan has just completed a new "Plans & Things" catalog, covering his complete line of peanut scale, rotorcraft, sport model, flying scale, and obscure aircraft plans. The catalog also lists such things as prop shafts, thrust washers, nylon thrust bearings and various and sundry vintage wheels, including the great FH "Spider Web" spoke line.

Two bits'll get you this 16 page pamphlet. Write to W. C. Hannan Graphics, Box A, Escondido, Ca. 92025.

* * *

It is no rumor now that Kraft Systems will have R/C engines on the market in 1974. Prototype .61's have been flown, and at this point, it is a matter of ironing out production wrinkles. Future plans also include .40 and .15 size engines. The "brains" behind the Kraft power plant development belongs to Roger Theobald, a name that should not be too unfamiliar to most modelers.

Good grief! If they keep this up, pretty soon you'll be able to look to Vista, California for "One Stop R/C Shopping!"

F/F Evans . . . Continued from page 36

The reason is that fewer Eastern fliers will make the trek to Taft in 1974. We will end up sending the lower-placed Semi's qualifiers to the Finals. The same thing will happen if and when the Finals move East (I say if and when because the site and sponsor problems). Regardless of where they fly, the 4th, 5th, and 6th Semis placers from one coast are not directly competitive with the 1st, 2nd,

and 3rd Semi's placers of the other Coast. Any "home field advantage," such as knowing the probable weather and retrieval conditions, on-site helpers and equipment, etc., just makes it worse. I hasten to add at this point that this is not just one man's opinion . . . I have heard rumblings from top Eastern fliers already. Several have not even bothered to qualify. Others have qualified and will compete in the Semi's only to bolster the FAI funds. Still others are wrangling to get longer vacations in 1974 to attend Taft, but they are not as determined to attend, as they were at Caddo Mills and Albuquerque.

THERMAL DETECTION AND TACTICS

It is really amazing how little research has been done on thermal detection. It is considered by some to be the *single most important* aspect of Free Flight competition.

There are several schools of thought regarding which system will yield the best results in thermal "picking," but it is generally agreed that the "piggy-backing" or tactical approach is as accurate as any other. Some fliers use *only* the tactical method; others rely on electronic thermistors and/or mylar streamers. Still others prefer to find the lift entirely with their own senses. These fliers are quite popular with the "piggy-backing" contingent!

While most competition F/F'ers have developed their own favorites by now, it is always useful to have different methods available, whether they are used to compensate for varied weather conditions, to throw the opposition off-balance, or merely to "change your luck."

Some of the less-well-known thermal detection methods I've encountered are: Small bits of Japanese tissue released to drift with the wind (long "glides" indicate rising air, and visa-versa), tethered kites of light weight (try covering a box kite with condenser paper) which climb and drop with varied vertical air movements, and cattails or bits of D.T. fuse "fluff" released similar to the tissue.

In tall grass or crops, the wind velocity can be clearly seen by the waves or ripples of movement perpendicular to the prevailing wind. Changes or drops in the wave system often indicate vertical velocity. By concentrated study of "waves" this can be an effective detection method.

A row of pole-mounted streamers perpendicular to the wind not only indicate the presence of lift, but can also *point it out*. This is usually the way Free Flight areas are set up anyway, so why not take advantage of it? Helium-

filled balloons can be used in place of the kites, mentioned earlier, and are easier to transport. By using one or more of these ideas in conjunction with the more normal techniques, you can develop a formidable lift-finding ability. Happy hunting!

PHOTOGRAPHING FREE FLIGHT

Our favorite sport is really a photographer's dream come true; lots of available light, exciting action, and a minimum of spectators to get in the way (although some would prefer a little better public acceptance). If your Instamatic just doesn't seem to be up to the job, why not try one of the many fine, but somewhat more expensive cameras on the market? My recommendation for all-around photography would be a 35 mm SLR (single lens reflex; which means that you see the image through the picture-taking lens via a series of mirrors, as opposed to a Rangefinder, which takes the photo through one lens, while you look through a separate viewer) with the normal lens supplied with such cameras, usually 50-55 mm.

There are a bewildering array of 35 mm's sold in the U.S. (90% of which are made in Japan), but my personal favorites are these four; Nikon, Minolta, Honeywell Pentax, and Canon. The list price of any of these will be between \$250 and 350, but by careful shopping you can get up to 40% off this price. Figure \$200 for the better model in any of the above brands, excepting Nikon, which tends to be slightly more expensive across the board.

Films for 35 mm cameras come in 20 or 36 exposure rolls, 36 being cheaper per exposure. Normal selection of film for a meet would be something like this; 2 rolls of Tri-X for high-speed action or poor weather, 2 rolls of Plus-X for sunny days and better detail (like close-ups of front ends, etc.) and a couple of rolls of Ektachrome (slide film) for club photos and the like. When you get done taking all the great pictures you've wanted to, how about sending copies into MODEL BUILDER? Jumbo size (3½ x 5) glossy black and whites are fine. To save time, send direct to Ron Evans, 83 Blake St., New Haven, Conn. 06511. (Don't forget to include caption material. "You can't tell the players without a program!" [Tell 'em what?]) wcn.

Workbench . . . Continued from page 4 letter, "The magazine MODEL BUILDER, July 1973, has an excellent editorial by Bill Northrop, pointing out that Sport Scale has already exceeded the intent of letting many get into scale with something that flies but does not

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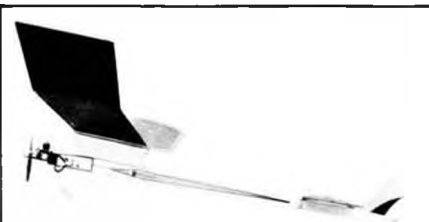
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take two years to build . . ." or Eldon Wilson (see pic on page 15), hobby shop owner in San Angelo, Texas, "Glad to see what I saw in writing concerning Sport Scale. Now how can we get some action?"

However, in deference to those who disagree but do not have the audience, we give you the floor for rebuttal . . . plus a bigger audience . . . our circulation is larger each month!

First, Keith Ward, editor of the Chicago Scalemasters newsletter:

"It is the time of the year to present the Scalemasters Annual 'Fur-lined Com-mode, Class II,' to a truly deserving recipient. I feel that after reading (and re-reading; the first time was in disbelief!) W. C. Northrop's 'Turned-Off-Scale' column in his July 1973 MODEL BUILDER magazine, he qualifies quite well. His admitted lack of prior knowledge of this event and its scoring system becomes painfully evident as his column and rules change suggestions progress, ending up with 110 points for flight maneuvers (flaps, retracts, multi-engines do not count for any points) and 30 points for static scale and another 10 for an original design. Under his suggested rules, anyone building anything but a thinly disguised pattern plane is just kidding himself; talk about a set of rules favoring one type of aircraft! As the present AMA Provisional Sport Scale rules are worded, a modeller can build a Stafford B-24 and be competitive *without* having to loop, spin, and fly inverted to win. 'Hardcore' AMA Scale standards have risen to the point where competing successfully in AMA Scale with this same B-24 would require two to three years of concentrated building, neglect of family and friends, and a constant threat of a heart seizure every time the damned beast leaves the ground. (I'm speaking from personal experience, having built, flown, and crashed a 1000 hour-plus aircraft myself.) Obviously, AMA Scale is not for everyone; so Sport



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Scale was born, providing an outlet for the less dedicated scale builder, novice scale modellers, and off-beat little-data aircraft. It's too bad that a few burned-out ex-pattern fliers are finding Sport Scale not quite as easy pickings as they perhaps thought at first, and are now making noise trying to change the rules more to their liking.

"What Mr. Northrop has really proposed is a semi-scale *Pattern* event. Pattern has become a perishingly boring event to watch; we don't need another, please. As for his astonishment at a flight maneuver called a 'low, slow fly-past', it really turns the spectators on and you should hear the cameras clicking (ever try to get a *good* in-flight photo of a pattern plane streaking by?). The spectators certainly seem to enjoy watching scale aircraft fly, mostly due to their widely diverse shapes, sizes, and flying styles; and at a time when we need public support of our hobby, why are so many people trying to turn Sport Scale into another boring one-type aircraft event (when did you last see a competitive Biplane pattern plane?)?

"It really 'Turns-Me-Off' to see well-meaning people who are not 'into' scale models and scale competition as they exist today calling the shots for those of us who are attempting to expand

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scale interest and raise the standards of a most interesting aspect of model building. Mr. Northrop has a nation-wide forum for presenting his views on whatever subject he chooses; I just hope he has the fairness to present opposing views, although it is his prerogative to not do so."

Next, Clark Macomber, who wrote the Sport Scale rules, and, to the best of our knowledge, does not build or fly R/C Scale or Sport Scale models:

"Since Bill Northrop publishes a magazine with considerable appeal to scale fans, many of you have probably seen the editorial in the July issue of the Model Builder condemning the current R/C Sport Scale rules. 'Somebody blew it!', he says, because they aren't rules for an R/C Semi-Scale Pattern event. He also implies that the present rules were written with no objectives or goals in mind and that's the reason for their short-comings.

"I guess I'm in a good position to disagree; I wrote the rules in question. They were written to provide a Scale event for low-pressure contests and rallies where judging man-hours would not become a burden on the organizers and also to provide a Scale event allowing those who haven't got 1000 hours to put

into building a model to compete on an equal basis with those who do. Judged on *these* terms, the present rules have been successful. I'm sure they will be improved over the years, but the basic idea seems to work.

"If a Semi-Scale Pattern event is desirable for R/C (and it may be), that doesn't eliminate the need for Sport Scale as it now exists. Semi-Scale Pattern would not, for instance, provide a scale event for beginners who hope to work into AMA R/C Scale. It would also fail to provide a scale event for those models that many scale modelers want to make of prototypes where insufficient data exists to make an AMA or FAI model, or where technical problems (autogiros, helicopters, some multi-engine types, etc.) would probably prevent the model from being competitive if built to AMA Scale standards.

"If Bill *does* decide that Semi-Scale Pattern should be added to the rule book, it would seem that it would more properly be in the RC Contest Board's area of interest rather than that of the Scale Contest Board. I think I can arrange an introduction for him to the Chairman of the RC Contest Board."

And finally, a letter from Dick Graham, Ottumwa, Iowa, a well-known

R/C Scale modeler and Nats R/C Scale competitor:

"Your 'Turned Off Scale' thing in 'Workbench' really turned me on! It's too damned bad that a lot of knowledgeable scale people wasted so much of their time and thought in an attempt to draft a set of workable rules for Stand-off scale. Had they just consulted you, it could have all been solved in a matter of minutes by a few strokes of your mighty pen. Really!

"After reading your proposal I'll agree that your attention was attracted elsewhere and, in my opinion, still is. This thing you propose completely eliminates all but stuntable models. What ten maneuvers would you suggest Tom Cook do with his very fine B 17? He certainly cannot enter AMA scale and expect good results. That was proven at the Nats last year. What about the hundreds of great scale subjects that are too complex to detail for AMA scale? Come to think of it, anyone having a Sterling P-63, Maxey Hester's old pattern design, would have an ideal ship for your rules. Is this your idea of a Stand-off scale ship? I hope not.

"We have a very fine thing for pattern flyers known as 'Pattern'. Let's not create another event for these guys from what I believe will be the only scale event for most scale builders in the future.

"At this writing, we all know that Stand-off has all but wiped AMA scale from the contest calendar. Much has been written to raise the standards of AMA scale in recent times. Progress is great, but by the same token, it has narrowed the list of people who have the ability, time, or desire to build a competitive AMA model to a very few. Therefore, in my opinion, there should be a 'middle of the road' event for a guy who likes to build a nice scale ship, even to the extent of incorporating things like flaps, a couple of engines, maybe a set of retracts, but does not want to make it into a museum piece. Neither does he want to have to fly it like a Chipmunk to earn a little hardware at the local bash.

"Perhaps the present provisional Sport Scale rules are not 100% ideal, but until I hear of something better they have my support."

Next???

THINGS TO DO

The Chicago SCALEMASTERS Club is having its 5th Annual Scale Rally at Glenview Naval Air Station on September 2, 1973. Events include R/C Sport Scale; R/C AMA Scale, C/L Scale, F/F Scale, and two new events — R/C

Stand-Off Helicopter, and C/L Stand-Off Scale. For further information, call Keith Ward (312) 833-8261.

* * *

The Palomar R/C Flying Club, San Marcos, California, is having its first Annual Stand-Off Scale contest on September 23, 1973. Mufflers are required, and the entry fee is \$5.00. The site is the San Marcos Model Airport, located on Rancho Santa Fe Rd. For further information, contact Granger Williams, (714) 744-3082.

KEEP THEM SPINNERS ON!

Williams Brothers has received some complaints about its new "Twist-Lock" spinner cones coming off during electric starting operations. We quote a portion of a letter addressed to the modeling press and club newsletters by Granger Williams:

"In all cases to date, we have found that the engine was started with wide open throttle. This allows the engine to exceed the speed of the starter, and the starter drag unlocks the spinner and it comes off. We had assumed that all experienced modelers would know that an engine starts quicker on low throttle and with less wear.

"We have been using these spinners for the past eighteen months, with and without starters, and have never lost the front cap from normal operations. One of our local old time flyers has been using a three-inch spinner, with very light locking pressure (so light it scares me) locking it in the wrong direction, and using a starter. The difference is that he starts his engine in idle.

"One other problem we have found is that some flyers using our spinner are not trimming the slots to clear the prop blades, but just forcing the spinner on and causing it to warp badly. This also will help the front to come off."

R/C PAYLOAD:

Two pictures on page 14 show what can happen to an Ugly Stik as the result of a bull session! Seems that some of the modelers at Kraft Systems were shooting the breeze (can't imagine modelers doing such a thing . . . much!) and the discussion got around to the question of how much load could an average .61 powered R/C model carry (not the pilot . . . the model!).

Joe Martin decided to investigate the question by the most direct method. . . try it and see the results. At a total weight of 17 pounds, 4 ounces, the plane would still fly, but takeoffs were the limiting factor. With 3 pounds of weight on the nosewheel, rotation became impossible (plane became airborne after hitting a bump!), Joe figures that 20

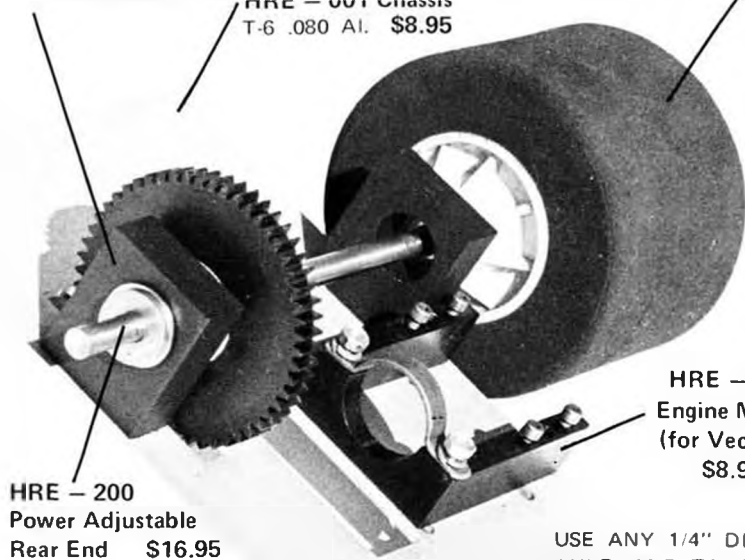
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pounds would be no problem if a tail-dragger configuration were used, giving the wing a positive angle of attack during takeoff. Incidentally, the wing on the test ship is a glass skinned honeycomb structure, a unit that was only marketed for a short time . . . too expensive. Engine is a Webra, fuel Cox Blue Label, and the weight, less payload, but with "all them wheels," is 8 pounds.

Speaking of payload, we discussed this with Joe as a possible new event which might bring out some new and interesting design problems and concepts. Rules could specify maximum allowed wing area, minimum weight without payload, maximum takeoff run to clear a specific imaginary barrier height, etc. In the interest of safety, the entire flight pattern would have to be carefully controlled to eliminate any passage over spectators, officials, or other fliers. Nothing could be more potentially dangerous than a grossly overloaded model hanging on the edge of a stall throughout its time in the air!

Nevertheless, the challenge seems very inviting. Send us your ideas, and let's develop a set of preliminary rules. Let's also base it on .61 engines, at least for a start. Getting into a variety of specs for different engine classes would complicate matters at this point.

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TALK ABOUT DETERMINATION . . .

Bill Hunter, along with his wife and two children, and accompanied by fellow modeler, Hulan Mathies, was driving to Oshkosh in a new Chevy carry-all, pulling a house trailer. Just outside of Evanston, Wyoming, they "lost it" on a curve and both vehicles were totalled! No serious injuries, but all suffered from concussions, bruises, and back ailments.

Once out of the hospital, they rented a U-Haul truck and brought home what could be salvaged, including a few out of many airplanes. After two frantic days of repairing, the hunters were on their way again, this time aboard the Cox Airlift!

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WHIRLEY DOINGS

Orbit Electronics supplied us with a report on its first Annual Invitational Helicopter Competition, from which we excerpted the following:

"Dave Gray, showing almost unbelievable control of his Du Bro Hughes "300" helicopter, swept three out of four firsts in the First Annual Orbit Invitational Helicopter Competition in Anaheim, California June 29 and 30, 1973.

"Close on the heels of Gray, were Ernie Huber flying his Shuco-Hegi Huey-Cobra, and Dieter Ziegler of Munich, Germany flying a Kavan Bell Jet Ranger. The three stars of the meet captured all the trophies.

"The Orbit Helicopter meet, first in the history of R/C model helicopters to schedule difficult events with winners decided on the basis of time, very quickly showed that only a few modelers have precise control in tight quarters or at a distance. It also showed beyond the shadow of a doubt that R/C model helicopter competition is a spectator sport. In order to qualify for the competition, contestants were required to control their models from the 18 ft. pitchers box of a regulation baseball diamond in a series of takeoffs and landings around the diamond. While the maximum distance was only about 45 feet, only ten of the 14 entrants was able to complete the difficult maneuver within the four minute time limit.

"The four formal events all started and ended with the aircraft idling at homeplate. The 'Cargo Slalom,' required the helicopter to maneuver carefully through three pair of slalom gates, pick up a 4 ounce load, and retrace the winding path to home plate. The 'Cloverleaf' was a wide open romp around pylons set at each base and the pitcher's mound. The craft traced a pattern around the pitcher to first base, around the pitcher to second, around

the pitcher to third, and around the pitcher again and head for home.

"Third in the series of exacting events was 'The Limbo.' The helicopters were required to fly under a limbo ribbon, fly backwards over the "bar" and go under it again before proceeding to the second and third bars, where the maneuver was repeated.

"The final event was the 'Home Run.' This was a repeat of the qualifying event, but the flyer could follow his craft. He was required to land and stay for 5 seconds on each base. This event turned into a track meet, with the contestants running to a new position during each 5 second pause, to the cheers of the crowd of several hundred spectators."

GOLDEN AGE REPRODUCTIONS

We just recently returned from a personal globe-hopping trip from Los Angeles to Copenhagen, Denmark, to New York, to Boston, to Philadelphia, and back to Los Angeles (whew!). As we were visiting relatives in Braintree, Massachusetts, we took the opportunity to telephone one of our new Classified advertisers, Joe Fitzgibbon, whose address happened to be in the same town. As it turned out, he was located only about 5 blocks away!

We spent one mind-boggling afternoon with Joe, looking into his operation (Not his appendix, idiot . . . his *business* operation!). He has, along with a partner, accumulated what seems to be a bottomless pit of old kit and magazine plans, rubber scale only. For openers, we saw long-since-forgotten Peerless 3/4 and 1/2 inch detailed kit plans that make Cleveland stuff look like kindergarten finger painting. There was Comet, Megow, Wanner, Scientific, Dallaire, and TOMASCO (Toledo Model Airplane Supply Company . . . do you remember that one?). Magazine plans included early 1930's oldies from M.A.N.

and Popular Aviation (by Paul Lindberg).

Joe and his partner are making new inked drawings from these oldies, reproducing them exactly, but also adding opposite wing panels, where only one is shown, and all bulkheads and rib sections that might otherwise only be available from the printwood! Then, and this is the best part of all, they are shooting photographic plates and offset printing the plans on white stock. In case you aren't aware, this means the plans you buy are printed black-on-white . . . not blue-line copies, not xerox copies, but clear, spotless, longlasting printed plans . . . in all cases better than the original. Cost of plans is in the \$1.25 to \$2.25 range (the \$2.00 and \$2.25 plans are on two sheets).

This may seem like a huge free plug for a mere Classified advertiser, but it is done entirely out of our pure enthusiasm for a product that has been produced with tender loving care. Send Joe a large stamped addressed envelope for his latest catalog of plans available. We happen to know he now has everything in stock that's listed, and the selection is growing steadily. Let him know what you'd like. It's probably in the mill anyhow, but your opinions will help in making future plans plans (get it?).

F/F Andrews . . . Continued from page 36

After about thirty minutes, remove the tube, rinse it with fresh water, and check the wall thickness with a micrometer. If it is still a bit too thick, return it to the solution until the desired wall thickness is obtained.

What could be simpler and cheaper?

FIELD REPAIRS FOR THE HURRIED

The sagebrush and cactus at Taft and elsewhere having taken its toll of my not-too-great-looking-to-begin-with covering jobs, I went looking for something better to patch the slashes and gouges that tissue is heir to . . . and found it!

Would you believe medium-weight Silkspan with 'sticky' on one side? Perfect for fast repairs in the field, it can also become a permanent patch with a light coat of glue over it.

It is 3M stock number 1530 Surgical Tape, and is available from surgical supply houses in three widths, 1/2, 1 and 2 inches. Here in Southern California I found GENERAL SURGICAL SUPPLY, 10821 Bloomfield, Los Alamitos, Calif., 90720, will sell it by the box for \$7.96 plus about fifty cents for handling. The number of rolls per box varies according to the width of the tape, with 24 rolls of 1/2", 12 of 1" or 6 of 2" being the minimum order.

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If you don't want to pop for the whole eight bucks "in the blind", send me a buck and I'll mail you one roll of the 1 inch wide stuff to try. It's really great!

Now, if I can just find out the specifications for the silk with sticky back, of which I have only a small sample in my flight box, I'll pass that along too. ●

Franny Continued from page 41

This cleaning action penetrates deep recesses, goes around corners, passes through barriers, blasting away residues, metal chips, etc. leaving a thoroughly clean surface. They are solid state circuitry, no moving parts to wear and they really do the job. Incidentally, all my hop-ups are cleaned by the above method. Prior to using Ultra-Sonic, I painstakingly hand-scrubbed all parts with the wife's dish liquid soap. Man, I thought this cleaned 'em, but you should see the junk come out of parts with the Ultra-Sonic method!

The price is reasonable and you can tell your wife she can use it to clean jewelry, utensils, eyeglasses, etc. Price range is \$55.00 to \$115.00. Incidentally, I stock them, in case you have trouble locating one.

It is possible to clean a brand new engine in one piece; but I find it best to clean them unassembled, take it from me, they really work. I should know since one has been in use in my shop for several years.

"Say, Franny:

I recently bought an engine at a discount department store. It ran okay for awhile, but now I notice fuel coming out of the rear. I took it back to the store and got no satisfaction. It seems they were only interested in selling to me. Fellow behind the counter admitted he knows nothing about engines. I will appreciate your advice."

**Mel Blome
Honolulu, Hawaii**

I receive many such complaints. My suggestion is that you should buy from a

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reliable hobby shop. After all, most hobby dealers are or have been model enthusiasts and know their product. Don't blame the discount store sales clerks. They are just doing their job and haven't the faintest idea of what you're trying to get across.

As to fuel coming out of the rear, I will have to guess that the engine is a rear rotary. If so, the rotor is probably not sealing properly. For me to explain how to lap the rotor would take too much space in my column. Chalk it up to experience. I feel you've learned a bitter lesson.

Oops, in case yours is a front rotary . . . most engines have a thin gasket between the rear cover and crank case. In that situation, chances are the gasket is shot. Suggest you also check screws to make certain they are not loose. Use "Loc Tite."

"Say, Franny:

I've heard rumors that nylon props should be boiled in water before using. Any truth to this? If so, how's it done?

**D. Elk
Detroit, Mich.**

Glad you brought this up. This is one "rumor" that isn't a rumor. As a matter of fact, Grish Bros. put out a flyer some time ago pertaining to prop boiling and how to go about it. Quote: "To users of Tornado or any other nylon props, BEFORE USE. You must first boil your prop in water for at least 30 minutes. Let it stay in the water 'til cool. Then your prop is ready to use."

They also advise when thru flying for the day to remove the prop, wrap it in a damp cloth and put it into a sealed plastic bag until ready to fly again. If you don't take their advice, nylon has a nasty way of crystalizing, making it very possible to fly apart, which could cause severe injury to anyone within range. Boiling nylon props assures you they are safe to use, so do as instructed!

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