MODEL BUILDER

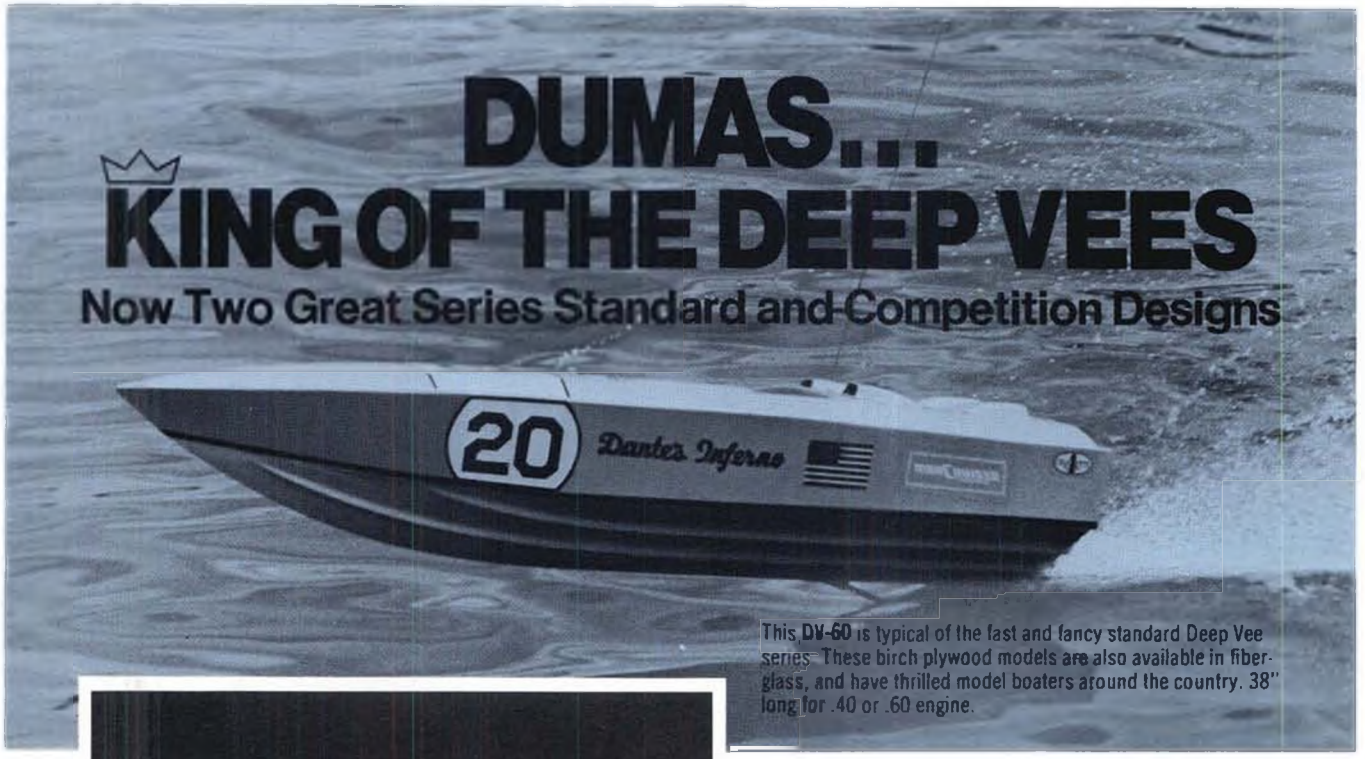
MARCH 1975

volume 5, number 39

$1.25

DUMAS...
KING OF THE DEEP VEES

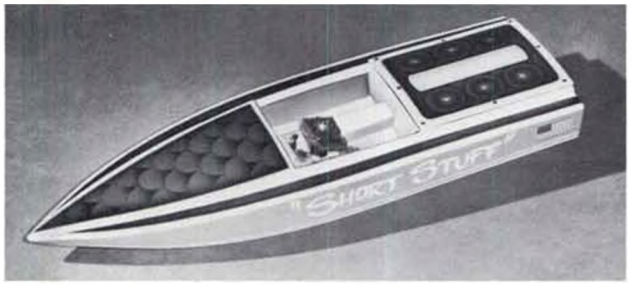
Now Two Great Series Standard and Competition Designs



This DV-60 is typical of the fast and fancy standard Deep Vee series. These birch plywood models are also available in fiberglass, and have thrilled model boaters around the country. 38" long for .40 or .60 engine.

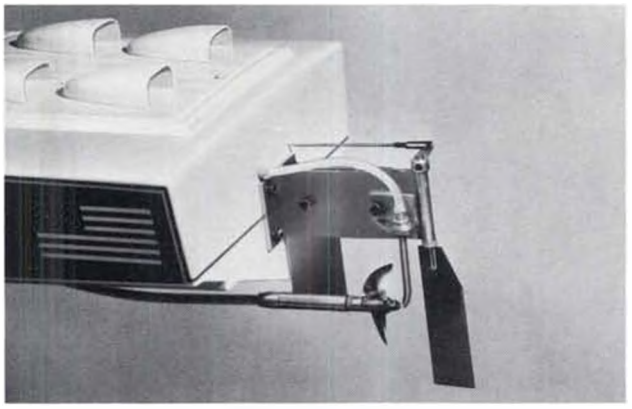
◀ **NEW – DEEP VEE 40 CF 40" (for .40 engine)**

The competition series Deep Vees that are the successful result of one year on the toughest racing circuit in the U.S. include this sleek 40 as well as DV 20 CF-40" (for .20 engine); DV-60 CF-45" for (.60 engine). Fiberglass hulls ideal for hottest competition or for fun running. For gas power and radio control. Hull and deck are white so boat can be painted to match the prototype. Racing hardware kit available.



◀ **NEW – DEEP VEE 10**

A new addition to the standard series. Designed for .049 to .10 engines. Mahogany plywood and veneer. 18" length, 6-1/2" beam. Uses Dumas hardware kit H-3 not included. The DV-10 is your opportunity to get into R/C Deep Vee running without a big investment.



◀ **NEW**

Outdrive for Deep Vee 40 and 60 boats (hardware kit H-22). Complete with everything but prop. Features adjustable stainless steel strut with needle bearings. Stainless stub shaft with flexible drive cable for virtually unlimited shaft adjustment. Stainless steel rudder with oilite bearings in stainless steel mount, rudder arm and water pick-up tube. And the price is so right for a super professional rugged unit.

When it comes to Deep Vees, Dumas has no peers. TWO complete series . . . standard (fiberglass or wood) or competition (fiberglass). From .049 to .60 engines. The most complete winningest line of Deep Vee hulls in the world is from Dumas. Whether you're a Sunday novice or circuit racer, Dumas Deep Vees are easy to build . . . provide top speeds and easy control in the corners, even in the roughest water. Winners . . . for show or go. New Deep Vee Hardware Kits. **Pre-packaged. Complete with everything you need for running. Props available separately. A kit for every model.**

See Your Local Dealer. If He Can't Help You Write Us.
See your hobby dealer or send 50¢ for our complete catalog

dumas boats

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

Dear Fellow Modeler,

It seems like only yesterday that the first Kraft radio control receiver was introduced in March, 1959. Yet, since that time, the sport of radio control has matured and we have grown from a one man garage operation to the largest company in our field.

We are proud to have contributed most of the technology upon which modern radio control systems are based and to have consistently produced the leading product in quality and performance.

Perhaps even more important is the reputation for service and insistence on customer satisfaction that we have earned.

Best regards,

Phil Kraft

450 West California - Vista, California 92083

OLDIES (BUT STILL GOODIES!)

BACK ISSUES OF "MODEL BUILDER" ARE STILL AVAILABLE, THOUGH SOME ARE IN SHORT SUPPLY. IF YOU PLAN TO FILL OUT YOUR COLLECTION, YOU HAD BETTER ACT NOW! PRICES VARY ACCORDING TO QUANTITY REMAINING IN STOCK.

November 1971

Nancy, R/C soarer.
R/C Pattern World Championships.
Peanut Fokker D VI.
LSF Tournament story.
Bi-Prentice, R/C bipe trainer.

Vol. 1, No. 2 $3.00

December 1971

Curtiss-Wright Junior R/C 2" scale.
R/C Twin Trainer 75" span, for .40's.
Peanut Laird LC-DC.
Volksplane 3V-1 3-views.
How to build light "wire" wheels.

Vol. 1, No. 3 $1.00

January 1972

SHOCer F/F by Mel Schmidt.
White Trash, famous R/C soarer.
Peanut Ord-Hume.
Chet Lanzo's famous rubber Puss Moth.
Curtiss Robin 3-views.

Vol. 2, No. 4 $1.00

February 1972

Minnow U/C profile scale racer.
Fokker E-III R/C scale.
Al Vela's E-Z Boy 1/2A
E-Z Boy 1/2A, Al Vela.
Peanut Ford Flivver.
Fiberglassing over balsa, by Le Gray.
Spoiler, FAI Combat.

Vol. 2, No. 5 $2.00

Mar/April 1972

Yankee Gull R/C glider 8' to 12' span.
Miss Cosmic Wind, QM R/C Pylon racer.
Peanut Scale Bucker Jungmann.
Siebel 1/4A F/F scale.
Mr. Mulligan 3-views.
FAI power "Folder."

Vol. 2, No. 6 $1.00

May 1972

Seahorse II, R/C seaplane. For .19-.35.
D.H. Humming Bird, F/F or R/C pulse.
Peanut Fokker V-23.
Whetstone 1/2A U/C combat.
Ryan ST 3-views.
Tethered Cars, R/C sail.

Vol. 2, No. 7 $1.00

June 1972

Bob White Wakefield.
Mongster QM biplane R/C pylon racer.
Calif. Coaster R/C glider. Sheet wing.
Three profile Peanuts.
Deperdussin 3-views.
Pesco Special 3-views.

Vol. 2, No. 8 $1.00

July 1972

Fairchild 51, 1" scale, R/C or F/F.
SAM-5 A/2 Nordic.
1912 Avro G rubber.
Comanche C stand-off R/C scale.
Travelair 2000 2" scale R/C, by Editor.
Chester Jeep 3-views.

Vol. 2, No. 9 $2.00

August 1972

Bonzo standoff R/C sport pylon scale.
Counterfeit, tailless A/1 Nordic.
Shoestring R/C QM.
Peanut Taylorcraft on floats, also big one.
Fairey Delta 3-views.

Vol. 2, No. 10 $3.00

October 1972

Stephens Akro R/C sport scale.
Mini-FAI F/F for .010.
Peanut Bellanca bipe.
1972 Nats reports.
Chester Special 3-views.
Electric power analysis.
Internats R/C pylon.

Vol. 2, No. 12 $3.00

November 1972

Torky 1/2A proto profile by Dale Kirn.
Seagull, R/C flying boat for .29 to .45.
Peanut Skyraider or 26 inch span.
LSF Tournament story.
Tethered cars.

Vol. 2, No. 13 $3.00

January 1973

Sproose Goose R/C bipe for .60 power.
Spectral R/C glider for single channel.
Peanut Ole Tiger.
First "Plug Sparks" col.
Andreasson KZ VIII 3-views.

Vol. 3, No. 15 $3.00

Feb/March 1973

Profile F4U Corsair C/L stunt, .40 power.
Beecroft's Satan, Class A free flight.
Indoor Ornithopter.
Peanut Travelair 2000
PT-3 Scale Views.
Thermal hunting with R/C gliders.

Vol. 3, No. 16 $1.00

April 1973

Fabulous PEA POD, R/C sailboat.
Briegleb BG-12, scale R/C soarer.
R/C Spirit of St. Louis, semi-scale, .049-.09.
Peanut Volksplane
Finish painting of rubber scale models.

Vol. 3, No. 17 $1.00

May 1973

Bantee mini-pattern R/C 3channel, .19 power.
Woodwind A/2, all sheet covered wing.
Slope soaring technique.
Teakettle, twin-boom CO_2 pusher.
Peanut Monocoupe 110.
Aerbo, .020 Replica, OT

Vol. 3, No. 18 $1.00

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MODEL BUILDER

MARCH

1975

volume 5, number 39

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

Subscriptions $12.50 per year, $23.00 for two years. Single copies $1.25. Add $2.00 for postage per year outside of U.S. (Except APO). Add 75 cents for Canada and Mexico.

Published monthly by MODEL BUILDER Magazine, 1105 Spurgeon, Box 4336, Santa Ana, Calif. 92702. Phone (714) 547-3963.

Second Class postage paid at Santa Ana, Ca.

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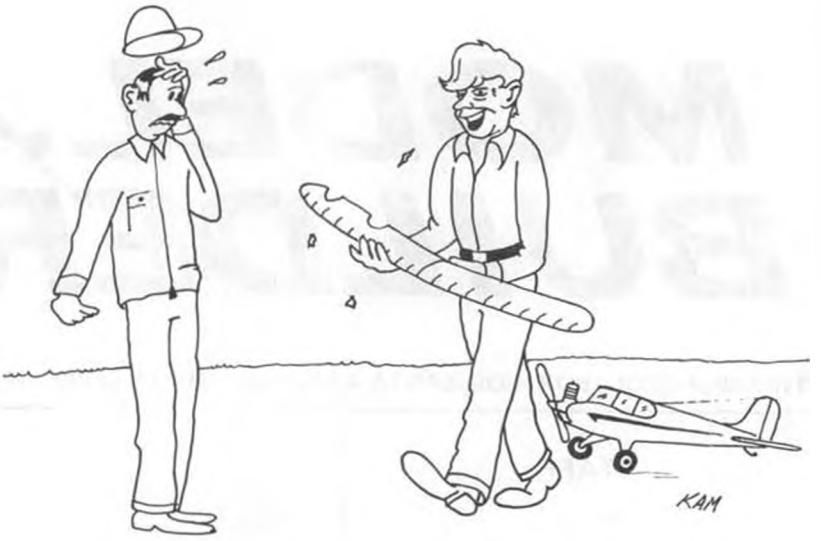
Cover: The typically colorful markings on Naval aircraft of the early 1930's are well depicted by this C/L model of the jaunty little Curtiss F9C-2 "Sparrow Hawk." Designed and built to 1-1/2" scale by Charlie Smith, of Snowmass, Colorado, this model of the maneuverable airship-based fighter spans 45 inches, and is powered by an Enya R/C .60. With a few modifications, and powered by a .40 to .45 engine, it could also become an excellent R/C project. Construction article begins on page 9 of this issue. Kodachrome transparency by Charlie Smith.



IT TASTES JUST LIKE WILD HICKORY NUTS!

from Bill Northrop's workbench . . .

• Modelers in this country are often heard complaining about the increasing cost of building materials, scarcity of certain items, difficulty in keeping flying fields, competition rules inequities, AMA's policies, etc. . . . even the higher cost of (harumph!) magazines.

It is true that these things happen, but in order to consider them good or bad, it is necessary to relate them to something. If it'll make you feel any better, and if you'll excuse us for sounding like John Wayne giving a speech on the good old red, white, and blue U.S.A., think about being a modeler behind the Iron Curtain, in Czechoslovakia.

First of all, very few modeling materials originate in the European country, and very few products are manufactured. Furthermore, because of the Curtain, it is impossible for Czech modelers to send money out of the country for the purpose of buying materials from foreign suppliers. Most of their model supplies are simply donated to them by friends from free countries, or are obtained in exchange for a few items that are made in Czechoslovakia, such as the much desired MVVS engine.

But the real difference between our problems and theirs goes a lot deeper than mere materials. The following letter, censored by us to protect the writer, was received by an English modeler, who forwarded a copy of it to one of our American readers.

"I have many problems with our exchanges. Our (censored) Club has been closed down by the Svazarm. Svazarm is like your S.M.A.E. Our club has been closed because we have very much friends in West and not in East. Also our planes have only West States markings and decals, and also our club named (censored) is English.

"With sending motors I have problems, and our members can send nothing from this region. I must give them to distant friends, and they must send them from different regions. Also, I am please you not to send goods to my address only letters and books. I give you new address to send parcels."

Now what was it you were saying about your hobby shop being out of 11x6 props until next Tuesday?

THINGS TO DO

The Radio Control Bees, of Anaheim, California, are hosting the first annual West Coast Multiwing Contest, on March 16th, at Escape Country, near O'Neil Park, in Orange County, California. The event will be operated under the rules of the National Sport Pattern Association. There will be two categories of competition: Sport Pattern and Stand-off Scale. Come on out and watch the fun, and if it's not too late, contact the Bees at 5224 Woodwind Lane, Anaheim, CA. 92686 to register to compete. You can also register at the contest . . . for an additional fee.

* * *

The Boeing Employees R/C Club (HAWKS) are organizing a Radio Control Exhibit to be held at the Seattle Science Center on March 28, 29, and 30. The exhibit is designed for the non-modeler, and will promote the hobby, covering planes, boats, and cars.

* * *

Canada's Largest R/C Model Aircraft Exhibition and Flying Show, sponsored by the Hamilton "Flying Tigers" Radio Control Club, is scheduled for May 10 and 11, at the Nelson Recreation Complex, 4235 New Street, Burlington, Ontario, Canada.

According to Exhibit Director, Carl Small, there will be prizes to third place in Military Scale, Non-Military Scale, Stand-Off Scale, Finish, Sport Plane, Original Design, Sailplane, Best Model built by a Junior (16 or under) and R/C Boats. There will also be distributor displays, a Swap Shop, and the flying shows daily. For additional information, contact the Hamilton R/C Club, P.O. Box 3183, Station "C," Hamilton, Ontario, Canada.

* * *

The First Annual West Coast World War II Scramble is scheduled for May 17 and 18, at the Hill Country Air Museum, Morgan Hill, California. Co-sponsored by the Pioneer R/C Club Inc., of Sunnyvale and MODEL BUILDER Magazine, the competition will include AMA and Sport Scale, with AMA engine and weight rules. All aircraft entered shall be World War II types, naturally. Contest director is Lou DeLateur, For info-packet and pre-registration form, write to Contest Manager Eric Clapp, 6116 Castello Dr., San Jose, CA. 95120. Phone (408) 997-2298.

SPECIAL NOTICE !

On Sunday, May 25, 1975, the San Fernando Valley Flyers R/C Club will host official world record speed trials at Sepulveda Basin. Timing traps will be open to anyone wishing to make a speed record attempt. To qualify, flyers will need the FAI Sporting License Stamp, in addition to AMA and FCC licenses. For further information, contact Dick Sonheim, 15856 Falconrim Dr., Canyon Country, Calif., 91352. Phone (213) 245-8433, evenings.

While thumbing through a mid-30's model magazine the other day, it occured to us that we should all remember the good old days . . . when a "pusher" was an airplane with the propeller on the back end, and a "twin pusher" *wasn't* the identical brother of another dope peddler.

And speaking of dope, it's gotten so that in mixed company (modelers and non-modelers, that is) we find heads turning in our direction if we happen to innocently mention that we've, "Quit using dope in favor of Monokote." Then,

Continued on page 80

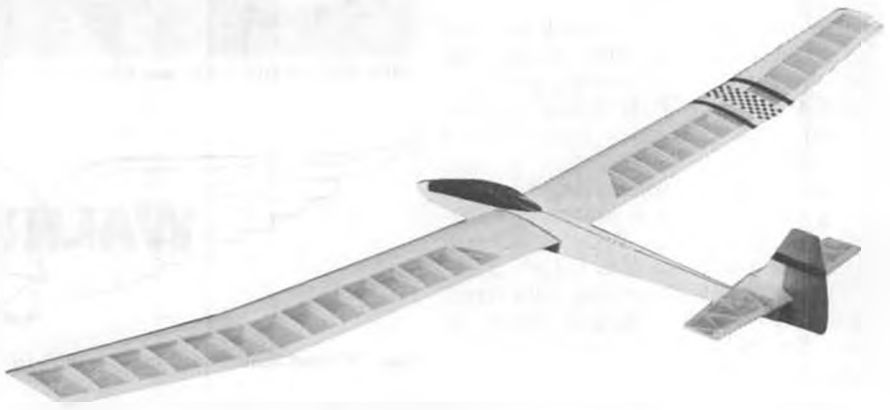
OVER THE COUNTER

• After more than a year of research and development, Williams Brothers has now released the kit for its 1-1/2 inch scale Pratt & Whitney "Wasp," the engine that "did it all" during the Golden Age of Aviation. Consisting of more than two hundred parts, molded in two colors of plastic, the engine kit also includes a motor mount. Price is $11.95.

The highly detailed Williams Bros. "Wasp" engine may be used simply as an exhibit model, or to enhance the realistic appearance of a scale model aircraft. The Wasp is the latest in a series of scale engines by the San Marcos, California company, which also produces the Wright J-5 "Whirlwind" in 1-1/2 inch scale, and the Le Rhone rotary engine, in 1-1/2 and 2 inch scale . . . in addition to many sizes of scale and scale-like engine cylinders, which may be purchased individually.

* * *

M&S Limited, P.O. Box 39745, Los Angeles, California 90039, is now producing a new "Standard Class" R/C glider with pleasing lines that are just enough out of the rut to be easily recognizable. Appropriately and cleverly named the "Curio," this latest design by Milt Swan spans 99 inches, is 42 inches long, has a wing area of 693 sq. in. (total lifting surface area 770 sq. in.), and has a flying weight range of 30 to 44 ounces (6 to 9 ounces per square foot loading range).



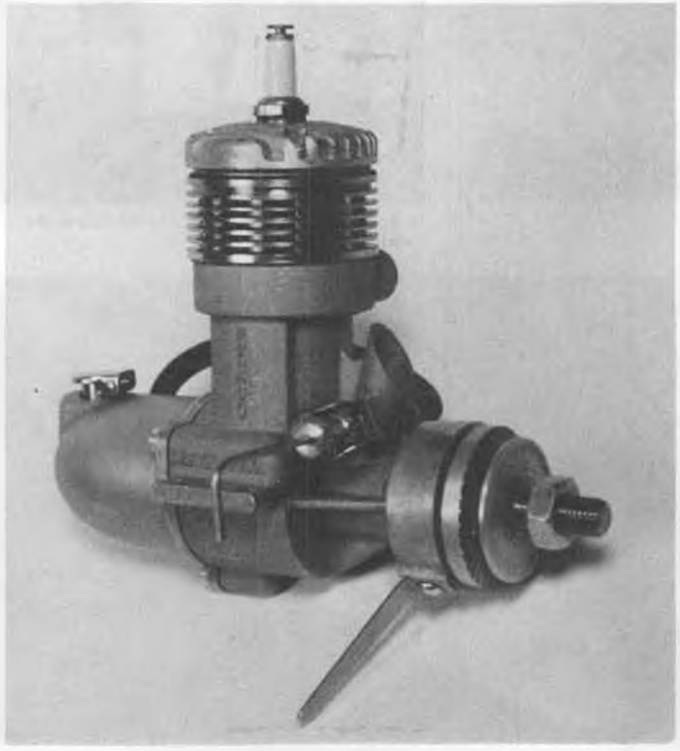
The "Curio", by M & S Ltd. Standard Class R/C glider.

The Curio kit features vacuum formed canopy, machined balsa and ply parts, contour sanded and notched wing rib set, plug-in wing panels, all-flying stabilizer, swept wing tips for better thermalling, and rugged construction.

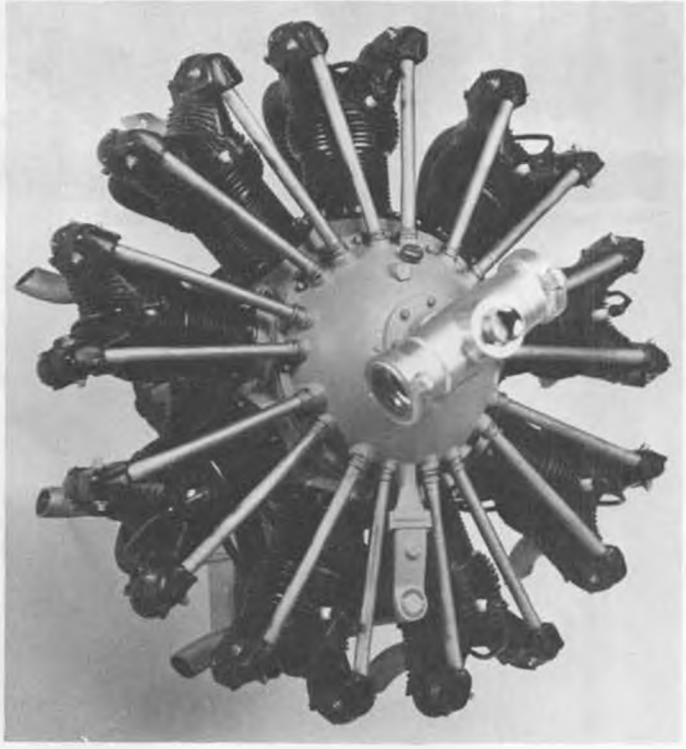
Available through normal distributor/dealer channels, the Curio may also be ordered direct. Retail price is $44.95. California residents must add 6% sales tax.

* * *

The electric model aircraft motor



First new ignition engine in over 20 years, the REMCO .29



Pratt & Whitney "Wasp" engine to 1-1/2" scale, by Williams Brothers.

kings, Bob and Roland Boucher, have now added the Astro 020 to Astro Flight's line of electric prop spinners. The 020 is the smallest unit in the series, and as the number implies, it corresponds to a glow .020 cu. in. engine.

Available in two versions, for R/C and free flight, the only difference is in the battery pack furnished. The R/C version weighs 6-1/2 ounces, complete, and the battery pack will provide 5 minutes running time on a full charge. It turns a Top Flite nylon 5-1/4 x 3 prop at 13,000 rpm, and a Cox 5 x 3 grey plastic prop at 12,000.

The free flight battery pack provides 90 seconds running time, brings the total weight to 4-1/2 ounces, and turns a 5-1/4 x 3 Top Flite nylon prop at 11,000, or a Cox black plastic 6 x 3 prop at 9,000.

Packs may be rapid-charged at the flying site, using 6-volt motorcycle batteries, in 15 minutes. Price of the free flight unit, complete with battery pack, is $19.95. The R/C version, with larger pack, costs $22.95. See your dealer, or order direct (See advertisement for complete address).

* * *

Astro 020 electric motor and flight pack, by Astro Flight.

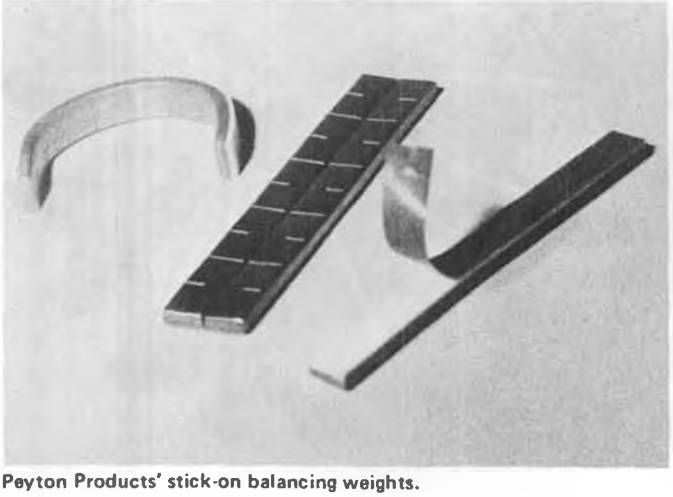
WALNUT SCALE

TERN AERO CO.

New "Walnut Scale" insignia by Tern Aero, for rubber models larger than Peanuts.

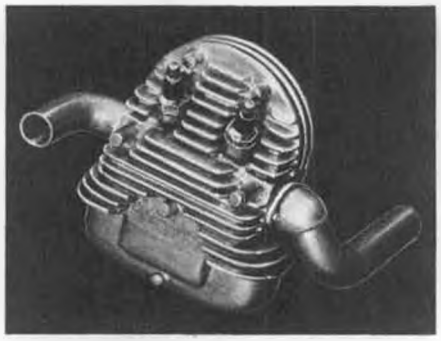
"Mach None", .049 mini-pattern ship by Ace Radio Control.

Glue gun tips by Peyton fit most dispenser heads. Reusable.



Peyton Products' stick-on balancing weights.

Glider fuselage and wing tip skids by Peyton Products.



Molded plastic engine for Heath Baby Bullet, by Gene Thomas.

The Coverite Corporation has finally released its pre-painted, iron-on fabric covering material for model airplanes. Called "Perma-Gloss," the new material was announced at last year's HIAA show, but was pulled out of production when new techniques indicated that it would be possible to put out a much better product after more experimentation and tests.

Permagloss is a light polyester fabric with four separate coats of paint on the outside surface, and heat-sensitive Quik-Stik adhesive on the inside surface. The outside finish is permanently glossy, though not super-shiney like plastic films, and will not scratch, peel, or fade. It is available in white, red, yellow, blue, and orange. Trimming can be accomplished with decals, paints, iron-on plastic films, and also other colors of Permagloss, since it will stick to itself.

Write to Coverite, 112 Chestnut St., Philadelphia, PA. 19106.

* * *

Peyton Products, P.O. Box 6423, Orange, Ca. 92667, has come up with an item that should be extremely popular with model builders. Eliminating the need to transfer glue from its original container into a glue gun, the MINI GLUE GUN is a polypropelene tip which can be slipped onto the uncovered end of most glue tubes, transforming them into glue guns. You simply seal them with a T-pin. Since it will not stick to the material, hardened glue can be easily removed by bending the tip to break the glue loose and then popping it out, making the cleaned tip ready to apply to a fresh tube. The glue gun tips are 3 for 99 cents.

In addition to the glue nozzles, Peyton products is also marketing R/C glider skids (also good for wing tip skids on powered R/C ships) made up of .020 inch thick by half inch wide polypropelene backed with .125 inch thick double-stick vinyl foam tape. Each 79 cent package contains a 24 inch length of the material . . . enough for two gliders (or about four wing tips).

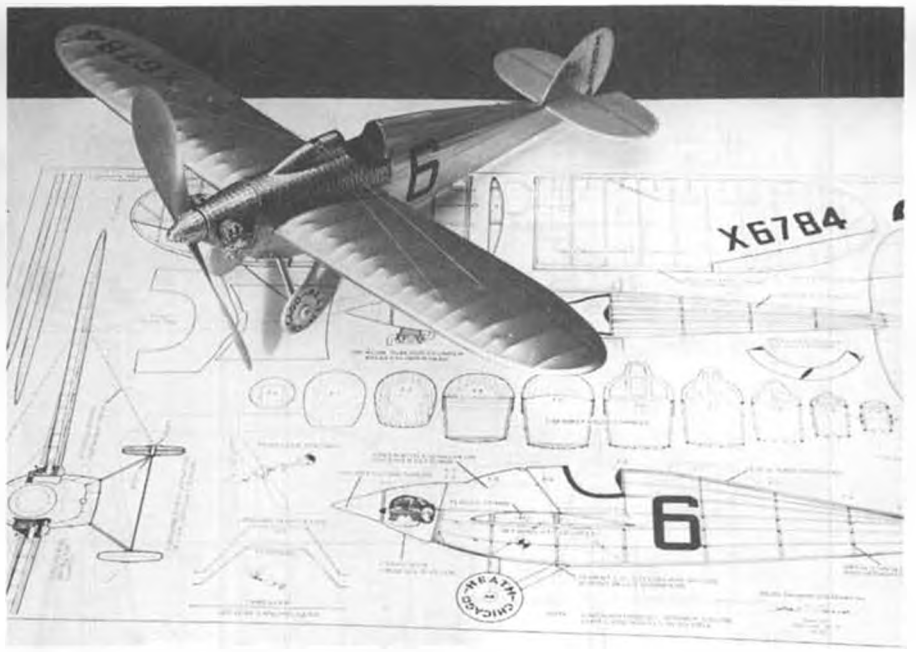
Another Peyton Product is double-stick vinyl foam tape backed strip weights. Each weight is divided into 1/4 ounce increments. A 5 ounce package sells for $1.59.

* * *

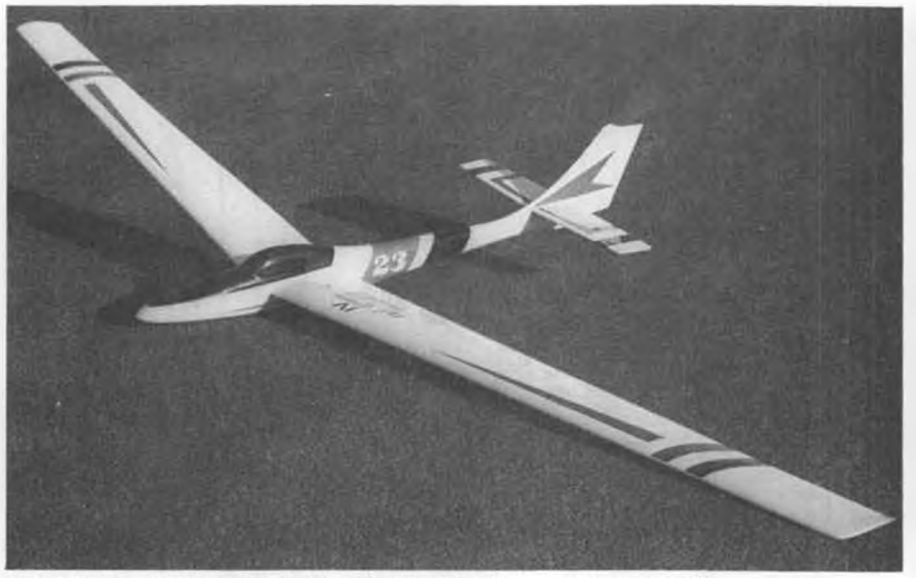
Aviation illustrator and model designer Gene Thomas, Box 681, Melville, N.Y. 11746, is introducing something new to the model industry . . . plan kits. Aimed primarily at the scale model enthusiast, a plan kit includes super-

Continued on page 78

Modeler's Flag stickers by Novel Products.

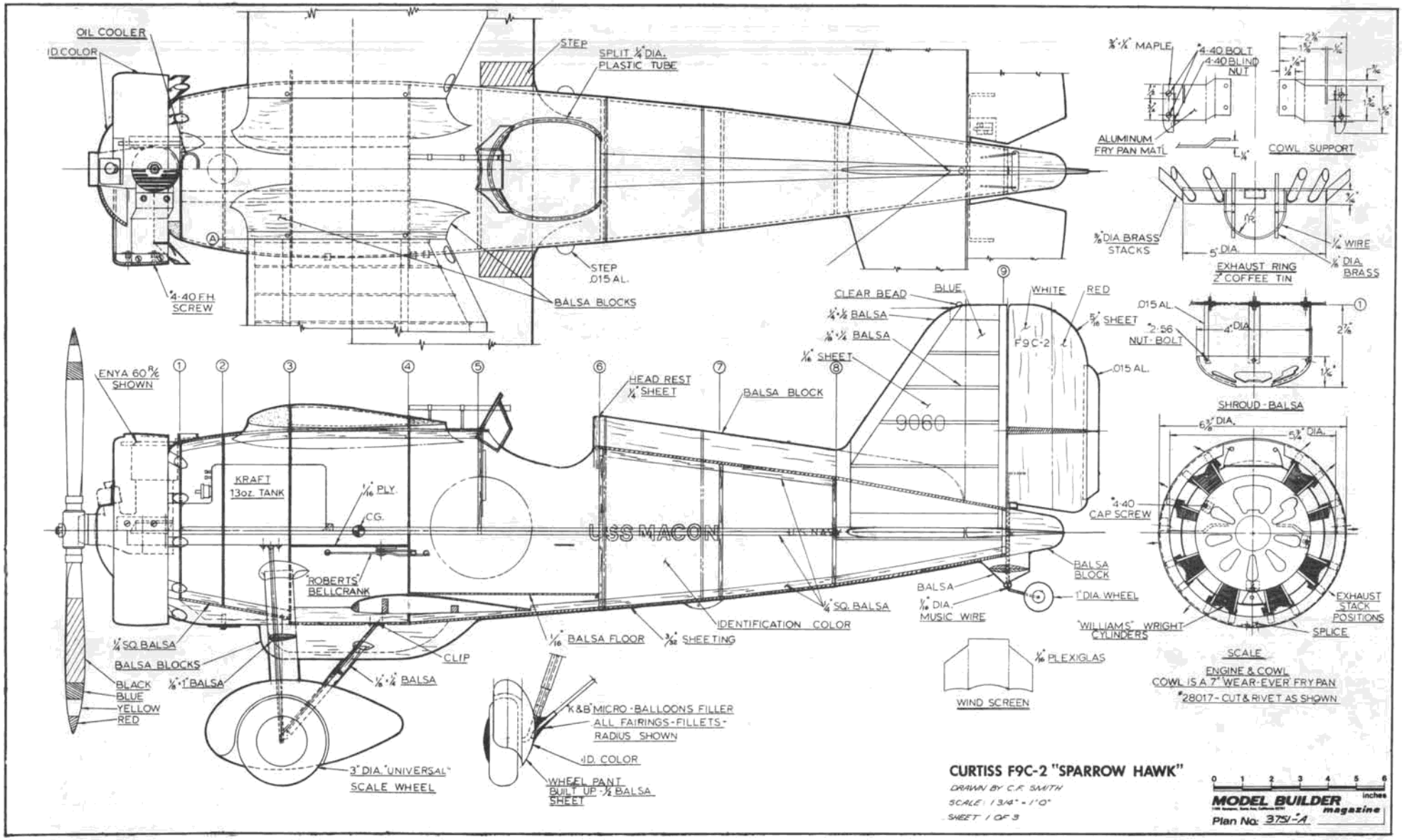


First plan kit by Gene Thomas is for the Heath Baby Bullet, in Peanut (13" span) and 1-1/2" scale sizes. Kits include complete documentation.



Harley Michaelis' "Sport Pro" is partially kitted by Hartman Fibreglass R/C.

Battery test meter by Craft-Air.



FULL SIZE PLANS AVAILABLE – SEE PAGE 80

PHOTOS BY AUTHOR AND HARRY SUTHERLAND, EXCEPT AS NOTED

CURTISS F9C-2 "Sparrowhawk"

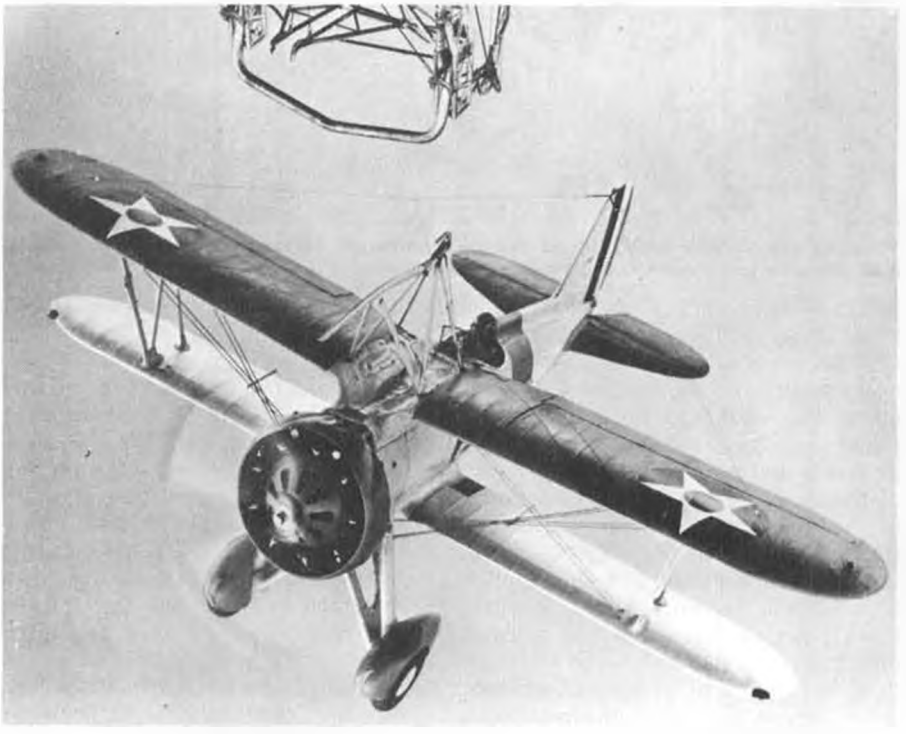
By CHARLIE SMITH . . . Designer of the popular C/L-R/C Curtiss 'Shrike' (July '74 MB) brings us another military aircraft from that great between-the-wars Golden Era of aviation. Though the 1-1/2" scale model was built for C/L only, only slight modification and a .40 engine would make it a fine R/C scale project.

American imagination and ingenuity produced this fighter plane, one of the most exciting and unusual planes to fly with the U.S. Navy. The colorful Curtiss F9C-2 Sparrow Hawk's specifications and performance for the times were impressive; 25'-5" wing span, 20'-7" in length, gross weight 2784 lbs, and powered by a 438 H.P. Wright R-975E3. At $23,000 each, the national debt hardly jiggled. Its top speed was 172 plus mph. With its landing gear removed and an external 30 gal. fuel tank added, its speed was increased to 200 mph, with an operational radius of 255 miles.

This cool little one-seater was primarily designed to fly from and return to the airships ZR-4, USS Akron, and ZR-5, USS Macon. However, the Sparrow Hawks could make carrier landings with the installation of an arrester hook. A few of them flew from the carrier USS Lexington.

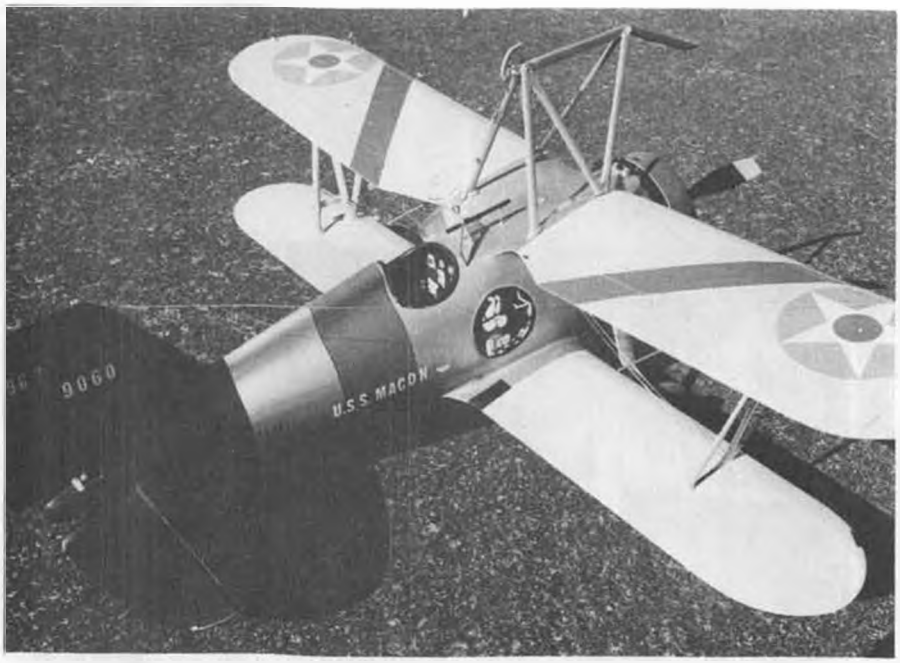
Six F9C-2s were assigned to the Navy's USS Akron in September of 1932, and flew with her until April 1933. None of the "Sparrows" were on board because of foggy conditions when the USS Akron was destroyed in a violent storm off the East Coast of the U.S. The six F9C-2s were then assigned to the USS Macon, commissioned in June 1933. The Sparrow Hawks made their first hook-up in July of 1933. Usually, four of the Hawks, with four pilots and fifteen mechanics, operated from the Macon. However, a fifth F9C-2 and pilot were added in 1934. This fifth Sparrow was kept on the trapeze in the ready position, while the remaining four were hung from monorails in the four corners of the 58 x 70 foot hangar inside the super-ship Macon.

Extraordinary airplanes and pilots made this unit work. Imagine, with no landing gear, you had no place to go but back to "Mama." Then, while waiting your turn to hook-up and be drawn up inside, you could hook onto a stationary bar, called the perch, to the rear of the trapeze. The F9C-2 Sparrow Hawks flew all kinds of missions, hook-ups and drop-offs without a single accident, from

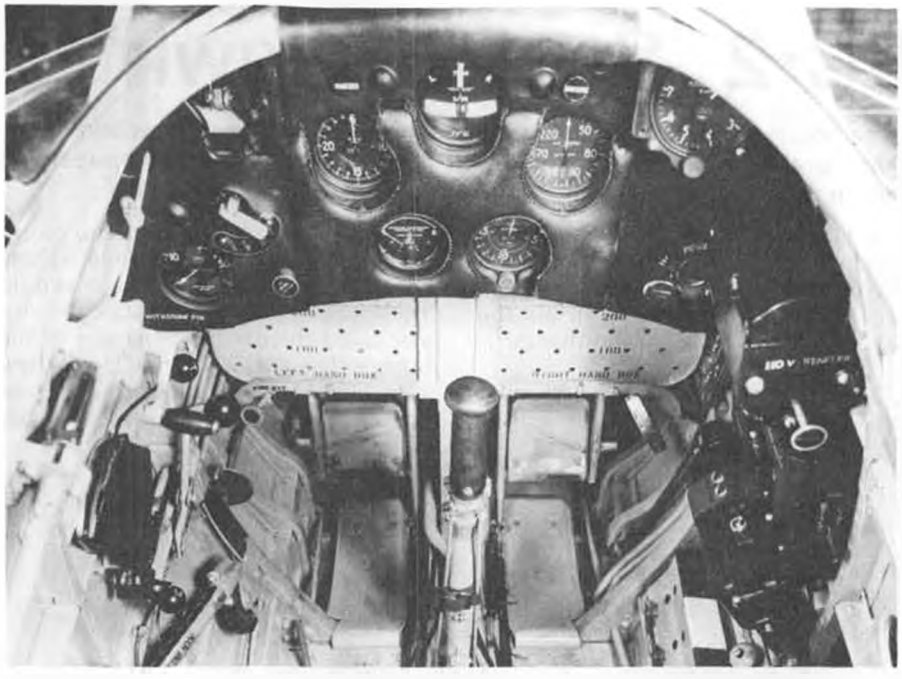


NAVY DEPARTMENT PHOTO FROM THE NATIONAL ARCHIVES

Super close-up shot of the 'Sparrow Hawk' doing its thing . . . hooking up to the lowered trapeze of its mother airship. A scale modeler's delight, the F9C-2 is loaded with detail goodies.



A flying rainbow; black tail, grey fuselage, yellow upper surface of top wing, all other wing surfaces silver, green band, green cowl, green pants, green section leader stripes . . . and insignia!



Ya say ya want cockpit detail? Tell ya what we're gonna do! Bureau of Aeronautics photo tells it all. Boarding house reach wasn't necessary. Very cozy.

1932 to 1935.

At dusk, on February 12, 1935, the USS Macon was struck a fatal blow by heavy wind gusts off Big Sur, Calif. Her upper fin, weakened previously while flying over Texas and due for overhaul, gave way and broke into girders, pieces of metal, and canvas. The flying pieces of metal pierced her three aft helium cells and the great USS Macon settled slowly into the Pacific and sank. So did four of the colorful F9C-2 Sparrow Hawks. A great loss to aviation and the lighter-than-air branch of the Navy. If they had had radar to warn of weather fronts, maybe the super airship concept would still be an active part of today's aviation.

Two parasite F9C-2 Sparrow Hawks were scrapped during 1936. The first experiments of hooking up to airships were done with a Curtiss XF9C-1, serial number A8731. This plane is different in some respects to the -2, mainly smaller fin and rudder, higher thrust line and no spats. The Navy converted it to an F9C-2, sometime in 1932, and it flew along with the six F9C-2s. The Curtiss company built an XF9C-2 at their own expense and this plane was later picked up by the Navy, reworked and given the number 9264. These are the facts as far as I can make out. One Curtiss F9C is not accounted for; maybe someone could help me on this. The Curtiss XF9C-2 number 9264 can be seen at the National Air and Space Museum. If you see it, check the tail. From my pictures it could be an F9C-1, with spats.

The F9C-2 that I modeled was number 9060, from the USS Macon. The identification color is willow green with a blue-black tail. All the metal surfaces are planked and sheeted, while the fabric covered structures are simulated with silk. The lower wing has negative dihedral built in, and all of the fillets are made from K&B micro-balloons. Building and assembling the fuselage requires that the stab, fin and lower wing be built first. However, this should not pose any real problem in building this model.

You will need some odds and ends to build this plane, so look around . . . like .015 aluminum roof flashing, a "Wear-Ever" 7 inch frypan No. 28017, a 2 lb coffee can, some broken props (12 x 6 Rev-Ups do well), and some canned beer. Drink the suds and save the cans. Besides keeping the environment uncluttered, they make fine material for cockpit details, and are light. Also get some film and take pictures of your construction for your presentation.

FUSELAGE

Cut out bulkheads Nos. 1 to 9, using proper material, and sand to a smooth contour. Cut the maple 3/8 x 1/2 motor mounts to length. Assemble bulkheads 1 to 4 with the mounts. I used epoxy here, and at the other stress points that will be noted. The rest of the assemblies were glued with Ambroid.

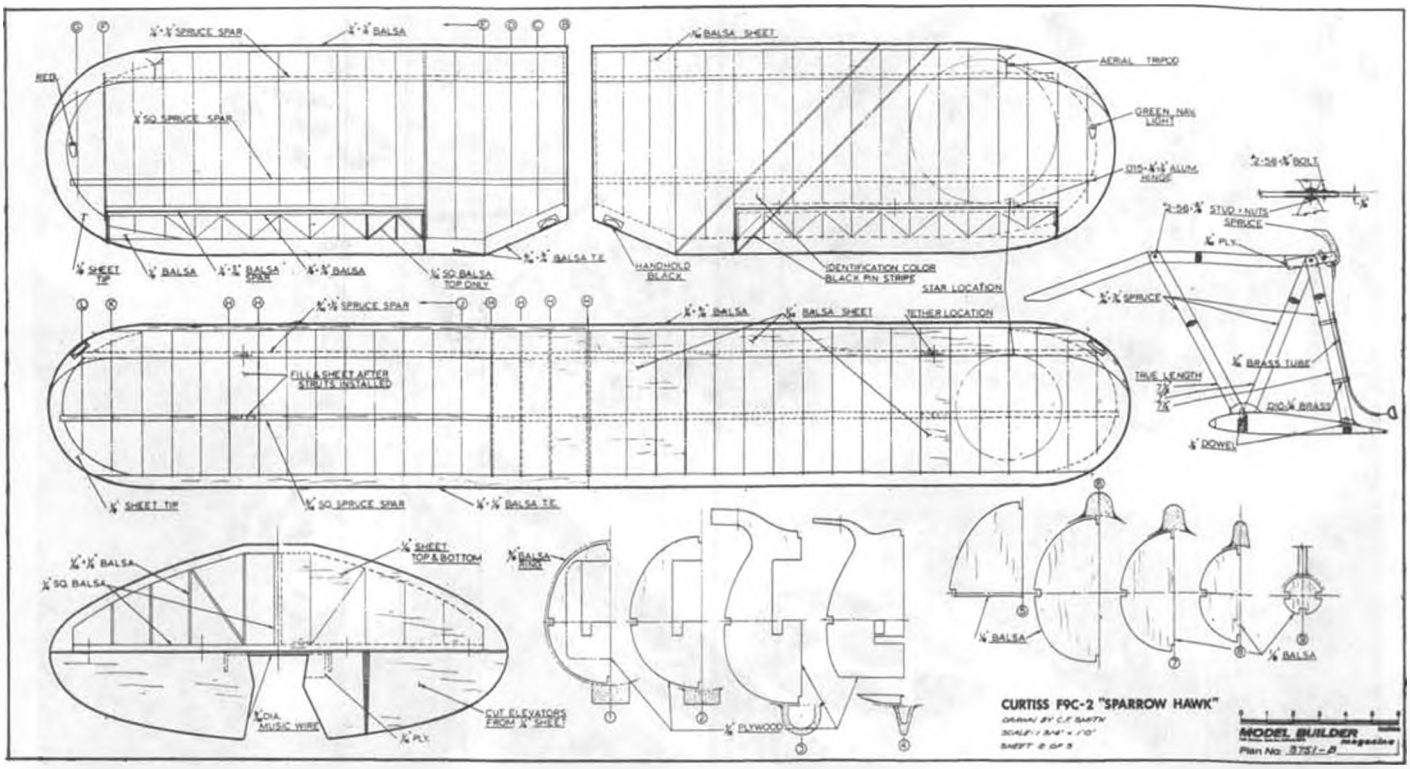
Glue the side 1/4 sq. balsa stringers and when dry, install the balance of bulkheads to station No. 9. Note that these stringers go all the way to bulkhead 9. Check that this assembly is straight to the top view. Install top 1/4 sq. balsa stringers, install and glue 1/16 sheet elevator floor between 8 and 9. Glue only at the bulkheads 8 and 9.

Now careful . . . Glue 2 strips of 3/32 x 1/4 balsa strips the full length, 1 to 9 on both sides of the fuselage, starting at the middle of the 1/4 sq. Cut out the 1/4 sq. stringers between 8 and 9 and install the elevator assembly. Install the fin.

Now plank with 3/32 strips of balsa from the side stringer, up and around the top. Install the control line plywood plate and bellcrank assembly, with epoxy, between No. 3 and 4 bulkheads. Glue the lower wing in place, using the wing block between No. 3 and 4. Use epoxy at these points.

Install the landing gear assembly. Note the front 1/8 strut is allowed to float. Install lower 1/4 sq. stringers. Install elevator push-rod from bellcrank to elevator. Be sure that it moves freely. Now mount your engine and install the throttle rod. I used a Sullivan "Gold'n Rod" for these and secured the outer case with G.E. Silicone cement at each bulkhead. Install fuel tank stop and

FULL SIZE PLANS AVAILABLE — SEE PAGE 80

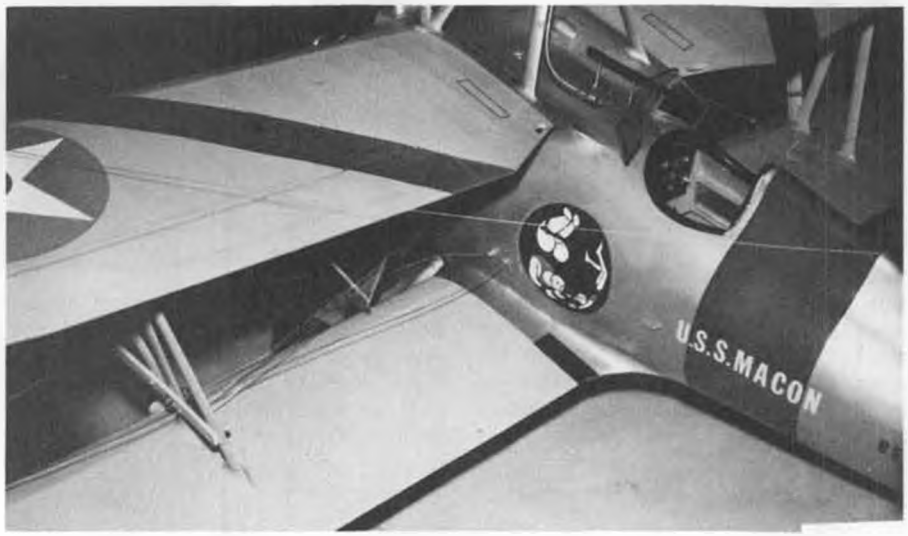


cockpit floor. Then finish planking fuselage. I used the lead out wires supplied with the Roberts bellcrank. Where they come through the fuselage side, use 3 pieces of 1/8 dia. x 3/16 long brass tubing for guides.

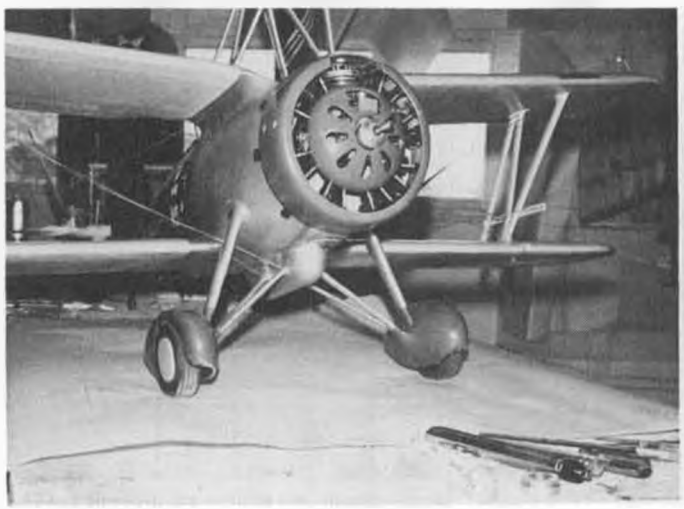
Rough sand where planking glue has dried. Glue wing fairing blocks as shown between No. 1 and 3 bulkheads and between No. 4 and 5. Preshape and sand before installation. Note the shape from bulkhead sheet. Install tail wheel assembly and fit tail block and glue in place. Install preshaped head rest block which goes from bulkhead No. 6 almost to No. 9.

WING

Cut out ribs as required. Lay out spruce spars as per plan, assemble and glue. The lower wing is made in two halves. Glue leading edges in place. Notch the trailing edges 1/8 deep as required,



Note ailerons in upper wing only. Bottom wing has slight negative dihedral (anhedral), possibly to improve chord/gap ratio. Portions of wings covered after assembly. One-piece airplane.

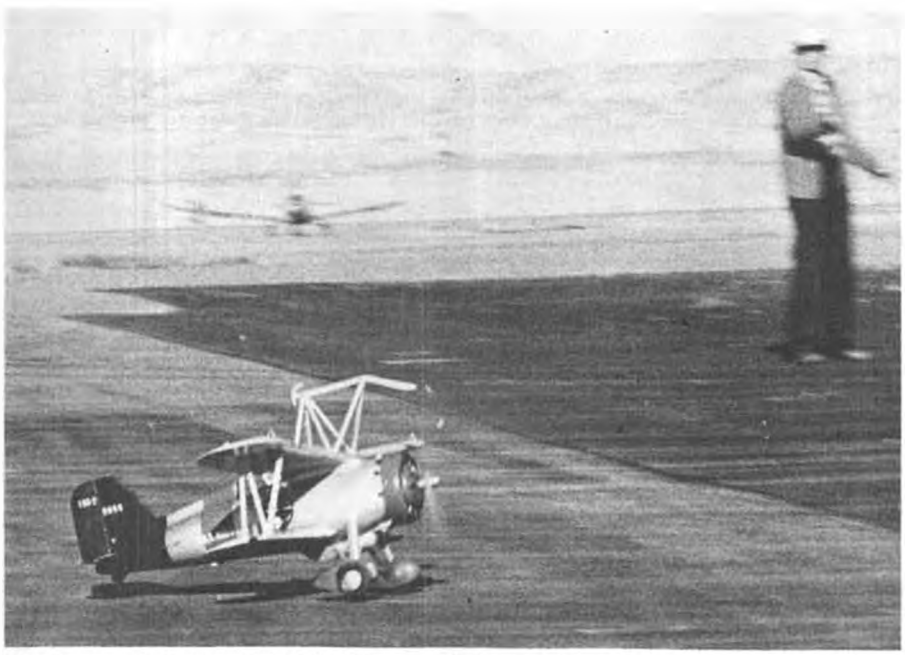


Close-up of engine detail. Charlie explains all about making it in the text . . . pots, beer cans, and all. Let's play "Find the Enya!"

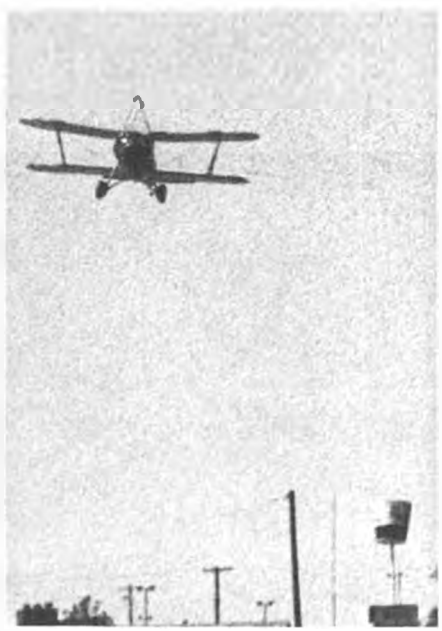
There's the Enya! Note exhaust ring. Fuselage is strip-planked over bulkheads. Shroud (foreground) is made from balsa.

glue in place. Cut out wing tips of 1/8 sheet balsa and install. Use 1/8 inch blocks to raise it in position on the spars. Trim the spars to the tip ribs and tip. Glue the 1/32 leading edge sheeting as shown. To make the tip curve and transition, wet with warm water before gluing. The strut filler blocks are not installed in the lower wing but the sheeting is. Remove wings and sand smooth. Cut out hand holds as shown and sand smooth. Cover the under side of upper

Not much bigger than some of today's home-built biplanes, this F9C-2 pulls in close for a great photo supplied by the Navy Department, National Archives. Anyone know the pilot? B/n had white stripes, fuselage band, pants, and cowl (note dent).Looks like Langley Field in the background.

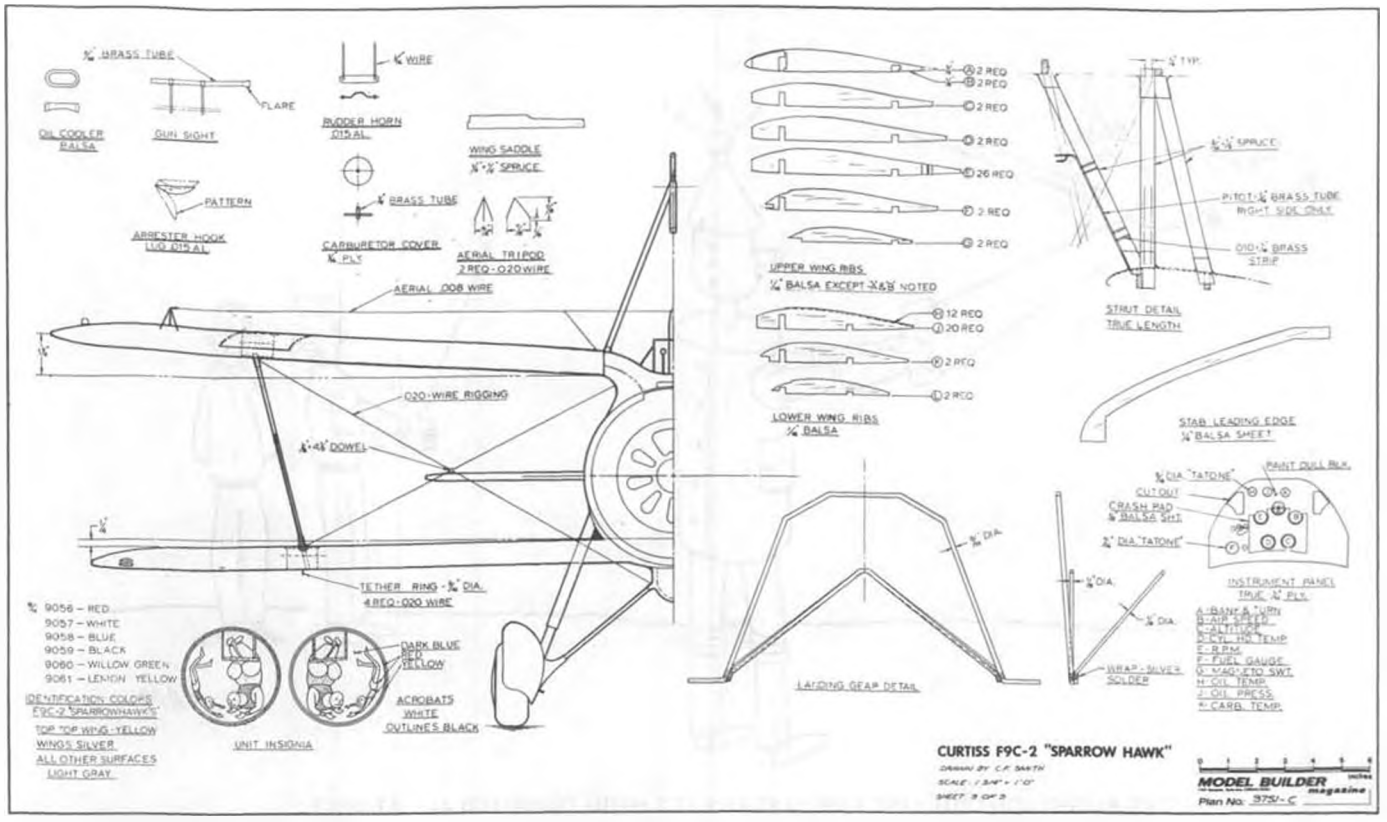


Charlie eases the 'Sparrow Hawk' off the ground. Ship is a fine, steady flier, and is easy to handle. The big Enya pulls it though windy conditions with no trouble.



Anachronism: An error in the order of time. The F9C-2 in full flight, passing over a very modern Col. Sanders bucket!

FULL SIZE PLANS AVAILABLE — SEE PAGE 80



wing panels and the top side of the lower wing panels with silk. Shrink the silk with warm water and coat with two light coats of clear dope. Glue the bottom wing halves together, installing the 1/4 inch negative dihedral. Make up the ailerons as shown. Note the 1/16 sq. balsa diagonal bracing, top side only. Cover with silk, sand smooth, and install ailerons with aluminum hinges, as shown.

FIN AND RUDDER

Build the fin outline using 1/4 x 1/2 and 1/4 sq. balsa as shown. The bracing is 1/8 x 1/4 strips. Cover with 1/16 sheet balsa. Sand to shape. The rudder is a sheet of 5/16 balsa cut and sanded to shape. Cut the tab from .015 aluminum and sand lightly. Slit rudder, glue and slide tab into place with epoxy. Wipe the joint clean with alcohol. As a matter of fact, this should be done with all outside joints as epoxy is hard to sand and will usually come up with a "blump."

STAB AND ELEVATOR

Cut out two leading edge shapes from 1/4 inch sheet balsa. This shape and 1/4 sq. balsa form the outline. Bracing is 1/8 x 1/4 balsa strips. Glue and cover with 1/16 sheet balsa. Sand to shape.

The elevators are cut from 1/4 inch balsa sheet. Sand to shape. Install 1/16 plywood plate with epoxy. Bend a piece of 3/32 piano wire as shown. Groove the elevators for the wire and install . . . glue with epoxy. Install 4 "Klett" hinges and assemble the elevator to the stab. Sand smooth and apply two coats of dope. Sand.

STRUTS

Cut and sand struts to shape. The view is true. Do not assemble. Slip the upper wing panels into position and support and pin temporarily. Fit the vertical struts into place. Check the upper wing dihedral, adjust as necessary. Glue all joints with epoxy. Install and glue the other struts in place. Glue filler blocks in lower wing. When dry, finish silking the top and bottom wing. Shrink and dope these surfaces.

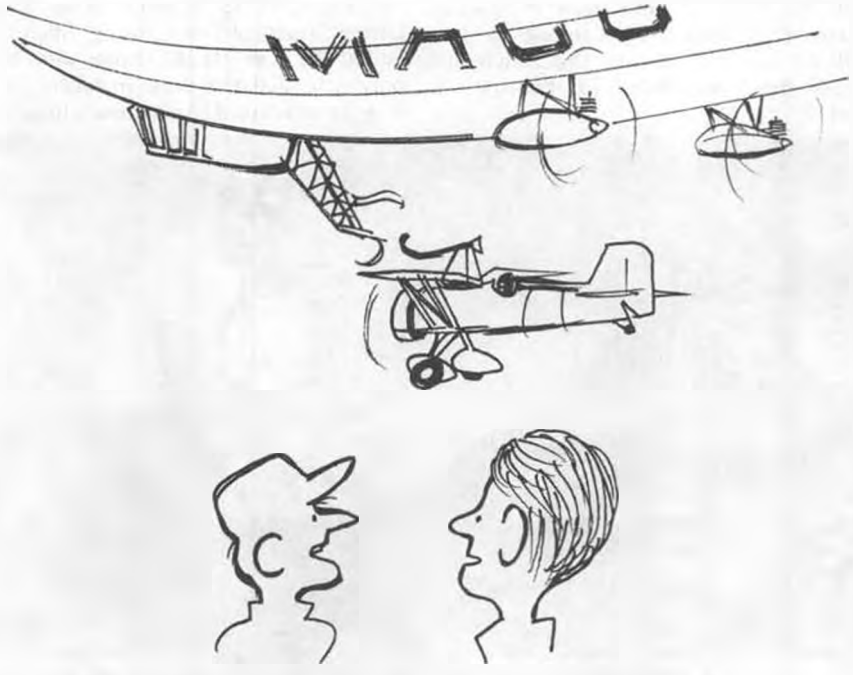
HOOK ASSEMBLY

Make up the hook assembly from 3/16 x 1/2 spruce, note the true lengths. Make 2 strut assemblies. Make the bridge hook and two plywood plates. Assemble the struts, bridge, and plates as shown with 2-56 bolts. Install the hook between the plates with 2-56 bolts. The plates and hook are moveable. Install four 1/8 inch dowels and glue in place. Drill four 1/8 inch holes as shown in the top view and fit the hook assembly in place. Disassemble, sand, dope, and prime with K&B primer. Make up the handle and tube assembly and install with straps as shown. The clevis is fastened to the hook with a straight pin. Cut flush and solder.

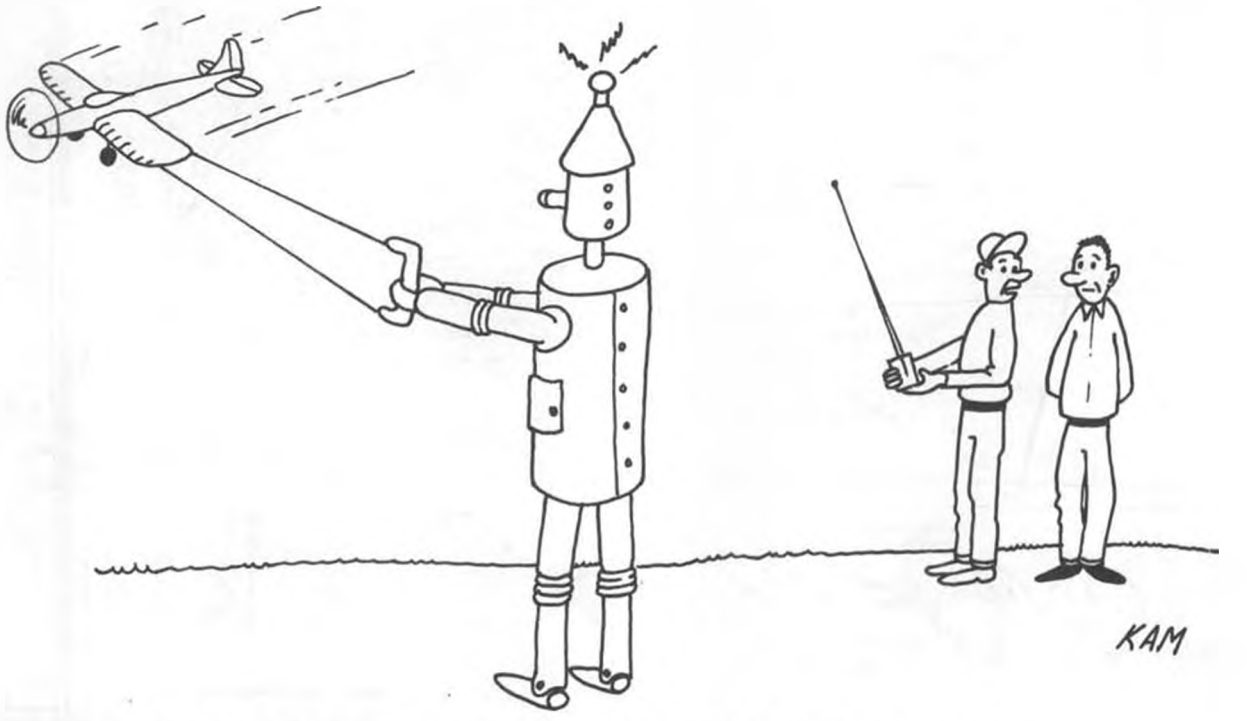
COWL AND CYLINDER

Now get that fry pan. Take off the handle and scribe (scratch) a circle to be

Continued on page 67



"IF HE HOOKS THAT THING ON, I QUIT SCALE FOREVER!"



"I'VE FLOWN CONTROL LINE FOR 10 YEARS. IT'S HARD TO SWITCH ALL AT ONCE."

'REMOTELY SPEAKING...'

R/C News, by BILL NORTHROP

• It is winter, and Trade Show time is upon us. The first "Biggee" of the year is the WRAMS show in White Plains, New York, February 28, and March 1 and 2, followed by the Toledo Conference, April 4, 5, and 6, and then the MACS show, Anaheim, California, May 2, 3, and 4. Of no less importance to the hosts, nor to the people in the area who will attend the RAMS show in Seattle, Washington, though a bit smaller in size, will be over by the time this article appears; being scheduled for February 8 and 9.

The granddaddy of R/C trade shows, is the Toledo Conference. This year's affair will represent the 20th consecutive annual show. Don Belote, of the hosting Toledo Weak Signals R/C Club has been a conference official for many of the recent shows. The following is his brief historical sketch of the conference as printed in "The Bee Line." newsletter for the CARDS (Capital Area Radio Drone Squadron) of Lansing, Michigan, edited by Les Hard. Those who have only attended the show in recent years may be interested to see how a huge oak tree from a small acorn may grow!

"The original Toledo R/C Conference was put together as just a little something to do at the end of a long winter of no flying.

"It was intended simply as a place to show off what you had built during the winter months, exchange ideas, and hear some talks by people who were supposed to know more than you did about the hobby.

At this time . . . 1955 . . . there were only a few R/C manufacturers anyhow, and what few there were did not start coming to the Conference 'till 1959.

"The first three Conferences were held in conjunction with the Detroit R/C Club; the first in the club rooms of the Detroit Golf Club. The second and third years, the Conference was held in a Detroit funeral home. The Conference grew right along with the rapidly increasing interest in R/C each year, and by 1958 . . . had outgrown the funeral home. The Conference was moved to Toledo, with the Detroit club dropping out. The Trailby Log Cabin was the site for the 1958 event and it now became the Toledo R/C Conference.

"Originally, the Conference was attended by members of Toledo and Detroit R/C clubs, but now modelers were beginning to come from farther away. Even so, it was still pretty small, maybe 125 people would show up. From 1958 to 1961, the Conference alternated be-

John Pahlow and his "Big John the First", from Nov. 1973 MB plans. Uses O.S. 80 engine, and Kraft radio. Weight is reasonable 9-1/2 pounds. Covered in blue and yellow Monokote.

tween the Trailby Log Cabin and the Miracle Mile Ballroom, each year getting a little bigger.

"By 1961 attendance had picked up considerably, and manufacturers were beginning to come. I believe there were about six manufacturers at the 1961 Conference.

In 1962 the affair was moved to the club rooms of the Sunnydale Golf Course.

(This was the first year that your MB editor attended, and we haven't missed one since. Accompanied by Graham Lomax, we drove the 500 miles from Delaware . . . the major portion of the trip in a blinding snow storm . . . taking 13 hours! The Pennsylvania and Ohio turnpikes were littered with stalled vehicles, and the rest stations were jammed with frozen travelers who had given up. Fortunately, we were driving my Citroen ID-19 and were able to jack up the hydraulic suspension to get additional ground clearance. That, combined with the front wheel drive, got us through. However, the heater quit working, and the wipers threw the right hand blade! Neither of us will forget that trip!

We'll also not forget the thrill of winning a trophy for the best Intermediate design. The model was the "Smooth Hare," a streamlined version of the all-sheet balsa "Square Hare." wcn).

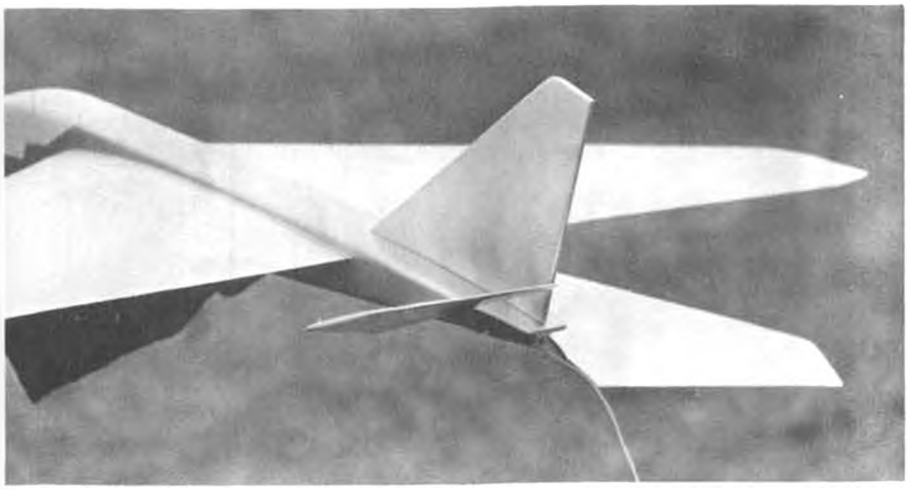
"By now, interest in radio control modeling was picking up generally, and some magazines attended in 1962, and perhaps 10 manufacturers. Attendance was up to about 650, and the golf course clubrooms were outgrown in just that year.

"In 1963 and 1964, the Conference was moved to the Champion Spark Plug Hangar at the Toledo Express Airport, with 25 manufacturers exhibiting, and attendance now up to the 1000 mark . . . we had to move again.

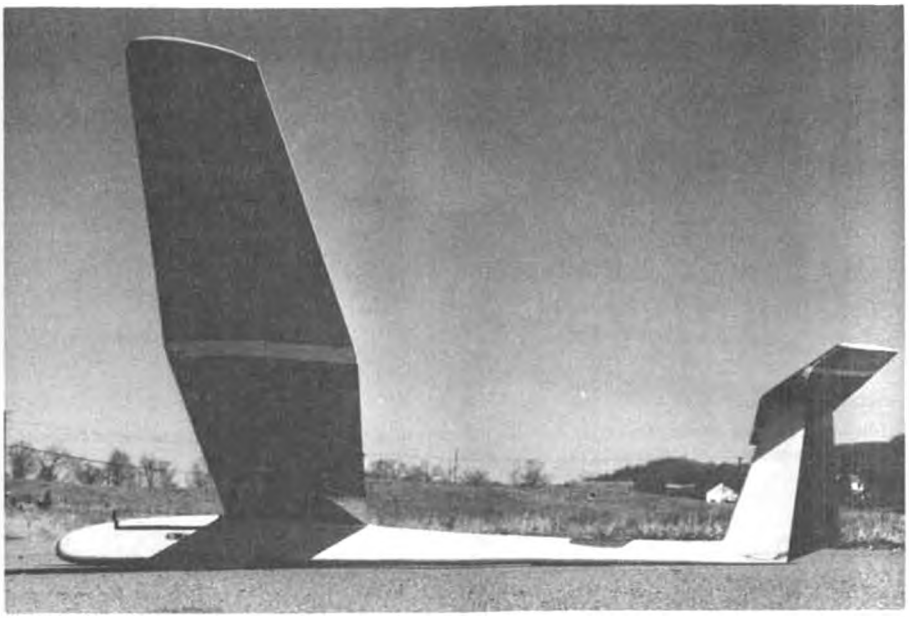
"In late 1964 the county completed a large recreation hall/ball park/sports-grounds; and this provided a large (200 ft. by 120 ft.) building for the Conference and plenty of parking, plus a place for flying demonstrations. So in 1965, the Toledo R/C Conference was moved to the Lucas County Recreation Center, where it has been ever since. The growth of the Conference is an indication of the hobby itself. Note in 1965 there were 1,400 modelers and 30 manufacturers attending."

In 1969, according to Don, there were between 5 and 6,000 modelers in attendance, with 79 exhibitors. Last year, the final for the Lucas County Recreational Center, about 140 exhibitors (180 booths were rented: some exhibitors using two or three combined) showed their wares to around 9,000 attendees, down somewhat from 1973 because of the gasoline shortage.

Though attendance may have been



Would you believe "ail-evator" control on this slope sailplane by Ken Stuhr, Seattle, Wash.? Movement is exaggerated in this photo by Dave Katigiri. All surfaces plug in. Very neat.



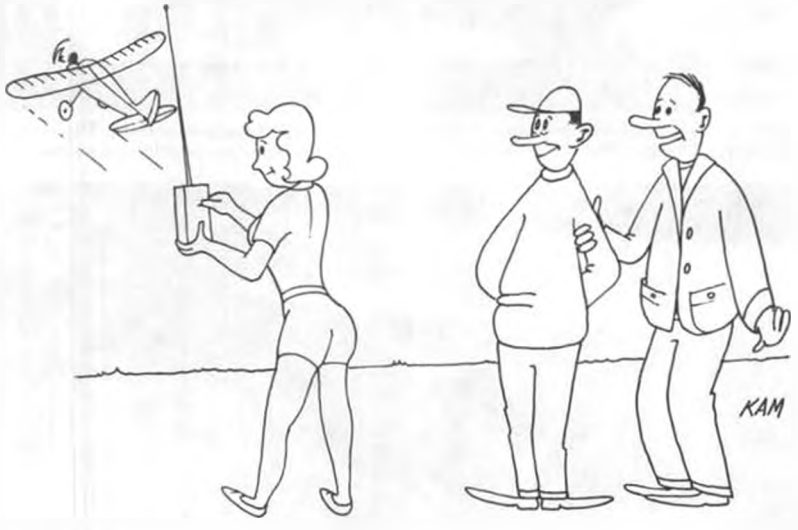
Roy Stephens, Tri-Cities Aeromodeler, finally took a picture of his own model! This one a modified Airtronics Olympic 99. Roy cleaned it up to try to improve penetration. It helped.

Another shot of John Pahlow's Big John, showing strip ailerons and canted cabane struts. Wings also have very slight sweepback. Nice covering job.

Line up of scale ships at first annual Scale Rally, Henley Aerodrome, Athol, Idaho (near Coeur d'Alene). Photo by Bob Petro.

Converted Sterling C/L Nieuport won first in WW I scale for Frank Hill. Kraft radio.

Another Stephens photo. This one is of Gary Paar's original Apex (Are you sure those cabanes are strong enough?). Cardboard-over-foam wings, 1/32 ply fuselage, OS .50. Materials cost $20.



NOW THAT'S WHAT I CALL PROPORTIONAL CONTROL!

down, the Recreation Center had reached its limit for exhibitor space, and another move was necessary. Consequently, this year's Conference will move to the Toledo Sports Arena which offers 2-1/2 times as much display area! There will be 85,000 square feet, with a Swap-Shop area of over 18,000 square feet!

Next time your club decides to have a get-together, be careful not to tell too many people about it!

DON'T PUSH YOUR LUCK

Anyone buying a new engine and immediately putting it to use without inspection or break-in, is going to be extremely lucky if they get *any* trouble-free operation from it, and if it performs well at all after a few hours of operation. Mentally divide your regular flying buddies into two groups; the ones who continually fiddle with their engines, and the ones whose engines seem to last forever, and are always clean, and perform flawlessly week after week. In most cases, the latter fliers have taken a little extra time to properly break in and care for their engines.

No matter how much you pay for today's engines . . . and it's usually a hell of a lot . . . and in fact, *because* you pay so much, it's idiotic not to take good care of that jewel from the moment you lift it out of the box. The following discussion on breaking in and setting up an engine is very well written, and worth refering to the next time you put out a bundle for a new mill. It was written by Basil Derrough, a well known Canadian pylon flier, and first published in the January '75 edition of "The Fliar," newsletter for the Forrest City Flyers of London, Ontario, Canada, edited by Larry Barrett.

"Much has been written on the breaking in of engines. Although some articles may vary on a given set of procedures, they will all have one thing in common, that some form of breaking in is necessary for all R/C engines. Since this author has only been associated with R/C for 6 years, in no way does he profess to be an expert. What we will try and do, is give you some idea of the procedures that have worked successfully for us. Some of what you read here, may vary from your previous practices, so I'll try and give you reasons for such.

"The first thing to do is read the manufacturers' instruction sheet. Also, try and read the test report for your particular engine. By having an idea of what the manufacturer says the engine is capable of, you can gauge your end result accordingly.

"Today's engines are probably held to closer tolerances than engines of a few years ago. However, being mass produced, they will vary in final fit.

With today's labor problems, it's a wonder they come out as good as they do. We in this hobby are very fortunate though, as most of the products are manufactured by dedicated hobbyists, and every effort is made to give you a good product.

"Before running a new engine, it may be wise to inspect for flashing, or burrs, or any foreign material that may be inside the crankcase. Any piece of flashing that can work loose, or any foreign material that goes inside the engine will have a damaging effect. A word of caution here though. Manufacturers will not warranty any damage that occurs from disassembly. If you don't feel competent to partially disassemble your engine, best get someone who is, or leave it alone!

"I've always taken the back plate off, at least, and checked the inside. In the case of a REAR intake racing engine, the head clearance and rotor clearance will be checked and corrected at this time.

"By turning the crankshaft slowly, you can get the feel of the bearings and the finess of movement. A little light machine oil applied to the bearings at this time will insure lubrication from the start. When satisfied that all is well, reassemble and make sure all screws are secure. Most of the screws today will either be a slotted or Allen head. Make sure you screw drivers and Allen keys that fit properly. Do not over-tighten screws and strip the threads from the case.

"Now you're ready to run it. Let us now consider what we are trying to do. In the end we want it to perform and live up to its expectations. Whether or not it reaches its full potential, may depend on what you do next. Whether or not it will perform for any length of time, depends on how you treat it during service. By following a few rules, you should have no problem.

Photo of Ole Dan Neilson's Gipsy Moth dates back a few years. Appears to have been built from Elmer Nowak's plans published by Flying Models before fire destroyed many great originals.

"For the first runs, you want lots of lubrication, not too much of a load, and avoid overheating. If you have an engine test stand, it will come in handy at this time. By using a test stand, you can set it up on something away from any dust or dirt that may be stirred up by the prop wash. If the engine is mounted in a plane for initial runs, at least get the model up on a picnic table, or something, so as to get away from the ground.

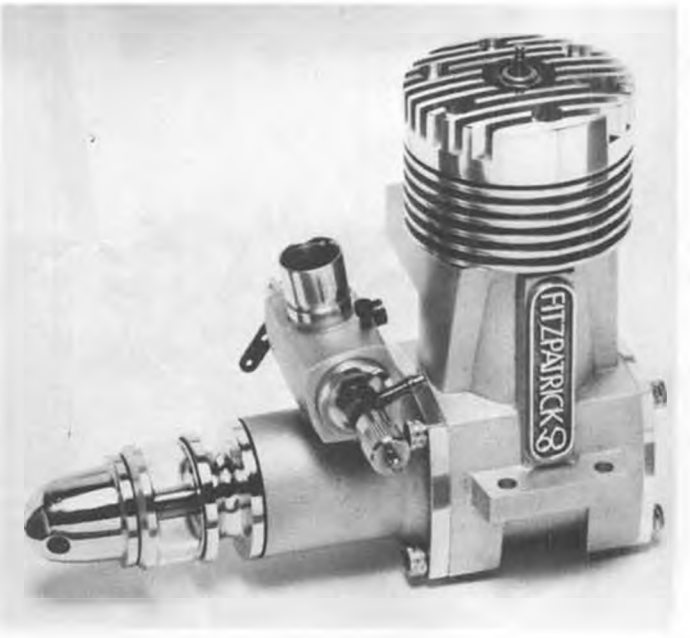
"The break-in fuel should contain at least 25% oil. With castor being hard to get, you may have to use a synthetic oil. If you can get some castor oil, fine. But remember, for the first few runs and first few flights, a 25% oil, 75% methanol fuel will give you good results.

"The prop you select will depend on the size engine, of course. Most instruction sheets will give a starting place as to prop size for break-in. Opinion will vary on this of course, but I've always used a prop for break-in with less pitch than what will be flown later on. I like a wood prop, balanced of course.

"With the engine mounted securely, tank filled up, and the prop tightened securely, you are ready to start. Most engines will require choking, or a prime in the exhaust and carb. Make sure the needle valve is open far enough to pro-

Continued on page 69

Charlie and Mike Fitzpatrick, who have issued notice that they will be manufacturing the engine shown at right.



The Fitzpatrick 60 R/C "Super Schnuerle" to be produced by the brothers in photo to left. See text for further information.

Larry Bingham's Kavan Jet Ranger looks right at home in this photo by Larry. He's from Salt Lake City, Utah.

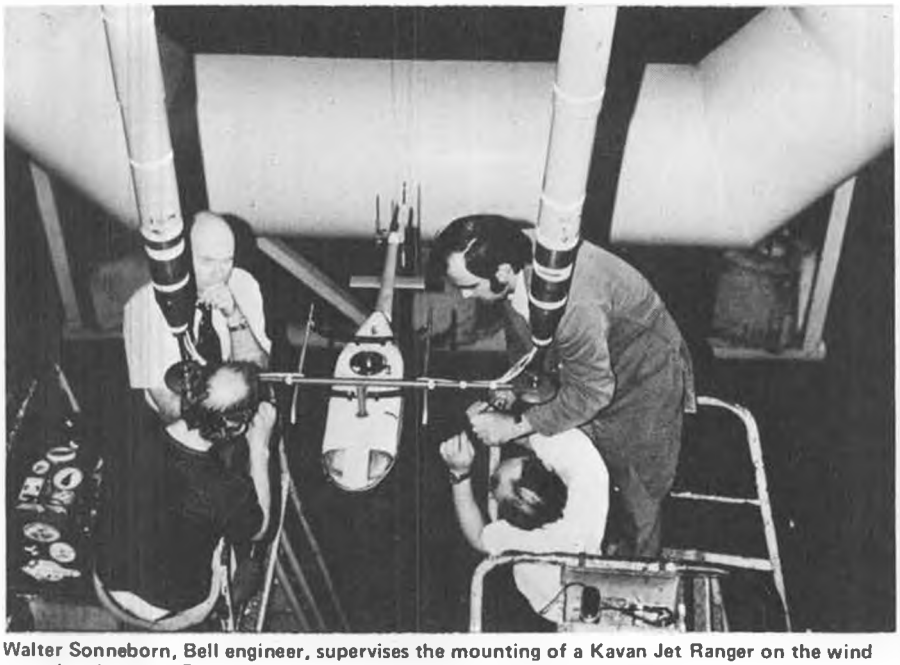
CHOPPER CHATTER

By JOHN TUCKER

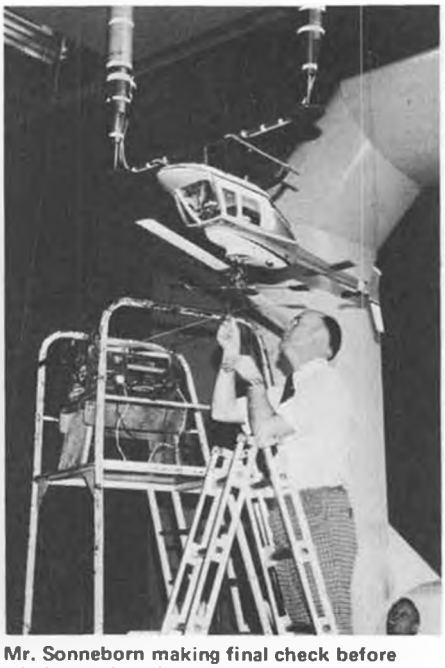
• The news release which follows is rather unusual in that, for the first time to my knowledge, an R/C model helicopter manufacturer, Mr. Franz Kavan, has leased a wind tunnel for the express purpose of improving his already well proven Jet Ranger scale model.

"Recently, the low speed wind tunnel at the German Research Institute, in Braunschweig, Germany, was the scene of some most unusual activities. The usual tests being conducted on full size aircraft were suspended for one full week. Mr. Franz Kavan, world renowned manufacturer of top quality model accessories and helicopter kits, leased the test facility for the entire week, at a cost of approximately $30,000. He planned to run a series of tests on a radio controlled scale model of the Bell Jet Ranger helicopter that he produces in his Nurnberg factory.

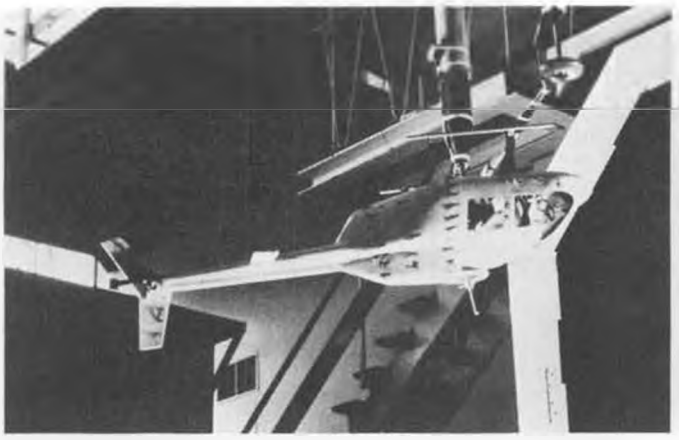
Mr. Walter Sonneborn, of the Bell Company, in Texas, was brought in to supervise the tests, Mr. Sonneborn was born and reared near Bremen, Germany, and was previously employed at the Research Institute. He was chosen to conduct the tests because of his intimate



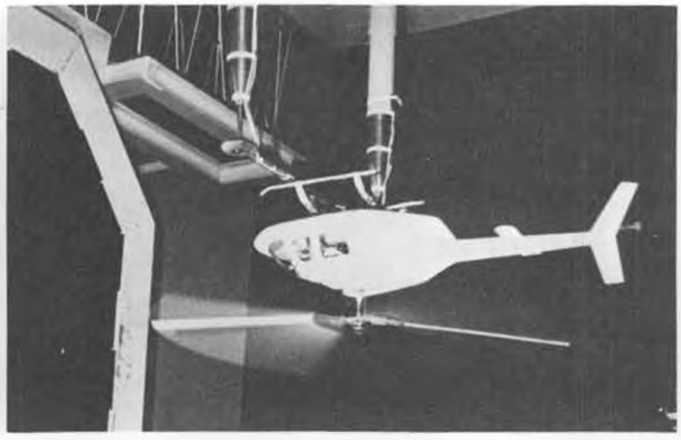
Walter Sonneborn, Bell engineer, supervises the mounting of a Kavan Jet Ranger on the wind tunnel scale at the German Research Institute, Braunschweig, Germany.



Mr. Sonneborn making final check before wind tunnel testing begins.



Unpainted fuselage, with rotors removed, and tufts of yarn added to show airflow pattern at 80 mph.



Test in progress, with engine running and radio controls operating.

knowledge of the test facility, plus being one of Bell's top engineers, and completely familiar with the full size Jet Ranger. The purpose of these tests were twofold, first to compare the relationship of the scale model and the full size helicopter. The second purpose of the test was to gather information that would enable Mr. Kavan to make improvements on current models, as well as future releases.

Mr. Kavan said that he would like to list some of the things that he learned from these tests, but the information is too valuable to give to his competitors free of charge."

"Radio control flying of model helicopters is increasing very rapidly, not only in the United States, but all over the world. This is evidenced by Mr. Sonneborn's statement that the Bell Company and Mr. Kavan have sold just about the same number of Jet Rangers."

Without doubt, the research data gathered from these test runs will prove of immense value to Mr. Kavan in his continuing program of updating his kits and other model products. Although he is very secretive about the actual findings, he has dropped a hint or two which leads me to believe that you should watch for surprising developments in the months to come!

Not connected with the wind tunnel experiments, the Kavan "Alouette" kit should be released in a few months, as soon as production can be set up. This little jewel has been mentioned in our earlier columns and should prove to be an inexpensive entry into R/C model helicopter flying . . . powered with a .19 engine, the performance is said to be sparkling.

Another newsworthy item is the forthcoming "rotor blade modification" for the Kavan Jet Ranger. These new blades are two inches shorter than the regular blades, are quite a bit thicker, and have a much larger chord. A few selected heli-pilots (yours truly included) have been given a set of blades to try out on their machines, and to a man, all agree that they will be an excellent optional piece of equipment for the Jet Ranger Flyer! My personal experiences with the new set of blades have convinced me that all performance parameters are improved and the maneuverability is absolutely fantastic.

As a part of the package, a new set of hardwood stabilizer paddles are included, which are also larger and thicker than the standard set.

Just so you "new" Kavan kit buyers don't get too "itchy," I wish to emphasize that the standard blades *are* the ones you should learn to fly with, then, after you are more proficient, you can purchase the modified set and perform like the experts!

Mr. Kavan says the modification is not yet available, but is making plans to get them on a production basis in the near future as an accessory item. They probably will be packaged in the same fashion as the standard set, that is, with machined hardwood leading edges, balsa trailing edges, and thinner hardwood mounting plates to adjust for the difference in blade thickness.

Just so you'll be up to date, some builders are coming up with modifications to the servo plates on the Jet Ranger. The aluminum bracket has been eliminated in some instances, and the bellcranks themselves are hinged to provide the same control reactions. Other modelers are eliminating the fifth servo and use the fourth servo for pitch control *and* motor control. Naturally, this requires a little rework on the linkage, however, it appears to be a reasonable idea, since throttle movement absorbs so very little power anyways.

Cliff Cottrell of Pacifica, California, sent a fine letter and enclosed a couple of pictures of his new Bell 47 helicopter. He designed this Bell around Stock Drive Products and used the Graupner collective pitch head, and says it flys great. It's powered with an Enya .45, weighs

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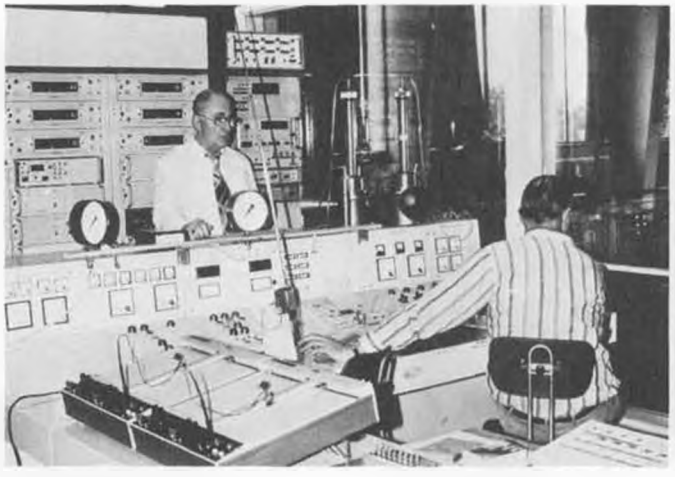
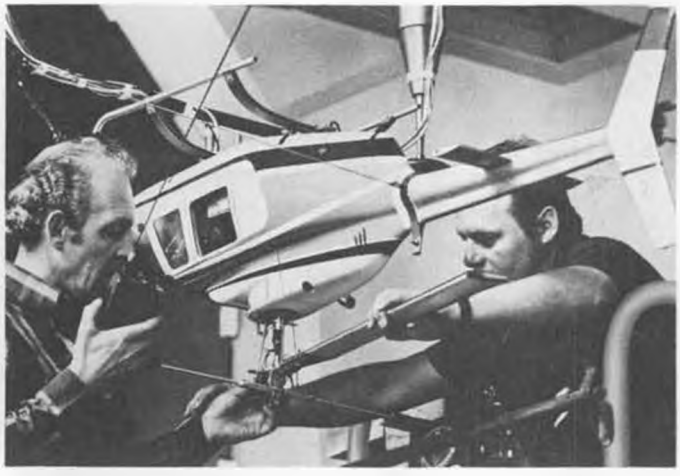
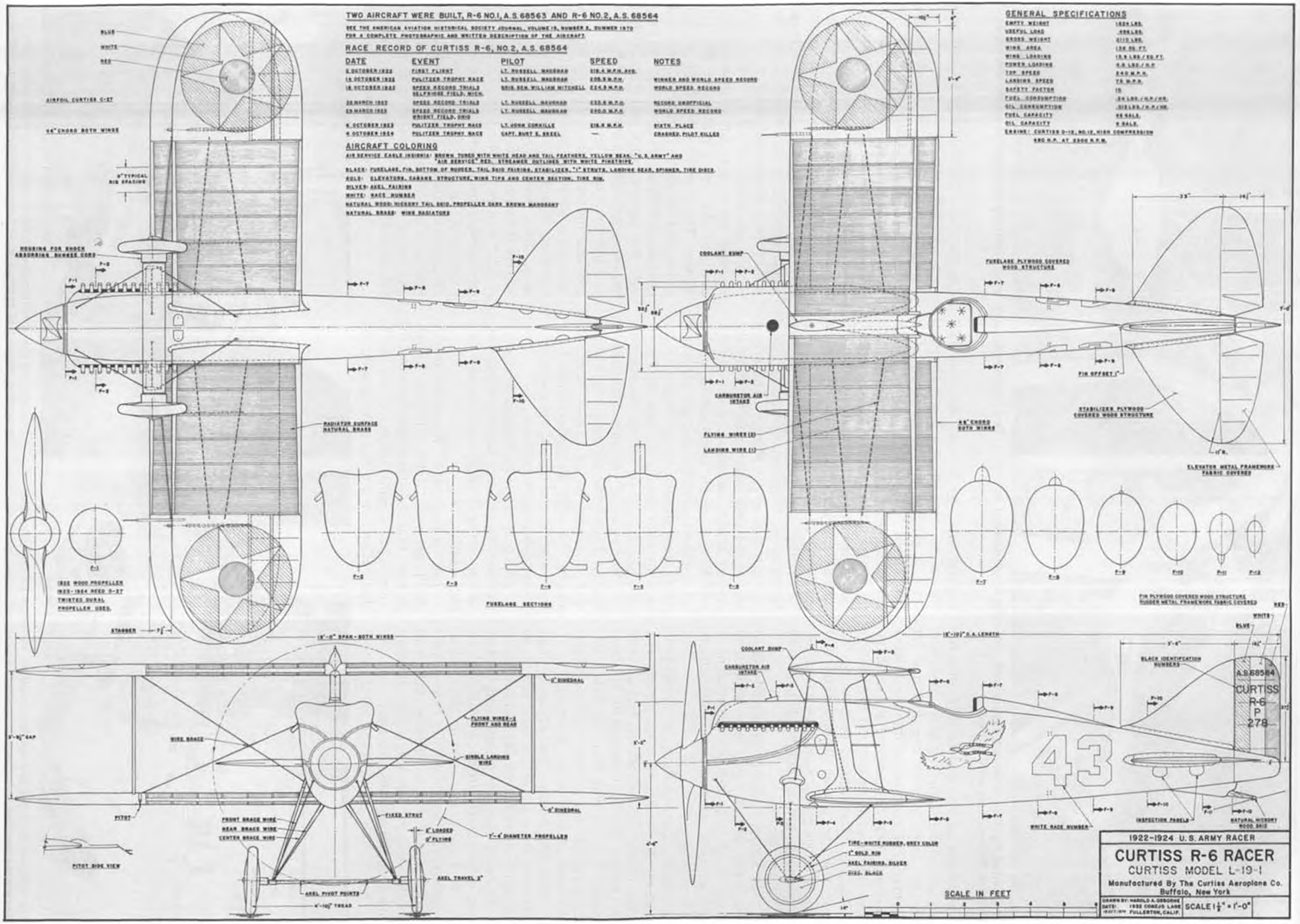


Franz Kavan watches as engineers conduct various tests on helicopter by remote control.



Technicians check helicopter while in radio communication with engineers in control room. Latest head modifications were studied.



FULL SIZE COPIES OF THIS PLAN ARE AVAILABLE AT 1-1/2" = 1'-0" SCALE, WING SPAN 28-1/2", WING AREA 300 SQ. IN.
PLAN SIZE 3-1/2 by 5 FEET. SEND $3.00 (1ST CLASS POSTAGE PAID) TO: HAROLD OSBORNE, PO BOX 2033, FULLERTON, CA 92633.

CURTISS R-6 RACER

By HAROLD OSBORNE

PHOTOS SUPPLIED BY BOB HIRSCH

• Each one of us has a favorite biplane, choice of which is not based on rational factors or clinical analysis. Rather, the favorite is chosen by intuition and augmented by subconcious associations that form the mind's definition of beauty and grace.

The polished black and gold R-6 racer of 1922 (the year of my birth) was conceived and fabricated by the world's most talented designers and craftsmen. It represented the epitome of racing design and construction. The R-6 took man of the post war period to the absolute frontier of speed.

In my opinion, nothing built since, with two wings, ever had half its class.

The R-6, with its 19 foot wing span, was smaller than many of today's so-called "midgets." The Curtiss D-12 engine of 460 horsepower, turning a 7 foot-4 inch diameter steel propeller, installed in an aircraft of this size, made a fantastic combination. An old timer who observed the flights has recalled that he was awed by the terrible mind-deadening shriek of the R-6's supersonic metal Reed propeller, howling above the shattering bark of 24 sawed-off exhaust stacks.

Many famous early pioneers flew this aircraft; Brig. General Billy Mitchell and Lt. Russell L. Maughan flew the R-6 to world speed records. Lts. Lester J. Maitland, John D. Corkille, and Walter Miller, flew the R-6 in the Pulitzer Trophy Races. Unfortunately, one pilot, Capt. Burt E. "Buck" Skeel, was killed in the diving start of the 1924 Pulitzer Trophy Race.

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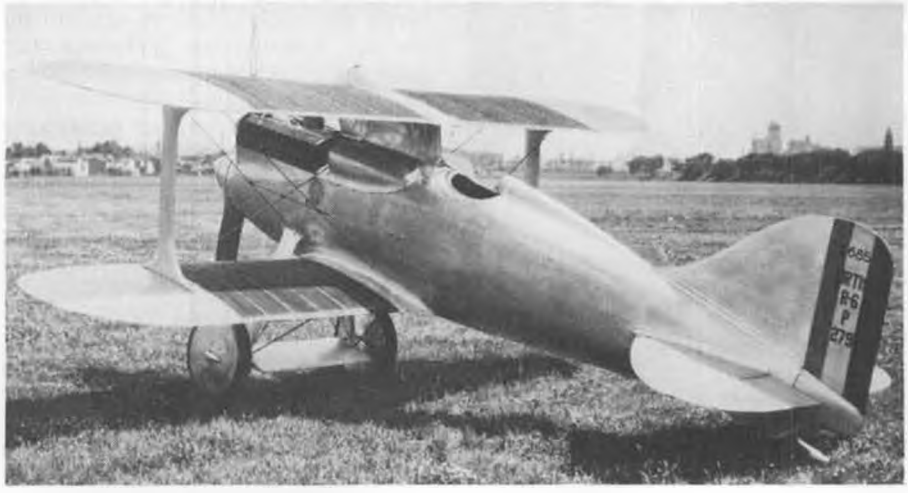


R/C SOARING

with LE GRAY

Guest Editor BOB GERBIN explains how to fulfill that urge to build a "really big one." If you need a good design, take a proven one and blow it up! No need to make elaborate plans . . . just follow Bob's system.

• This article is being written for those of you who are following the trend towards larger R/C sailplanes. As the average modeler progresses from sailplane to sailplane, he will eventually come upon the idea of building the super-ship. This is the Cirrus-beater that we have all dreamed of. It will have rudder, elevator, ailerons, spoilers, tow-hook release, disposable water ballast system, and a landing chute. The wing-span will be over 14 ft. and the weight will have to be over eight pounds.

If this logic is correct, then why is the sky over the local flying field still filled with 100 inch sailplanes (eg. Windrifters, Windfrees, Olympics, Hobie Hawks, etc.)? The painful truth is that there is a lot of distance to cover between the back of our minds and the day we actually test glide our first super-ship. Let's consider some of the problems.

Availability: The market penetration of large sailplane kits is very low. The Craft-Air Leo is one of a very few kits that is currently available in the super ship category. Most large sailplanes tend to be originals, scratchbuilt by a limited few who have the expertise and time to design, draw, and build their own creations.

Expense: Large scratch-built models tend to be costly. Big planes eat up balsa wood faster than most modelers are able to believe. Twenty dollars of material will build a nice set of 14 ft. wings, Monokote or paint not included. The rest of the plane, of course, is extra.

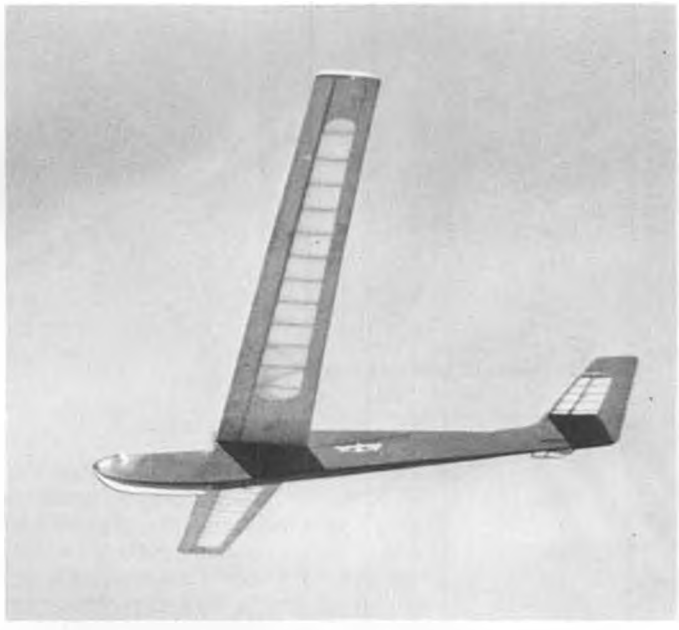
Flying and Maintenance: Remember the story of the man who built his boat in the garage? Little thought was given to incidentals such as the size of the garage door, or in your case, to the size of your current method of transportation to and from the flying site. Of course, if you own a station wagon, most of your transportation problems are already solved. The next problem is how to get "Big Bertha" into the air. If a large hill and a hardy wind are not available, you could have some problems. Thermal flying generally will require a power winch. I use a Hi-start with thick-wall rubber tubing to launch my six pound sailplanes, but this method is not recommended for new models that still have questionable towing characteristics, especially large, expensive and potentially dangerous models.

Now that we have some realistic views of the problems involved, let's consider some solutions. The 1-3/4 size Windfree that is illustrated in the pictures, is my approach to getting around most of the problems that we have discussed.

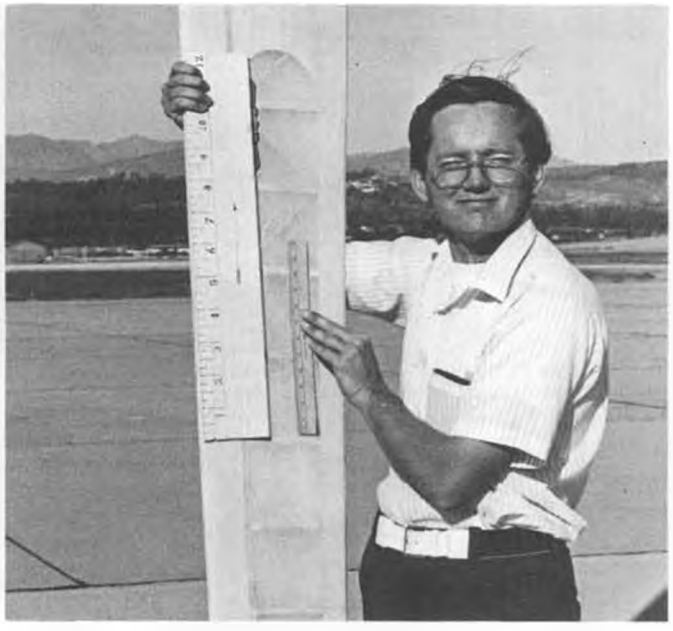
If you have a set of plans and a yardstick (cheat stick) as illustrated in the picture, you can easily build a 1-1/2, 1-3/4 or double size Windfree, Questor, Windrifter, or whatever model that you prefer.

Directions: All measurements are taken off the plans using a standard size ruler. These measurements are then enlarged by using the same dimensions on the cheat stick. Your enlarged drawing should consist of silhouette lines only. Do not try to enlarge the entire drawing. The specific locations of bulkheads and other parts should actually be marked directly on the interior sides of the balsa for the fuselage and wing, not the drawings. This saves time and puts the information where you need it.

Enlarging airfoils or elliptical surfaces can be a problem if you are the type of person who must plot out every rib on graph paper. I generally only duplicate the root, dihedral break, and tip tibs. The remainder of the ribs are either taper-sanded or duplicated as the model



In this photo there is nothing to give away the size of Gerbin's big bird. It looks like just another Windfree . . . sorry 'bout that, Mark.



It's as simple as this; big ruler for the big plane, small ruler for the small plane. Read in on the little one, read out on the large one.

requires. If you duplicate the chord, and put the thickest part of the airfoil at the same percentage of distance from the leading edge, your airfoil will, for all practical purposes, be close enough to the original. Use a drafting or ships curve or a springy piece of spruce as a guide when you draw the top of the airfoil, and the bottom, if your wing happens to be undercambered. Above all, don't get hung up on details. Some of the best airfoils flying today came from the bottom of tennis shoes and peanut butter jar lids. Besides, the only place your airfoil actually occurs in true shape is at a rib. Unless you're using a foam core and/or all sheet, the airfoil between ribs is real weird!

The actual assembly should not deviate from the original instructions. Do not alter the design unless you feel a genuine structural problem is developing. If you have difficulty locating tubing, spruce, or plywood in larger sizes, then get away from your usual source and find yourself a good hardware/lumber store. Locating and using larger sizes of the same material is much easier than redesigning the model!

As a guide, wing and stabilizer balsa should be sized up the same as your cheat stick. For instance, if you are doubling the size of a model and the plans call for 1/16 sheeting on the wings, use 1/8 balsa for sheeting, not 3/32. Size up, not down, if the exact size of the balsa is not available. These big birds will require all the strength built into the original design. Because fuselage weight generally is not a problem, substitute plywood, spruce, and fiberglass in the fuselage whenever possible. Also, the main spars of the wings should be enlarged by laminating standart sizes of spruce rather than sizing up what the plan indicates. This ensures that the wing will not fold during strong electric winch tows.

Covering: As your super-ship nears completion, the problem of how and with what to cover the model will soon arise! This is an expensive problem and there is no cheap way out short of Japanese tissue. Your best bet is to try to talk your dealer into a special price on Monokote, possibly in exchange

Continued on page 63

How to make a big model look bigger. Scaling up young Bobby Gerbin is going to take a little longer and will be more costly.

Lee Buffum, fellow member of the Camarillo Flying Circus, launches Bob's 1-3/4 size Windfree . . . Seven pounds of glider on a Hi-start!

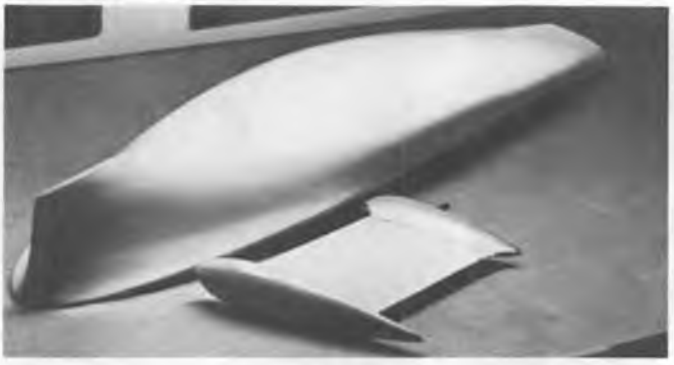


Photo 0: The "Yankee" 50/800 hull and keel shells. Keel rod had already been installed before picture was taken.

Photo 2: Piecing of bow area sheer timbers.

STRICTLY SAIL

By ROD CARR

OUTFITTING A 50/800 YANKEE: PART 1

● There are as many variations to building a model sailing yacht as there are skippers to do the building. What is to follow in these pages is one fellow's approach to the task, and should not be considered the only, or even the best way, in many specific details. I spent my childhood with a father who was a shop teacher. His motto was, "Build it with the fervent hope that you won't have to be the one who disassembles it." He specifically referred to strength and durability. I've adopted his rule, and have yet to incurr a failure on my boats that can be traced to something I built. They may be ugly, but they're strong!

The hull, as delivered had very little flash, and needed only minimal sanding to even up rough spots. (Photo 0). Since the hull is quite flat in cross section, it is prone to warping after leaving the mold. To insure a fair curve along the sheer (corner where the deck meets the hull) I made two little upside-down "U" shaped stands, and used them to hold the sheers at the same heights from the table while the sheer clamps were curing. See Photo 1. Lead weights were put on top of the stands.

The sheer clamps were made of 3/8 x 3/16 x 5-inch pine stock. They are bedded in thickened polyester resin and clamped with clothes pins to the interesting curve of the sheer. You can see in Photo 1 that they do not easily follow the small radius curve near the bow. To avoid such time consuming projects as steam bending, it was decided to piece the bow area, and a horseshoe shaped nose block was the final addition, as well as a stern cross piece.

Photo 2 gives a good indication that final sheer shape will be achieved by sanding away all offending clamps and resin. One word of warning . . . after each piece is bedded, use a paper towel to remove as much dripping resin as possible. This will keep weight to a minimum, and make the sanding and fairing of the sheer much easier. Now, the hull is quite rigid and we may begin installation of internals.

Some sort of decision must be made on the keel/hull joining procedure. I have chosen to make provision for a substitution of keels, and use a method much like that which is used in the Vortex Santa Barbara. Should you decide to use a single, permanently attached keel (and if this is your first boat, I strongly urge you to do so). First procure 6 or 7 pounds of No. 4 lead shot. Block the keel shell upright, and stand a 5/16 diameter steel rod in the bottom of the shell. I drilled a hole through the bottom of the steel rod, and put a twist of coat hanger wire through it to act as an anchor. Using tape, hold the rod vertically in position where it comes out of the shell, and pour the bulb full of shot. Tap carefully to settle shot, then pour 5 ounces or so of polyester resin into the shell. Remember to tap the shell to settle the lead and resin. Keep a scale handy and aim for a keel shell/lead/resin combination which is no more than 7.5 pounds. If it is as light as 6.5 pounds I don't think you need worry. My feeling is that she is a bit stiff for best all round performance, and the 6.5 end of the range might prove slightly better overall. Cut a tear-dropped shaped piece of 1/2 inch plywood, (Fig. 1), drill a 5/16 hole in the proper place (careful not to split the plywood), and push into the top of the keel shell, down over the rod, liberally bedding it in resin. This will seal the keel shell, and should be completely watertight.

Measure carefully the distance from the keel fin leading edge to the 5/16 rod. Based on the weight distribution in the keel bulb, I chose 2 inches. Now, looking at Figure 2, you will need to drill a hole 24.5 inches aft of the bow, plus whatever distance from fin leading edge to

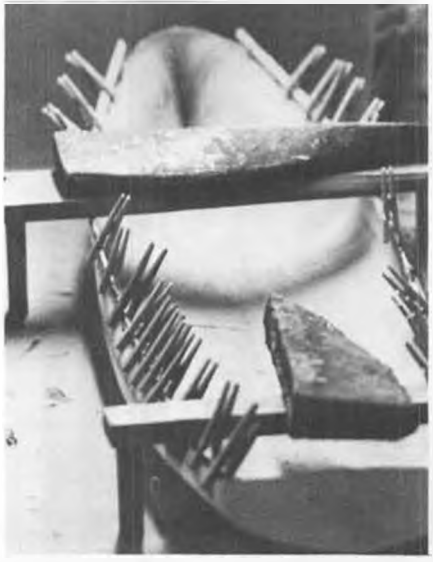


Photo 1: Sheer "horses" hold hull to eliminate twist while sheer clamps cure.

Photo 3: The two sail control unit mounts in place. Patterns were in January issue.

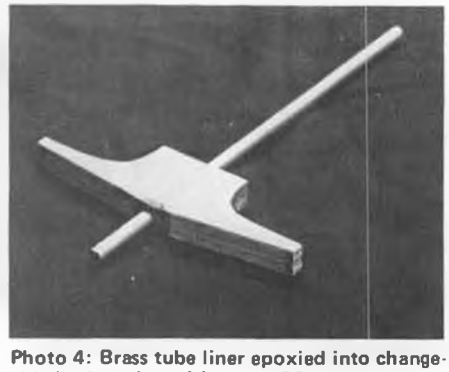


Photo 4: Brass tube liner epoxied into changeable-keel version of forward SCU mount.

Photo 5: Rudder tube installation.

Photo 6: "Little Hercules" sail control unit installed on its mounts.

5/16 rod. In my case it was 24.5 + 2 = 26.5 inches. I drilled the 1/4 inch hole and then carefully enlarged it with a file to get a loose fit. This will allow room for later alignment.

As soon as the keel is fitted to the hull, you will have a storage problem. So right now is a good time to stop and make a cradle for the boat. What you are really doing is making a holder for the lead filled bulb, and then contriving to stabilize the boat, which just happens to be attached. The depth of the keel will produce a rather tall boat on a stand, so remember to provide additional lateral support as shown in the drawing. This can be held on with wing nuts and by removing, will allow the boat to be stored more easily between sailings. See Figure 3. Put strips of outdoor carpet on the vertical standards to protect the hull from scratches. Make the vertical standards of such a height that absolutely no keel weight is borne by the hull. In fact, a little bit of floppiness is just fine.

Full size templates for a set of sail control unit mounts, with which we will fix the Little Hercules winch to the hull, were published last month. The front mount also does double duty by acting as the upper termination of the keel rod. Should your winch be different, modify the mounts accordingly. However, height of the front mount should not be decreased, in order that the proper amount of lateral bearing surface remain to keep the keel from "working" when the boat is heeled.

I used the old "draw-the-bullseye-around-the-arrow" trick to insure that the hole through the front SCU mount was perpendicular to the top and bisected the angle of the bottom. I cut out a 2-1/4 x 8 inch piece of 1/2 inch plywood, drilled the hole and then drew the template outline. Works every time, and you don't need a drill press!!! Photo 3 shows the two SCU mounts placed in the boat. In my case, since various keels will be mated to the hull, I epoxied a 5/16 inch ID brass tube inside the forward SCU mount. This is cut off flush with the top of the mount, and extends down through the hull to the bottom of a 2 inch long section of keel root. The purpose is to provide as watertight a fit as possible for the keel rod, as well as having the exit into the hull above the waterline. The brass tube prevents wear from enlarging the hole in the forward SCU mount. The forward SCU mount, before trimming, is shown in Photo 4.

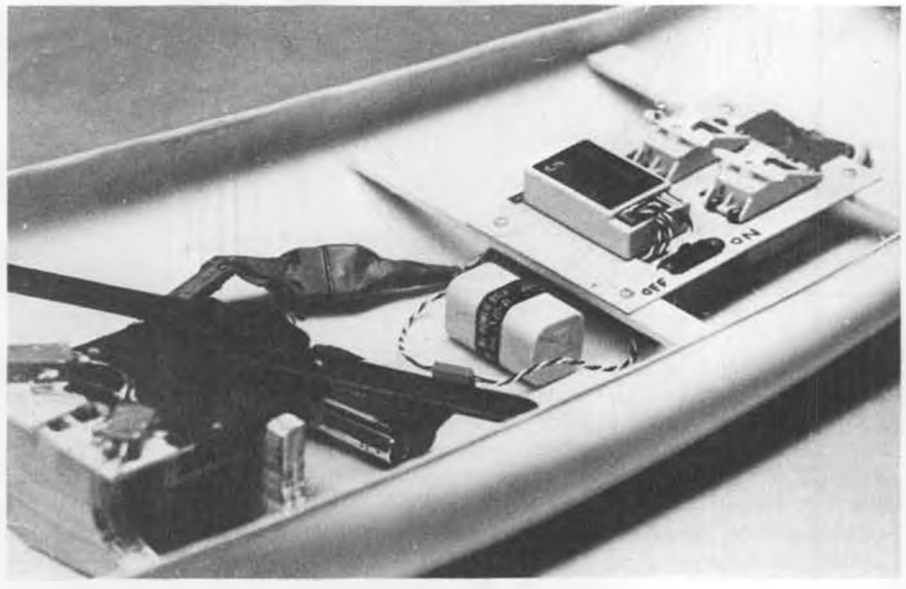


Photo 7: Futaba radio gear installation aft of winch in the Yankee.

The installation of the rudder tube is simplicity in itself. I recommend a 3/16 inch rudder stock, so use tubing with a 3/16 inch I.D. Drill the proper size hole 5-1/4 inches from the stern on the centerline. Drill the same size hole in a 3/4 x 1/4 x 10 inch pine brace. Trim the brace until the tube pushed through the two holes turns out perpendicular to the deck line. I leave the entire tube while doing the alignment as shown in photo 5. Thickened resin is put around the tube where it leaves the hull, where it passes through the brace,

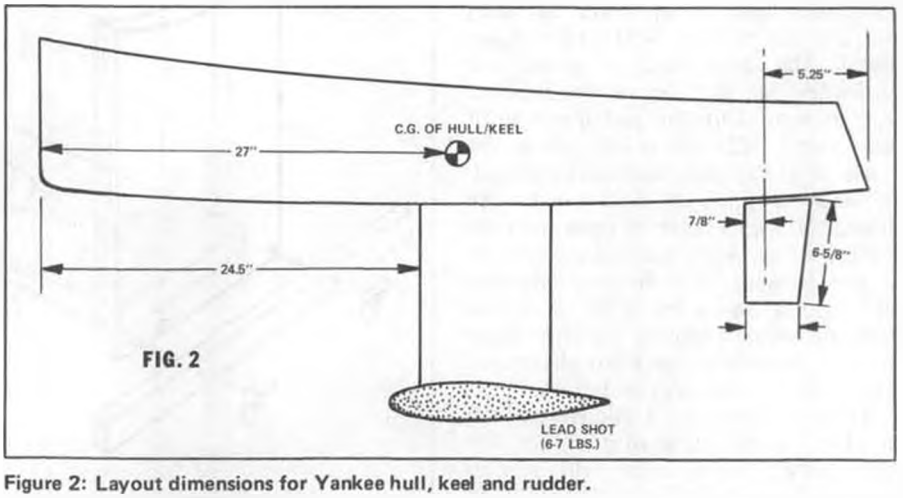
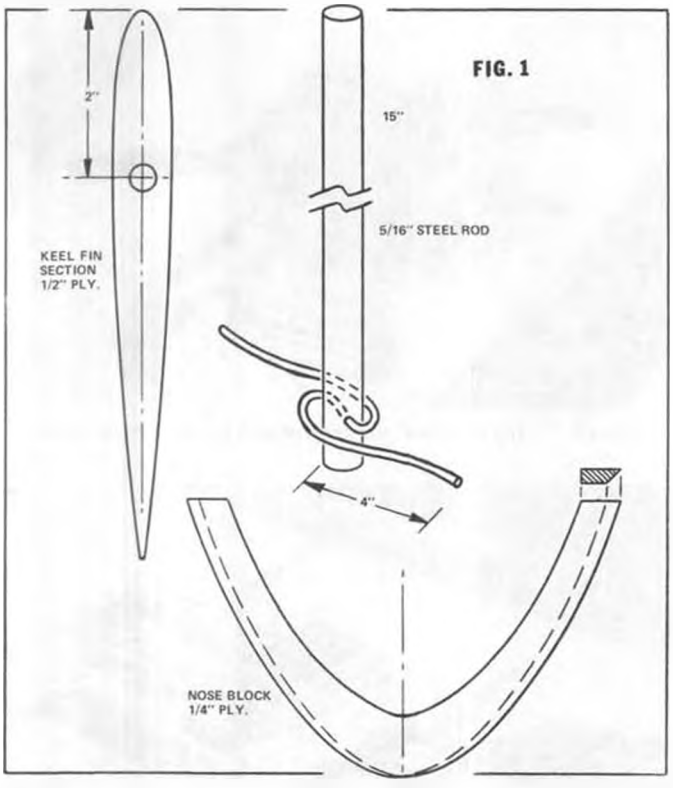
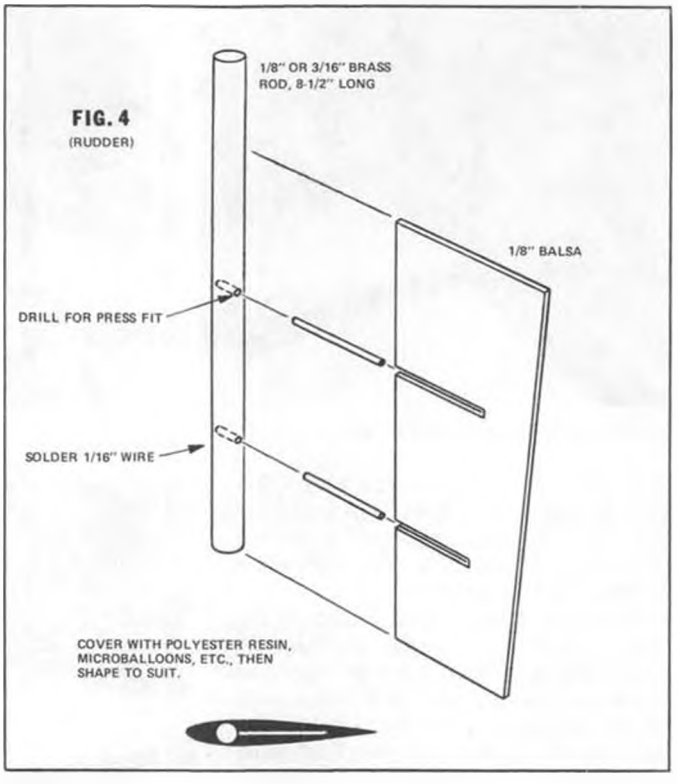


FIG. 2

Figure 2: Layout dimensions for Yankee hull, keel and rudder.





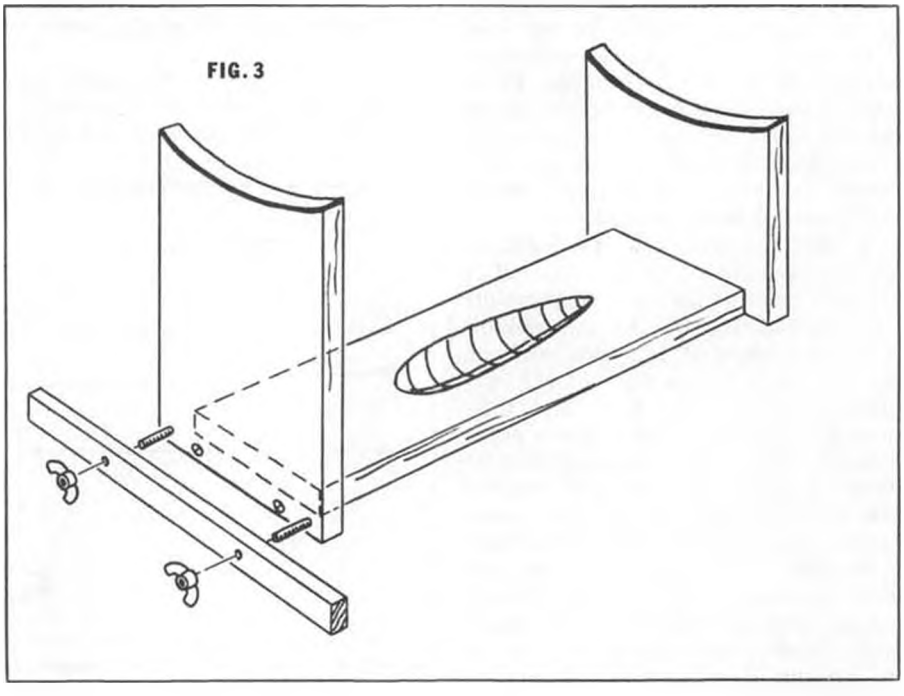
and on each end of the brace itself. Remember to roughen the outside of the tube with a file to provide some "bite" for the resin to grab. (You will also note the rear sheer brace clothespinned in place here.)

Using a 3/16 inch brass rod, fashion a rudder as shown in Figure 4. A good rudder is directly proportional to the amount of time you spend shaping and smoothing it. It's not a bad idea to make a spare one too. Model Masters may be providing a rudder with the hull/keel combination, so inquire specifically about that when you contact them.

Prepare the hull for keel attachment by sanding with coarse sand paper, the area that the keel fin root will touch. Do any necessary shaping of the top of the fin root so that it blends nicely with the hull. Final fairing will not cover up gross errors if allowed here. Insert the keel rod up inside the hull, and slip the forward SCU mount down over it. Mark how much of the keel rod protrudes out the top of the forward SCU mount. Cut the rod down until only about 1/2 inch is left, above the mark. That half inch needs to be threaded with a 5/16-18 National Coarse thread. Mix up a batch of resin and coat the top of the keel root and the bottom of the forward SCU mount. Assemble and tighten down the 5/16-18 nut to hold the whole assembly together. Place on the cradle and check for alignment. Wipe excess resin away as before.

Photo 6 shows the Little Herc winch in place. The wiring diagram for the winch/servo combination will accompany next month's article. We have gone to this arrangement in order that the radio control gear can be modularized and will switch easily from boat to boat. The winch and its batteries stays with each boat. Photo 7 looks aft toward the R/C installation. Braces such as the ones holding the rudder tube are used, and 4 sheet metal screws mount the radio board to the braces. The batteries for both the winch and R/C gear will wind up being wrapped in Velcro, with a Velcro strip placed down the center of the bottom of the boat. This will allow shifting them as trim ballast.

Next month we'll put the deck on, after providing shroud mounting blocks, a mast compression strut, and jib rack mount. The YANKEE is available from MODEL MASTERS manufacturing division of LEISURE PRODUCTS, 6920 Braddock Road, Annandale, Virginia 22003. The hull/keel set costs $50, and is shipped FOB Springfield, Va. by UPS. Write to them for further information. And write to me, Rod Carr, 7607 Gresham St., Springfield, Va. 22151, with your questions and suggestions. I'd like to hear of some methods you use for making hatches that are watertight. I'm running out of masking tape!! ●



R/C Call-Air SNOWCAR

By FRED SANFORD

Tired of building wings? Do your boats keep sinking? Stripped all the gears in your R/C auto? Need a good excuse to get out of the house in the dead of winter? Here's the answer to all of the above.

• The Call-Air Snowcar is a "stand-off" scale model of a propeller-driven snow sleigh built during the fifties and sixties by the Call-Air Company of Afton, Wyoming. The original idea and outlines for this project came from an old issue of American Modeler. This Call-Air model has operated for three summers and winters on both bare ground and snow, and has provided me with many hours of trouble-free enjoyment. You will find that this project is low in cost, due to the fact that it is constructed primarily of pine with very little balsa used.

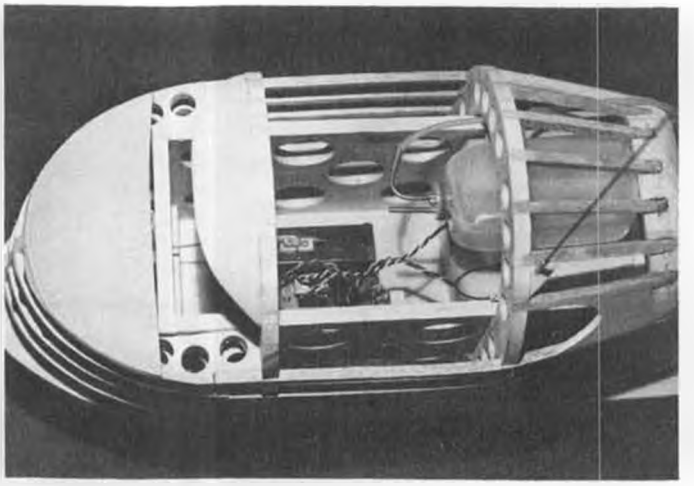
Although my Call-Air weighs in excess of six pounds, the performance is not impaired. By using a .35 to .40 engine for power, you will find the performance is superb.

Before beginning construction, purchase from your local lumber yard a 3/4 by 8 inch pine board, 12 feet long. Select a board that has straight grain and is free of warps. The board then has to

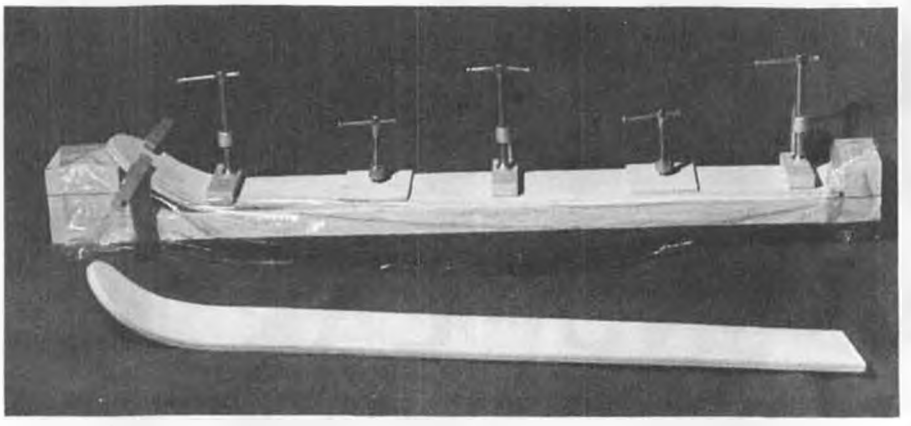
If there's no snow or ice in your area, or you'd like to operate on dry land anyhow, here's the answer. Hmmm . . . How about three floats . . . ?

No, it's NOT Red Foxx. This is the REAL Fred Sanford, dressed for winter operation.

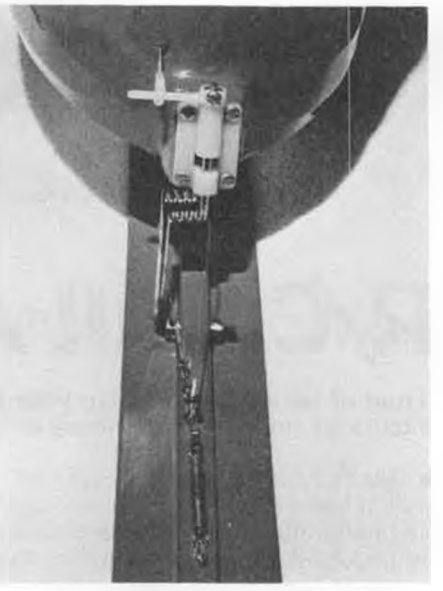
Uncovered framework reveals rugged construction that is a little unfamiliar to airplane modelers. Nevertheless, note lightening holes.



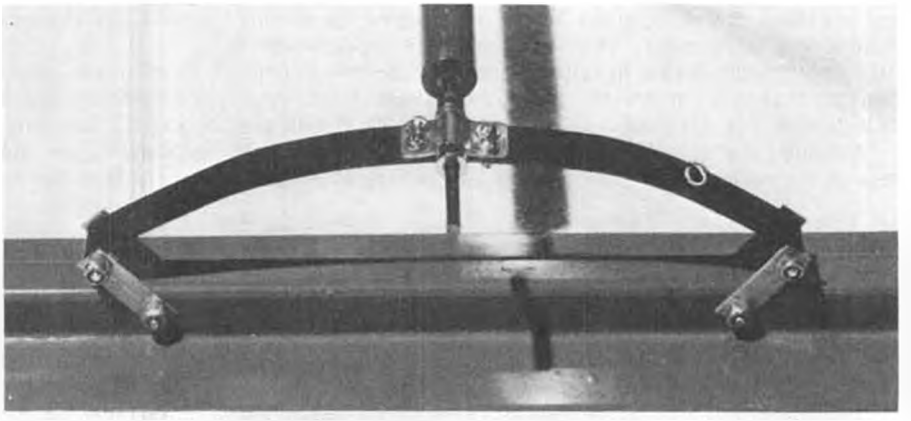
With servos sitting just below fuel tank, it's important to be neat while fueling up. Note whip antenna.



Bending jig for skiis is considerably simpler than the one used by Pete Waters ("Do It On The Snow," Dec. '74 MB), but just as effective. First clamp on left is most critical.



Sprung shock cord prevents front ski from digging in. Goldberg nosegear unit.



Close-up shot of leaf spring and shackles. Spring comes from steel package banding. Can be found at lumber yards. Shackles are 1/16 aluminum.

be reduced in thickness for our purposes. This may be accomplished by using either a power wood planer or sawing the board vertically on a bandsaw. Most lumber yards are equipped to do this for you at a nominal charge. You will need two feet of 1/2 inch thickness (sometimes available locally) and ten feet of 3/8 inch thick material. After transfering the outlines to the pine, and cutting out the various parts (A Dremel Motosaw works well here) we are ready to begin . . .

CABIN

The cabin is basically a box built on a platform with formers and stringers added to lend the desired shape. By following these steps the cabin will take shape quickly.

1. Glue and nail (use 5/8 inch - 18ga. brads) the 3/8 x 1/2 cross pieces to the sides, and while the glue is still wet, nail this box to the platform. Square up the structure.

2. Install the 1 inch balsa nose blocks and 3/8 inch pine vertical nose piece.

3. Add the two main cabin formers, checking to make sure they are square to the platform.

4. Glue all nose stringers to the nose piece and front former, making sure they are horizontal to the platform.

5. Make up the rear motor mount bulkhead from 3/8 pine and 1-1/8 x 1-1/2 balsa blocks. If you have access to a table saw, use it to cut the bottom bevel. Attach this assembly with epoxy glue.

6. Use a 1/4 square soft balsa stringer, placed in the former notches to mark the notch positions on the rear block, route these notches with a Dremel Mototool and a 1/4 inch routing bit.

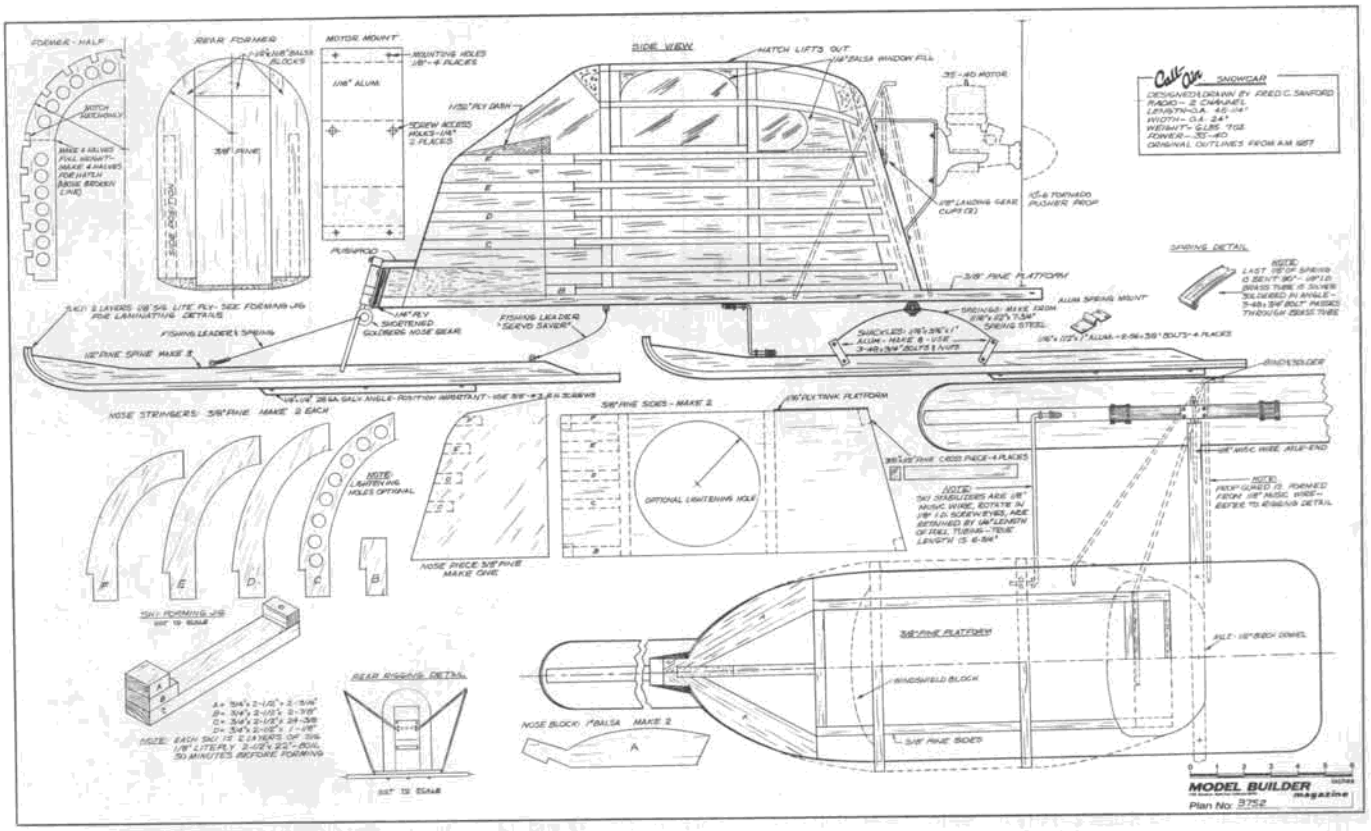
7. Use 1/4 square hard balsa or spruce for the stringers. It will be necessary to boil the aft portions of the stringers for about 30 minutes in order for them to bend properly. Glue each stringer to the rear block first, and work forward.

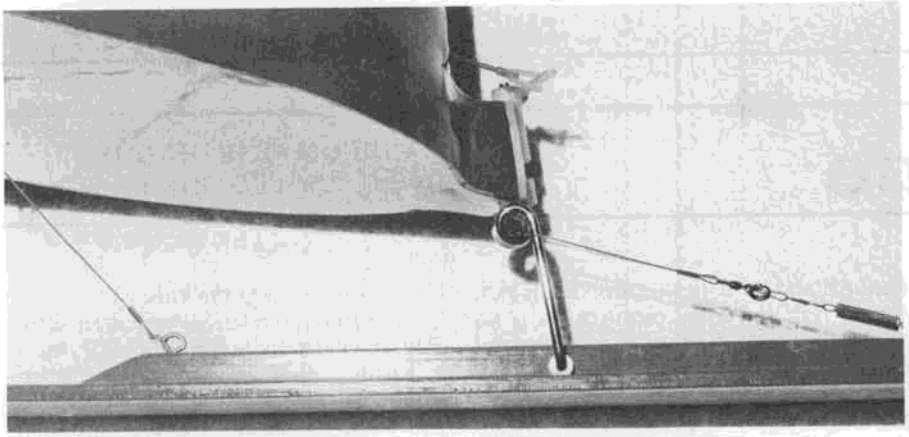
8. Next, cut out the top stringers between the main formers and use them, with the hatch formers, to construct the hatch.

9. Add the 1/4 inch balsa filler pieces to form the rear window openings and the inside radius pieces for the side hatch windows.

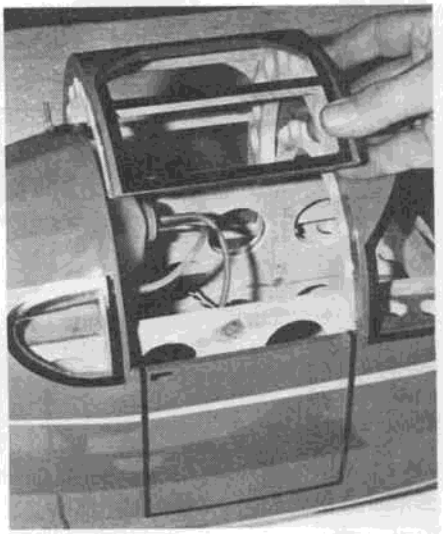
10. Install 1/32 ply dash, 1/16 ply fuel tank tray, upper windshield block,

FULL SIZE PLANS AVAILABLE — SEE PAGE 80





Rear cord to nose gear prevents over-travel, thus protecting steering servo from damage.



Clear acetate windows are mounted with Sig striping tape, body covered with Monokote.

and 1/4 inch ply nose gear mounting pad.

11. Sand the basic structure, fairing the stringers to the vertical nose piece and rear bulkhead.

12. Mount the 1/2 inch diameter birch axle with three wood screws after drilling the ends of the dowel for the 1/8 inch music wire axles.

Note: If you intend to use the model for wheels only, you may wish to substitute a sheet aluminum landing gear blank for the wood axle.

13. Form the engine mount from 1/16 sheet aluminum. Install mount with wood screws or blind-nuts and bolts, and add motor, using your favorite mounting method.

14. Add the Carl Goldberg steerable nose gear and shorten according to the plans.

15. Install a 6 oz. plastic tank on the plywood tank tray . . . vent the overflow through the bottom of the cabin. Eighth inch brass tubing is used to pass the fuel through the firewall and cabin floor.

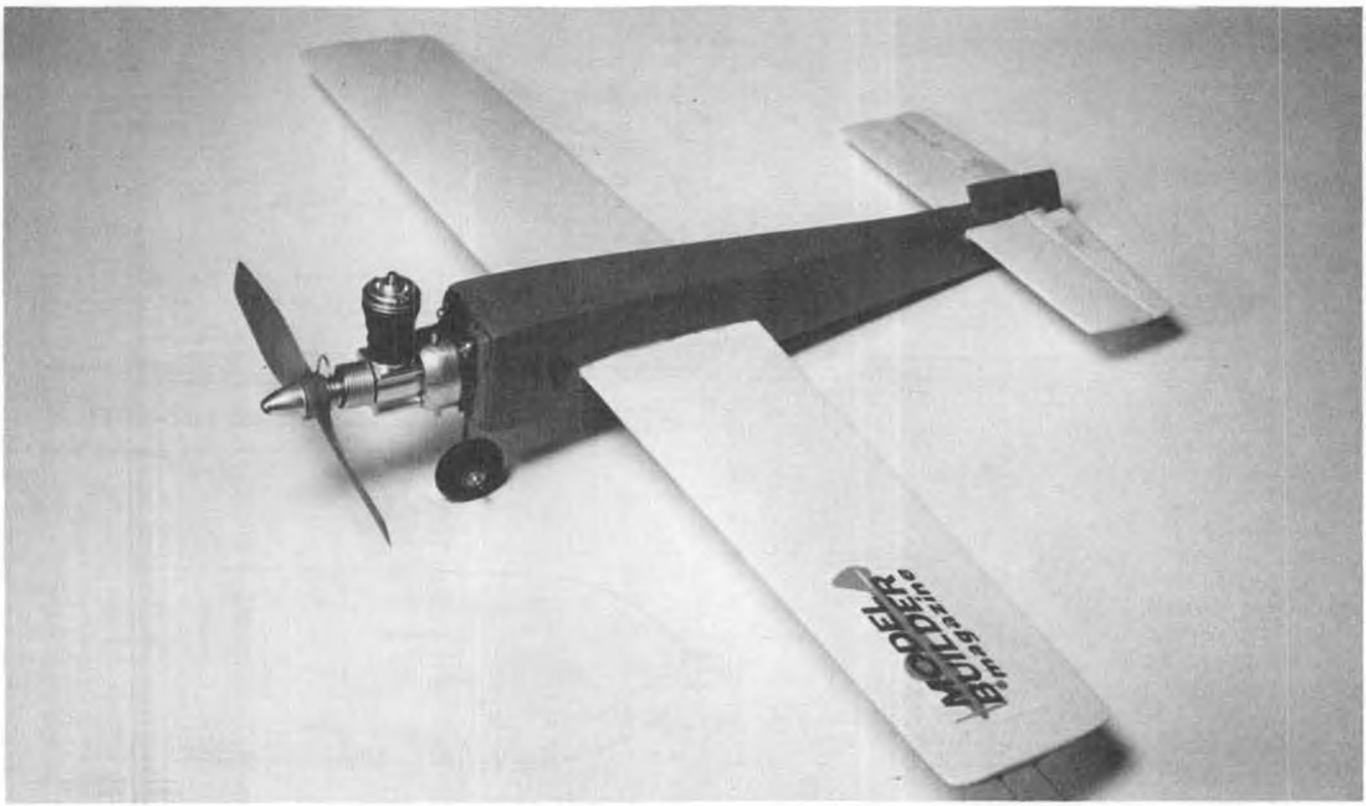
SKIIS

The skiis are made from 1/8 inch Sig Liteply. Make the form from scrap, using the detail on the plans as a guide. Each ski is made from two laminations, the basic blank being 2-1/2 by 22. The blanks are boiled for about 30 minutes and glued together with white glue. Check for separation of the ply laminations after boiling, and glue if necessary. Clamp the assembly together, using the photo as a guide for clamp positioning (If all of this seems like a lot of work, why not try aluminum?).

Use the profile of the ski to form the bottom contour of the ski spines, which are cut from 1/2 inch pine. This is a good time to drill the necessary mounting holes in the spines. Next glue the spines to the skiis. Finish the tops of the skiis with dope and use several coats of polyurethane high gloss varnish for the bottoms. This will give you a glass-like finish which boosts performance. Add the 1/4 inch angle keels made from 28 ga. galvanized sheet metal. The keels are attached with No. 3-3/8 inch round-head screws . . . note particularly the position of the front keel, as this location has been determined to give the best steering advantage.

The rear ski springs are made from a scrap of spring steel which was scavenged from steel package banding found at the lumber yard. The spring shackles and mounting plates are formed from 1/16

Continued on page 59



Control line Editor Jed Kusik's HalfFAI Mouse Racer. Full size plans are on pages 32 and 33. Plane has been clocked around 90 mph.

Control line

"FROM THE HANDLE"
By JED KUSIK

• Those magnificent MEN in their flying machines. They go up, up, and they go down, down . . . they're looping the loop and defying the ground . . . Wait a minute! Hold on! What about the kids? They belong in there too.

Every year, for more years than I'll admit to remembering, the AMA Junior problem has been lamented by every writer and every organization. Hundreds of programs and special events have been tried . . . some worked, some didn't.

Ed Abram is the Academy's Junior Committee Chairman, and also the editor of Just Juniors in the AMA Monthly Mailing. Ed would like help in the form of news, hints and general information that will help promote a better Junior program.

Ed's is a request I just can't pass up. I must lay my worthless two cents worth of knowledge on the people; for whatever it's worth . . . By the way, did I remind you to avoid recurring redundant repetition? You know—the three R's. *(No, you didn't. And thanks for the resamples. wcn)*

Stand back and brace yourselves. I am going on record as saying that the national and local Junior problem is not, repeat *not*, a Junior problem. It is an adult problem! The adults cause the problem and do very little to solve it . . . except talk. Don't send me nasty letlets . . . do something useful.

I believe the problem with adult modelers is their inconsistency. They do not *always* help the kids.

The Junior modeler who has an active dad involved in building and flying is not the Junior who we have to worry about. His dad will see to it that Junior has what he needs. If dad is into competition, then son will also compete. If fact, some dads find it easier to win

Brent Callis helps younger brother Brian as he extracts plane from sod. Power of modeling!

Modeling can also teach you to come up smiling from disaster, as Brian does here.

"Why is it so fast?" The opposition examines Jed's winning mouse racer.

Randy Abe. He does everything neatly.

Steve Dickerman pitting in Half-A Combat.

by having the Junior enter and pilot . . . the custom equipment . . . those dads unknowlingly kill off Junior interest.

The Junior who we really have to worry about, and work for, is the "privateer." This is the boy who builds models simply because he thinks they are neat. His parents usually don't care if he works with airplanes or not. His finances usually come from an allowance or from simple paying jobs. If the Privateer Junior can acquire $10.00 a month on his own, he is quite well off.

This Junior wants to compete and must get the most satisfaction for his dollar. Special national events "designed for Juniors," or a few extra trophies thrown in to the club annual, are wasted on the young privateer. What he needs is an inexpensive event, and he needs it all year long! He also needs adults he can count on for help . . . when he needs it! That means 8:00 pm when the parts don't fit, or the model is ready to cover. If he can make a phone call to someone and get an enthusiastic answer, maybe he won't quit.

So where do I get my enlightened information? From eight years of running my own private "Junior Program" in my school shop, after hours. I get paid for my time when one of my students solo's or wins a contest with his own equipment.

The number of young people I work with each year varies greatly. In a school of 1,000, usually 25 boys are enrolled in the club at any given time. The membership keeps changing, however, and by the end of each year, approximately 100 boys have spent some time participating in modeling. Of this number, only about 10 stick with it and become modelers.

Talking numbers now, only 10% of the potential Juniors are interested in model airplanes and only 1% have the desire to really build and fly. Think about it . . . that is 1% of *all* children, girls included (girls like airplanes too!). If we could provide for this 1%, we would have no Junior problem.

So . . . in my opinion, here is what has to be done. These are things I've tried and I know they will work: Regular, convenient flying sites must be secured that Juniors can get to on their own transportation. That means the local schools.

Don't try to get the schools to let you adults fly with your big, loud airplanes. Just the kids that go to the school. Their student body card could be their permission slip. Also notify the student activity personnel that your club might put on demonstrations. Also provide a poster for the library, telling of model flying, your club name, and the meeting schedule. Also list a half-dozen phone numbers to call.

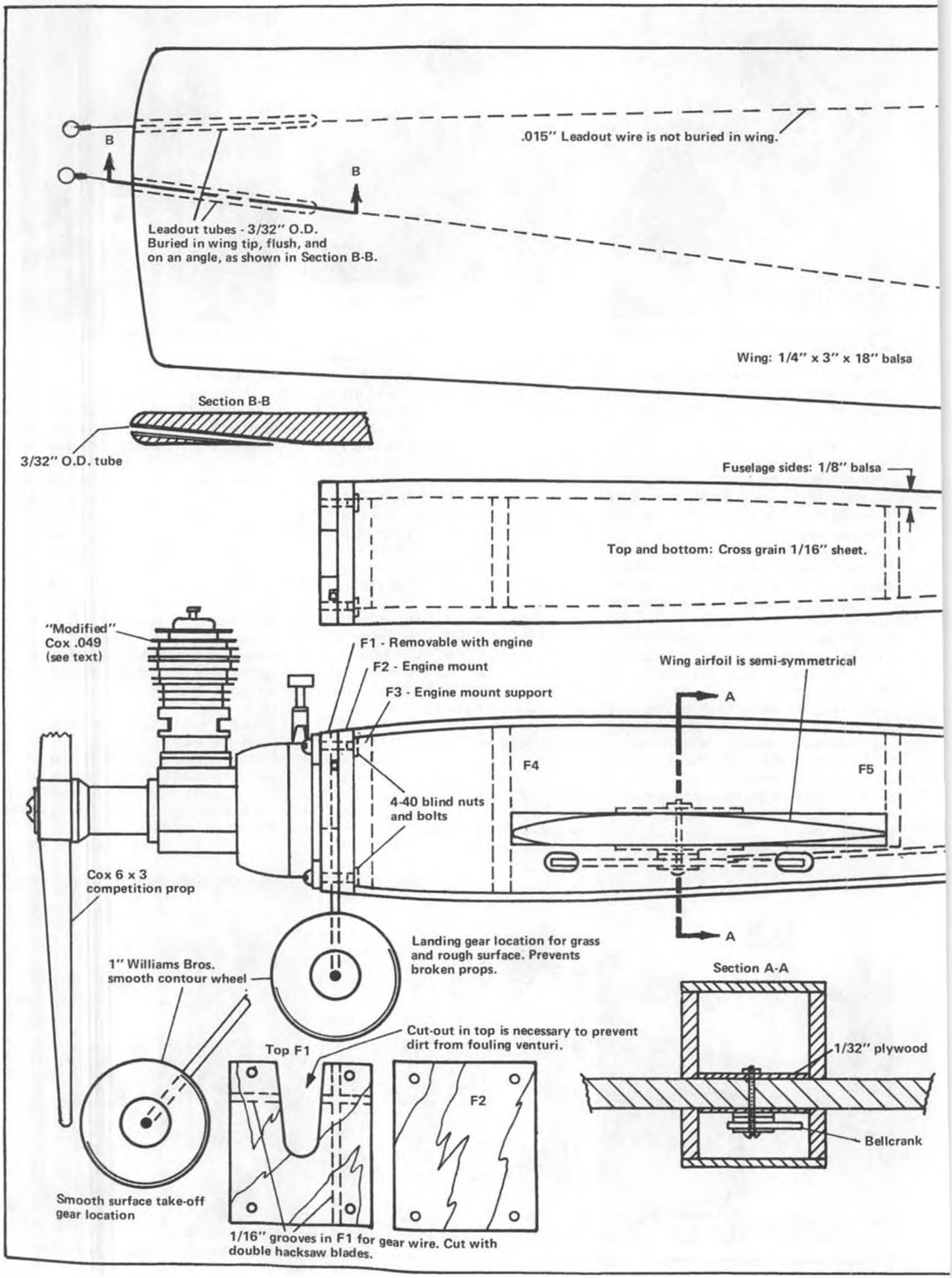
Most Juniors start with 1/2A, and if they finance their own, they usually can't fly in a "Junior-only" Goodyear, or combat, or slow rat, or stunt, or whatever, to AMA rules. They simply can't afford the big engines and models. So your Junior-only events must be 1/2A only.

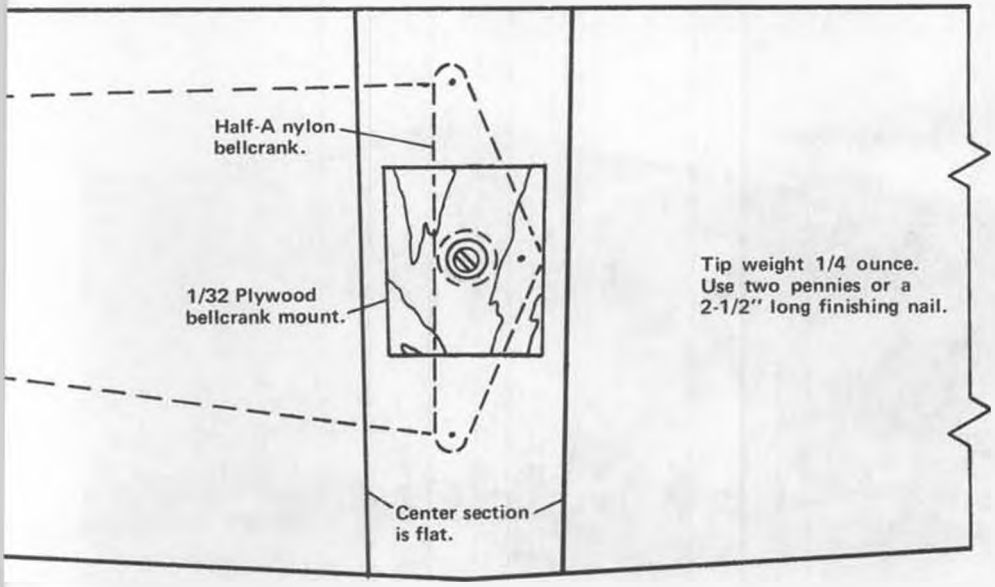
Don't try to invent a special 1/2A event for a contest. Think about what kits are available and what kind of flying the kit aircraft are capable of. To help you out, here are the most popular events with my students. They are listed in order of preference.

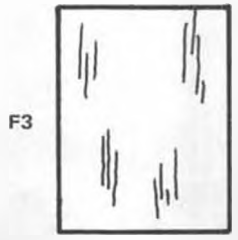
Continued on page 73

Efficiency and safety are prime concerns in WAM contests. Janet Duffey keeps the balloon busting rack loaded.

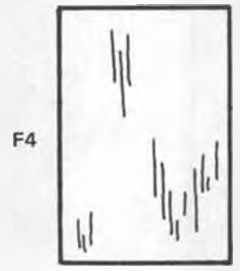
Perky Mary Malo, Burbank, California, holding her father Ron's beautiful Sig Chipmunk.

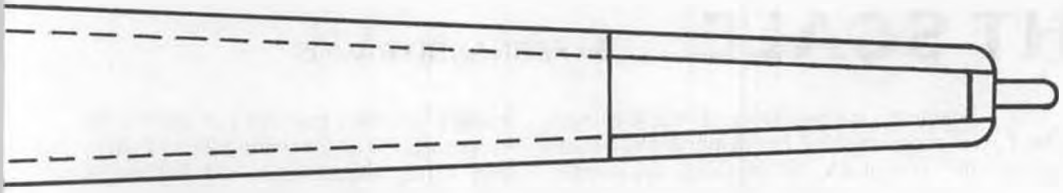

B
B
.015" Leadout wire is not buried in wing.
Leadout tubes - 3/32" O.D.
Buried in wing tip, flush, and
on an angle, as shown in Section B-B.
Wing: 1/4" x 3" x 18" balsa
Section B-B
3/32" O.D. tube
Fuselage sides: 1/8" balsa
Top and bottom: Cross grain 1/16" sheet.
"Modified"
Cox .049
(see text)
F1 - Removable with engine
F2 - Engine mount
F3 - Engine mount support
Wing airfoil is semi-symmetrical
A
F4
F5
4-40 blind nuts
and bolts
Cox 6 x 3
competition prop
Landing gear location for grass
and rough surface. Prevents
broken props.
A
1" Williams Bros.
smooth contour wheel
Section A-A
Cut-out in top is necessary to prevent
dirt from fouling venturi.
Top F1
1/32" plywood
F2
Bellcrank
Smooth surface take-off
gear location
1/16" grooves in F1 for gear wire. Cut with
double hacksaw blades.

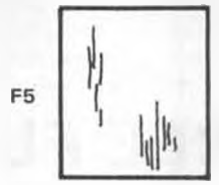


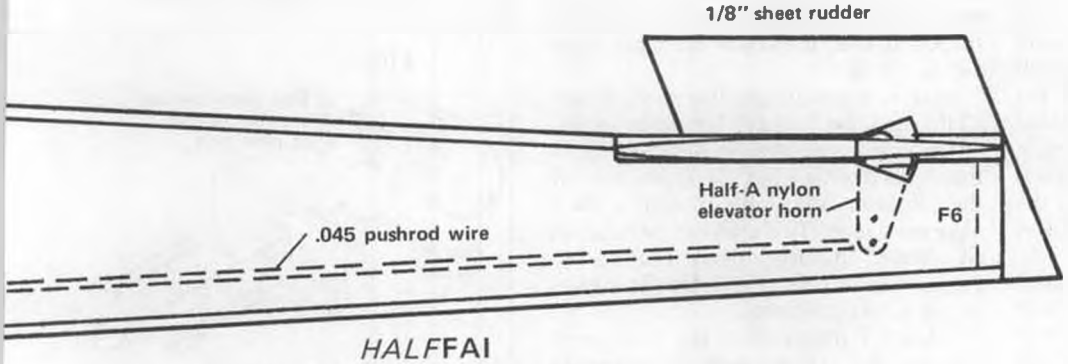


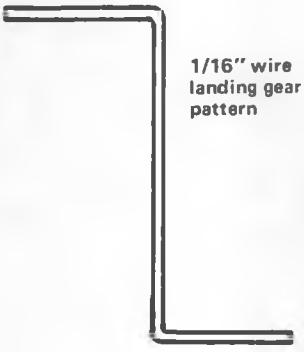
Formers F3 to F6, 1/8" balsa.







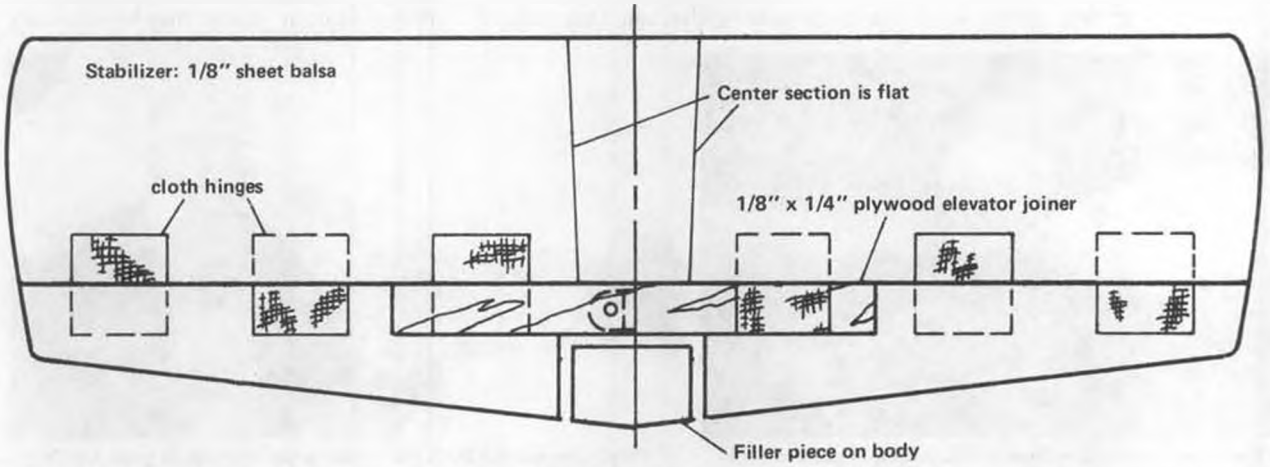




*HALF*FAI

.049 "California" MOUSE RACER

By JED KUSIK



Rubber powered Curtiss SOC-3, a great subject for F/F scale with its large stabilizer. This one by Jim Dean, editor of "Hot Leads" newsletter of the SCAMPS (Southern California Antique Model Plane Society).

FREE FLIGHT SCALE

By FERNANDO RAMOS

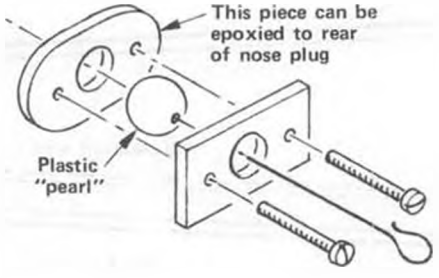
• Have you ever noticed the thrust line on the plans of most rubber powered models? It is usually shown with a little down and right added. However, how many of these kits or plans show how these thrust settings are achieved and incorporated into a nose block, or for that matter, why? Modelers know why most, if not all, propeller driven models need down thrust. This is to keep the model from climbing too steeply under power and ultimately stalling, ending in an undesireable crash. The right thrust is used to counteract torque created by the propeller, causing the model (full size aircraft also) to veer to the left.

There are several ways to approach this adjustment problem for rubber powered models. One simple way is to drill the prop shaft hole so that there will be a little down and right thrust. When test flying, a few turns of the motor and a gentle hand-launch will determine whether more or less thrust adjustments are necessary. These are usually accomplished by using shims behind the noseblock. Shim stock, incidently, should be made of material which will not compress under the tension of the rubber motor. One good, readily available source is paper matches. If less thickness is required than their size, they can be sliced.

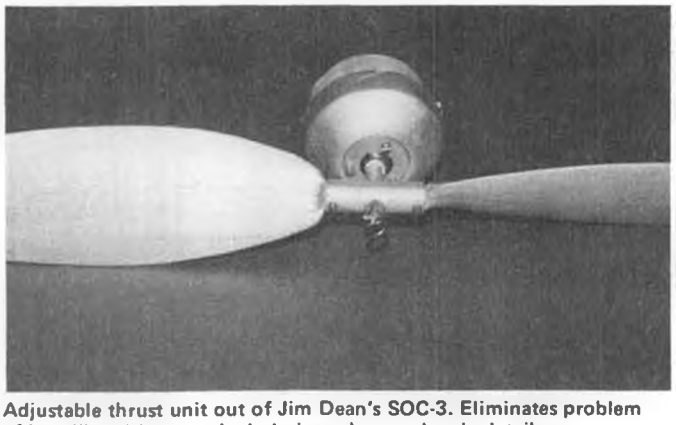
But, how would you like to eliminate all this fuss and bother? Jim Dean (newsletter editor for the SCAMPS of Southern California) has designed one of the simplest adjustable thrust units I have ever seen. This unit can be used on all rubber models, from Peanuts to Jumbos, with only a variation in size of material being required.

Figure 1 shows all of the basic components, but I'll go over the materials used, and the concept of this nifty contraption. First, as you can readily see from the illustration, the prop shaft is free to rotate in the ball that is sandwiched between two discs or plates. By loosening the screws, you can add whatever thrust adjustments are felt necessary, then retighten the screws. This clever set-up certainly eliminates those awful looking shims, particularly on scale models.

FIG. 1



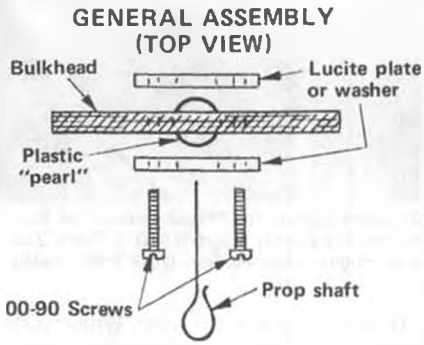
For Peanut size models, Jim uses a pearl-like ball which can be purchased cheaply (a near extinct word these days) at most hobby stores that handle craft



Adjustable thrust unit out of Jim Dean's SOC-3. Eliminates problem of installing shims, particularly in and around scale detail.

Here's Jim and his SOC. He's waiting for the grass to grow a little longer before making the first test flights. Can't blame him.

supplies. These false pearls come without holes. Jim chucks the "pearl" into a lathe and drills a hole dead center. For those who do not have a lathe, one way would be to clamp a piece of wood into the base of a drill press. With a drill the same size as the diameter of the "pearl," drill a hole just deep enough to hold it in place. Then drill a hole into the ball just big enough to take the prop shaft.



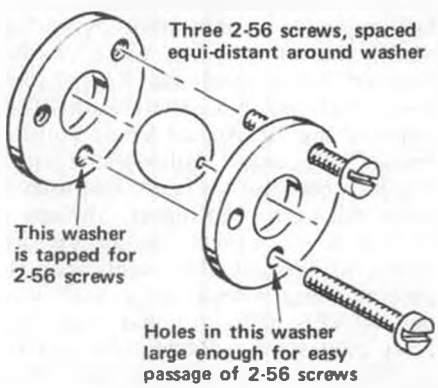
Jim used lucite for the plates on either side of the ball. The front one was cut round, and the rear one was square. This is strictly a matter of choice, but the round one does look better for the front. Now, the center hole is drilled through the two plates. The size of this hole is dependent on two factors . . . One is the diameter of the ball. These holes have to be smaller than the ball, otherwise the ball will slip through. The other factor is that these two plates have to be mounted on either side of a "bulkhead," so-to-speak, in the noseblock. Therefore, the holes have to be large enough to let the two plates come together on either side of this "bulkhead."

Clamp the two plates together and drill the center hole, and while still clamped, drill two more holes for the screws that hold this assembly together . . . 00-90 screws can be used. However, you must use an undersize drill, since one of the plates must be tapped. Jim, on his Peanut models, taps the front round plate so that he has to take off the noseblock to make any adjustments. This is no big deal, since the noseblock normally comes off for winding anyway.

Beautiful Waco Taperwing by George Meyer, Corpus Christy, Texas, designer of the famous "Li'l Toot" homebuilt biplane.

Other material can be used in lieu of lucite, and I'm sure most everyone can come up with an appropriate replacement. Just remember that it has to be thick enough to be tapped, and not brittle, so that it will not crack under pressure.

For larger models, Jim uses a proportionally larger ball made of plastic and also purchased at a craft store. He has a supply of light aluminum washers, so he uses these for the plates. Three screws (2-56) are used to hold them together instead of two. All in all, I think you will agree that this system is simple to make, and quite effective, and I certainly want to thank Jim for passing this idea along to the rest of us.



* * *

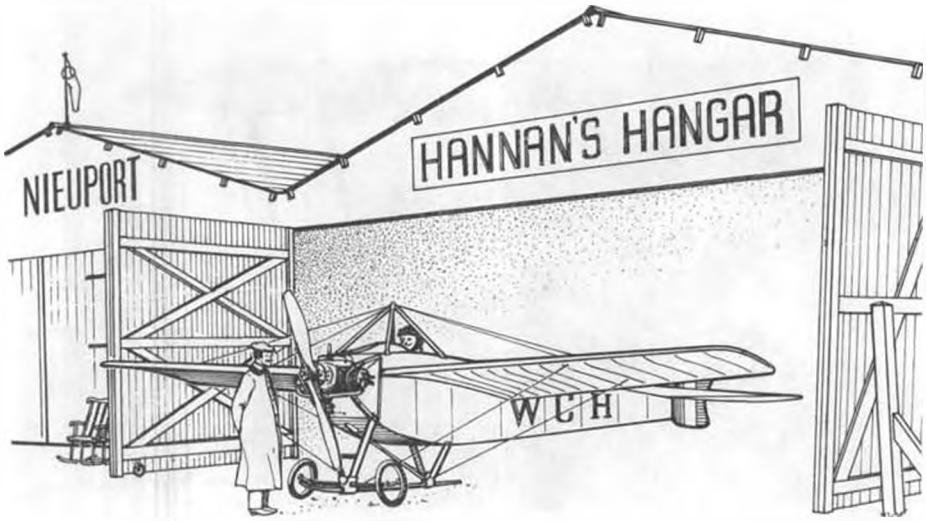
Often I have been asked where one can purchase diesel engines for modeling. Diesels are ideally suited for scale work. Models don't need special fuel proofing, which is a pain, and diesels can swing much larger diameter propellers, producing more realistic flights from scale models. Well, it so happens that one of MB's advertisers handles quite a variety of these engines, as well as diesel fuel. Who is this outfit? Well, none other than Hobby Hideaway. The name Hobby Hideaway is quite a natural since it is located next to nowhere in central Illinois.

The business was started in 1966 by

Continued on page 61

The home of Hobby Hideaway, a much restored barn on the property of the owner, Dave Shipton, Delavan, Illinois.

The upper floor of Hobby Hideaway (formerly the hay mow) has been turned into an aircraft museum, for models and full size.



Dr. John Martin, the "Head Peanut" of Florida, and his Martin (natch!) MO-1. Took 2nd in Nats Flightmaster Peanut. Does 1:05 usually.

. . . another in a seemingly endless series of aeronautical ramblings.

PEANUTS ARE FOREVER

Or so sez Errol McMillan, of Canada. And he may be right, judging from all the mail MODEL BUILDER has received regarding the Peanut Postal contest. Then too, other magazines are starting to jump on the bandwagon, even in foreign countries. For example, the French magazine "MODELE" devoted several pages to the subject recently, including a two-page spread with full-size plans of the Nieuport 17 Peanut. Author Maurice Mouton devoted an additional couple of pages to a review of "Cacahuette" (French equivalent for Peanut) developments in the United States, and described the performance of some as "stupefiante", which loses very little in the translation. In addition, a French model magazine usually devoted only to R/C types, also featured a short Peanut review!

AND SPEAKING OF NUTS

There is a restaurant in Vacaville, California (near Sacramento), which deserves a visit in the event you are traveling in that neck of the woods. According to Fred Reese, who sent along some photos, the place is called the NUT TREE and features, in addition to the eatery, its own airport, a gift shop, book store and fabulous model collection. Everything is aviation related, and, according to Fred, the book selection and the model kit selection, rival the best found in any specialty shop.

EVEN IN LAS VEGAS

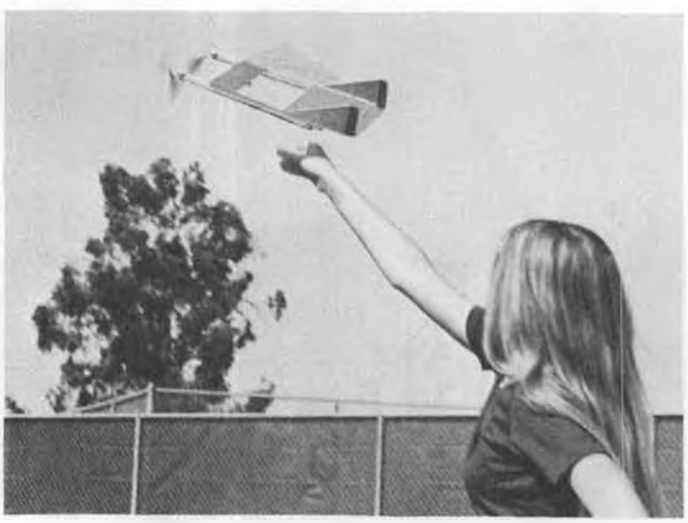
The odds, that is. But only if you go there to "gambol" for Peanuts. Although primarily famous for other types of entertainment, the fabulous desert spa is fast becoming an important center for model aircraft activities. Close on the heels of the International R/C pattern meet which took place there late in 1974, followed the 7th Annual Vegas Vulture Peanut Scale contest. Although the prizes may have been less costly, the enthusiasm could not have been higher. The spirit of fun reigns supreme at all Vulture meets. While many club events seem to become more serious every year, this one NEVER falls into that trap, and every contestant is forcefully reminded of this fact. By contrast with most "formal" competitions, the complete list of rules are not posted. While SOME of the rules are announced, the "house" always keeps a few of them secret. Thus, an unsuspecting entrant may find his age has been subtracted from his scale score!

Or, he may find that his best flight was disqualified because he was not wearing a New Year's party hat at the time of launch! Thus, there is simply no point in taking things too seriously, and under such circumstances, one must relax and simply enjoy the proceedings.

This year, a hardy band of Californians (the Peck family, Bill Stroman, Bill Warner, Jim Lueken, Ken Hannan, Hal Swanson, Walt Mooney, Curtiss Mooney, and yours truly) were joined by Bob Mickelsen and his family, who drove all the way from Clovis, New Mexico in a VW bug! That's what we call real dedication to the sport! And, Bob was rewarded for his efforts, as he carried home the first prize. MODEL BUILDER's resident Peanut Farmer, Walt Mooney, captured second place honors, while his son, Curtiss, snared third spot.

Jim Lueken, in his first try at a

Famous aircraft designer Grover Loening accepts model of his creation from Marie and Fulton Hungerford. Note array of awards.



Jill Peck (Peck-Polymers) modified a "Stringless Wonder" to accept twin motor sticks. A very impressive flyer.

Vegas venture, was top placer in the Junior class. The FEMLIB award went to Jill Peck, junior member of the Peck-Polymer "factory team".

An added attraction was a World War One aircraft CO_2 powered model category, which brought forth some splendid examples of vintage types. Another absolutely unique feature of this particular meet was the option given for contestants to attempt their official flights either indoors or outside. Most elected to fly inside, since the temperature was brisk enough outside to retard the efficiency of the CO_2 engines, not to mention the humans.

The day prior to the contest was spent at (Bob) Haight's hangar, which features one of the most fascinating workshops to be found anywhere. In the evening, aircraft movies were shown, and conducted tours were offered. Conducted tours are rather special in Las Vegas, with visits to places like Arjac's Hobby Shop and Thaddeus Thudpucker's tavern, which features a genuine World War Two ambulance as its utility vehicle. Not to mention one Susie Midnight in action, at HER specialty.

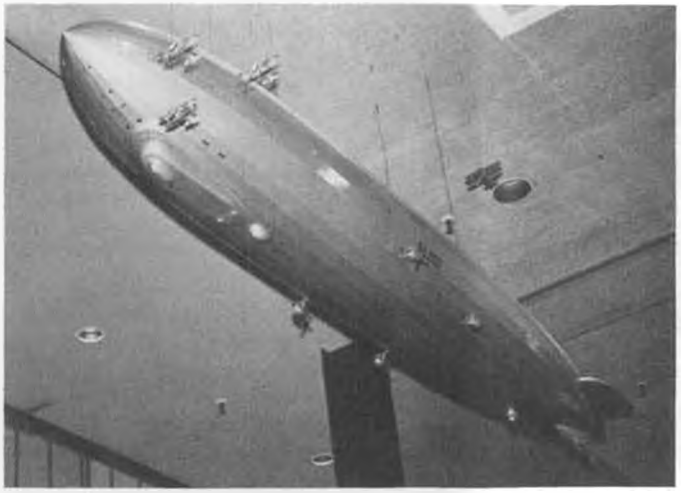
During the static scale judging portion of the contest, Walt Mooney conducted a bit of research into Peanut Scale trends: Of the perhaps 35 or so models on hand, 29 were able to make qualifying flights. Of these, 6 were biplanes, while 7 were low-wingers. Ten of the aircraft were of the all-sheet variety, and 5 were constructed from kits. Only one flyer elected to take advantage of the rule permitting retractible landing gears to be in the "up" position, although almost all flights were hand-launched. Plastic propellers were featured on 27 of the Peanuts. At least three of the entries were fabricated on the day/night preceeding the contest. Try this in any other event, except perhaps hand-launched glider!

Following the contest, a splendid buffet lunch was served, thanks to the efforts of Chuck and Dixie West, Arnold

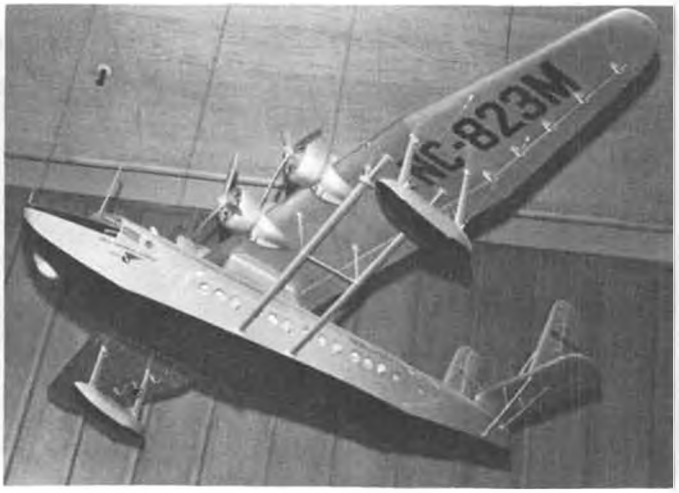
Continued on page 63

Warren Shipp turned up this photo dated April 3, 1929. National model Championship winners traveled from Detroit to Washington D.C. to meet the Sec. of Commerce (l to r): Merrill Hamburg, Detroit, Secretary of Airplane Model League of America; Wm. P. McCracken, Assistant Secretary of Commerce for Aviation; Wm. Chaffee, Detroit; Sec. of Commerce Robert Lamont; Ford Grant, Detroit; Aram Abgarin, Detroit; and Tom Hill, Winston Salem, N. Carolina.

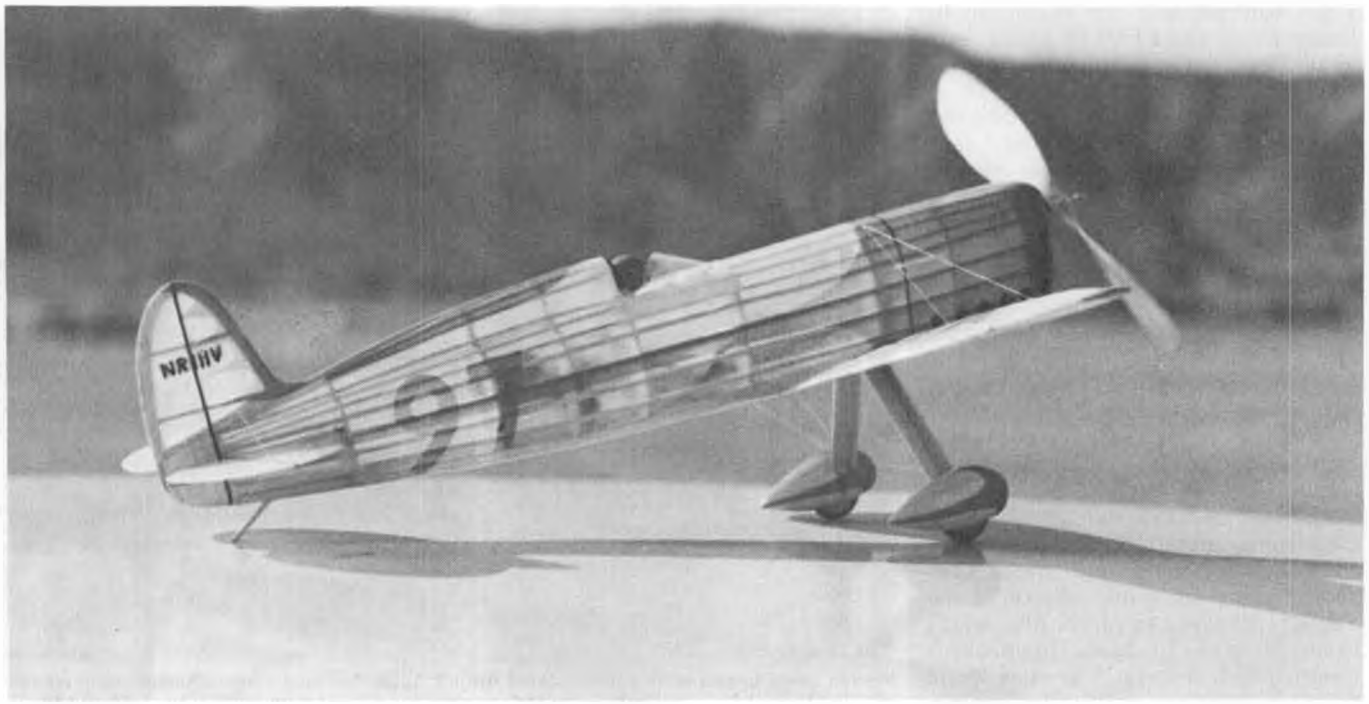
George Meyer built this Waco 10, one of the best known OX-5 powered biplanes of the Golden Age of aviation.



A model of the Graf Zeppelin, complete with Boeing F4B escort, hangs in the Nut Tree collection. See text. Photo by Fred Reese.



Pan American Clipper in the Nut Tree display. Fred Reese photo.



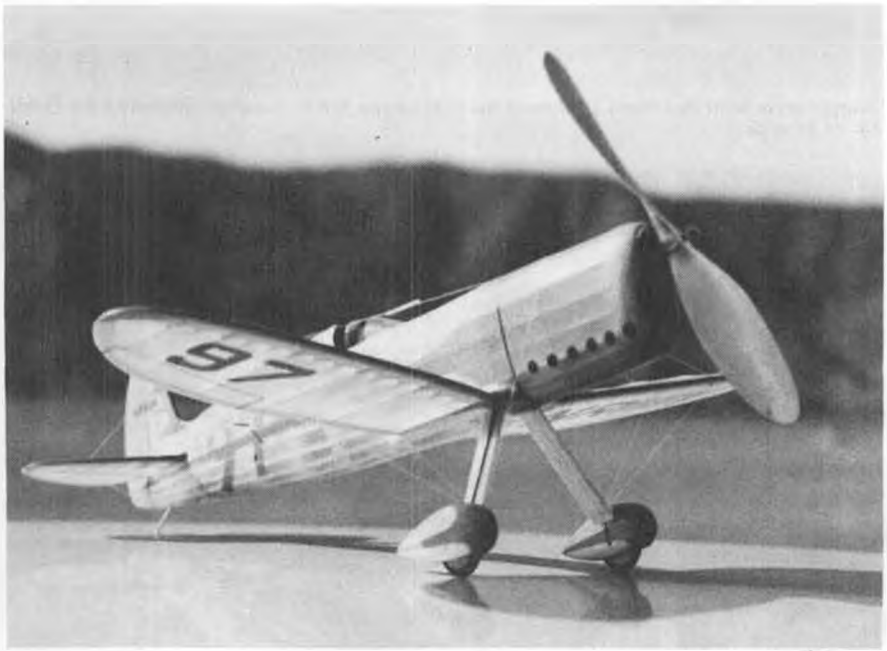
GORDON ISRAEL'S "RED HEAD"

A SPECIAL PEANUT WITH AN INTERESTING HISTORY

Except that the plans had to be reduced by 97% in order to meet the 13 inch span limit for Peanut models, the construction article presented herein is reproduced word-for-word and line-for-line from two consecutive Sunday editions of the Omaha Nebraska World Herald, October, 1934. The model was designed by Ted Vogel, and the article was written by "Bud" Schleh.

NPMRA President Glen Spickler sent us prints of the original newspaper clippings, and Walt Mooney built the Peanut model shown in the photographs, using the plans as printed on the following two pages.

Considering that they are over 40 years old, the plans and text are surprisingly modern. About the only thing missing is the word "epoxy!" Walt's model is a fine, stable flier, and on the day photographed, it put in several 30 to 40 second flights. The most noticeable modifications are the installation of Walt's favorite music wire shock absorbing landing gear, and the rear motor peg relocation . . . to keep rubber weight forward. All of the flying and landing wires are nylon monofilament.

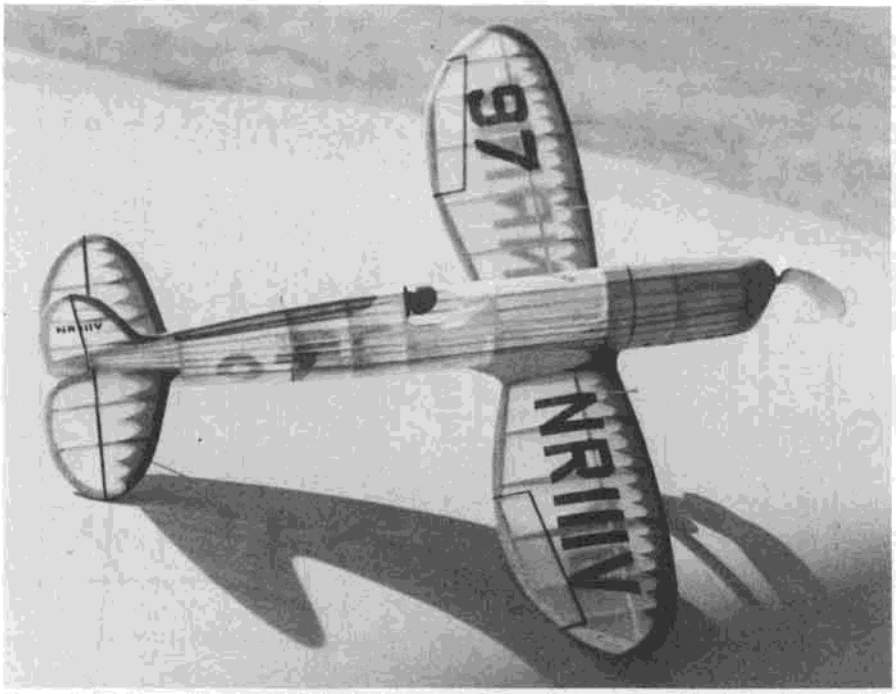


High thrust line plus long landing gear permits generous size prop for this Peanut scale model. Ship flies quite well in spite of racing configuration.

• Perhaps no ship at the last Omaha air races holds more interest for model builders than Gordon Israel's "Redhead." Many requests have come to me for flying scale plans of this sleek little racer, and here they are! This model is much larger than any shown on this page up to now, and (don't get discouraged) requires a great deal of time and patience to build. However, the finished job will well repay you for your efforts.

"Due to the length of the fuselage, it is necessary to show the side view in two sections. Cut these parts out with shears and paste them together to form a continuous side view . . . then start construction.

"Note that along the bottom of the fuselage, from end to end, runs a keel using the dotted and the solid lines shown. Cut the keel from good, firm one-sixteenth-inch flat sheet balsa. With a pencil, mark the position of the formers on the wood. Then, from one-sixteenth-inch flat balsa, cut out formers "A" and "I." The rest of the formers



Unusual plan form of wings is evident in this photo. Long fuselage permits lots of rubber and long power run. Original plans show hook at rear, which could cause tail-heavy problem.

. . . "B" to "H" inclusive, are cut from one-thirty-second-inch flat balsa.

"Make pencil marks on all the formers to show the position of the one-sixteenth-inch square strips (or stringers). Now glue the formers to their proper places along the keel, being sure that they are properly lined up from front to rear, and that they are perfectly perpendicular. Connect the formers with one-sixteenth-inch square stringers, laying them along the top of the formers, according to the marks given. The keel should protrude one-sixteenth-inch below all formers except rear former "I." This serves in place of a one-sixteenth-inch stringer along the bottom of the fuselage.

"This type of construction . . . (formers glued to keel, then connected) automatically lines up the fuselage from end to end, eliminates the need of a top view drawing, and also the need of building a box fuse first.

Between formers "D" and "E," cover the cockpit with one-thirty-second-inch flat balsa, sanded thin. Cut out the hole for the pilot's seat with a razor blade. Don't apply the celluloid windshield until after the ship is covered.

"Make the nose-block from a block of balsa cut to the general outline of former "A," then carved and sanded to shape. The inside should then be hollowed out, and a hole drilled for the nose plug. Then glue the nose-block to former "A." To add realism mark the openings shown on the front view of the nose-block with India ink. Or, carve them in with a knife. On the real ship these openings provided air cooling for the motor. The six round dotted holes on the side view represent exhaust ports. They are on the right side only, and are either drawn on with India ink, or made of thin discs of balsa, painted black, and glued to the cover job.

"The vertical fin and the rudder are built up from one-sixteenth-inch flat balsa, using the outline given in the drawings, and have two connecting ribs built into them. These are shown by the double broken lines. The single broken lines simply indicate the scale number of ribs in the real ship's fin and rudder. The bottom part of the rudder is made of balsa block shaped to conform to former "I," then tapered to the tail of the fuse. It is glued to the rest of the rudder, and moves with it on aluminum hinges. The tailskid is made of one-sixteenth-inch bamboo, securely glued to a notch cut in the keel.

"Although the landing gear is not mounted to the ship until after the wings are built in, it is just as well to make the landing gear struts and wheel pants along with the fuse. The struts are made of one-eighth-inch flat balsa cut to two and one-eight inches length and one-half inch width, then sanded so that the rear is tapered to an edge. Each wheel pant is built up of three pieces of flat balsa . . . the center piece one-quarter-inch and the two outside pieces one-eighth-inch stock. Carve a circular opening in the center pieces, large enough to hold the wheels without jamming, then glue on the outer pieces and sand the pants to their streamlined shape (see top and side view of pants).

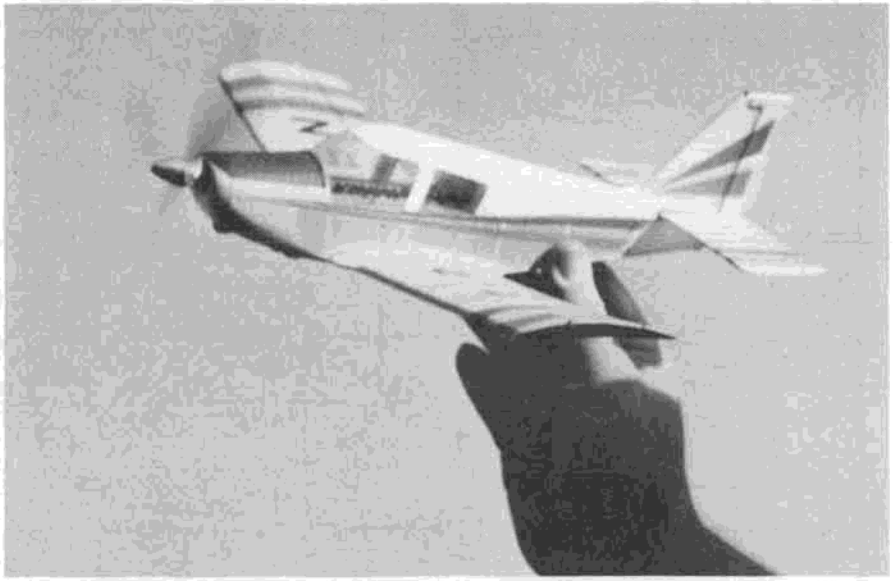
"The wheels are assembled after the pants have been glued to the landing gear struts. The axle is one continuous piece of thin music wire, which also serves as a flexible, shock-absorbing brace.

"Now glue in a music-wire motor hook at the rear former "I," and make one for the front of the ship. This goes through the nose plug, then through two small washers which act as bearings, and finally through the prop—where it is securely glued. Carve a flying prop from a one-half by three-quarters by 5-inch balsa block.

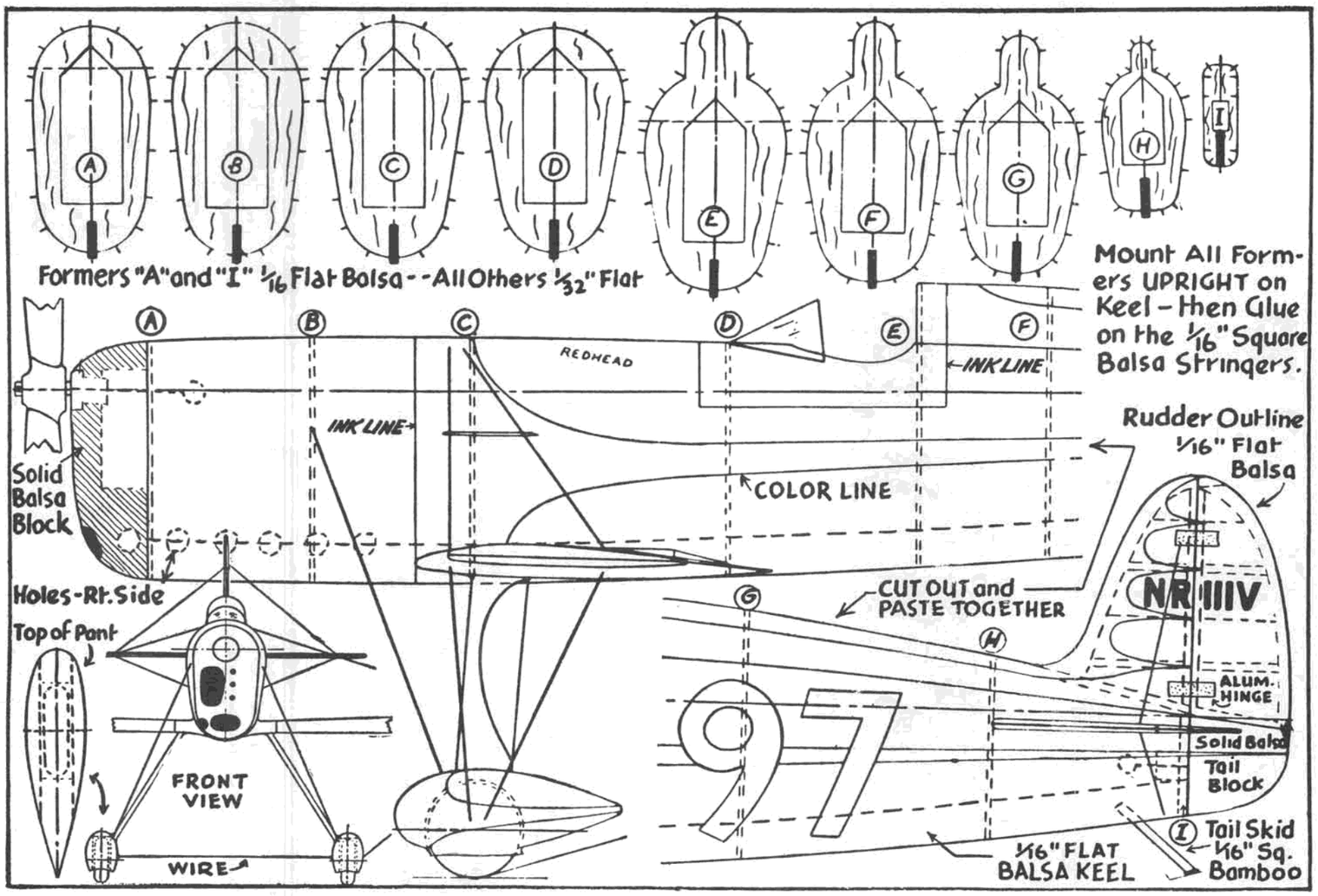
"Cut the 12 wing ribs from one-thirty-second-inch flat balsa, noting that ribs three and four are identical. In the real ship, there were more ribs. The dotted lines indicate the scale number, and if you feel ambitious, you may add them, by fitting pieces of one-thirty-second-inch flat balsa in position and then shaping them to the proper contour. However, the ribs shown are ample. Next, cut two wing spars from one-sixteenth-inch by one-eighth-inch strip balsa. Pin them in place on the plan, and add the ribs as noted by their numbers.

"The leading edges are one-eighth-

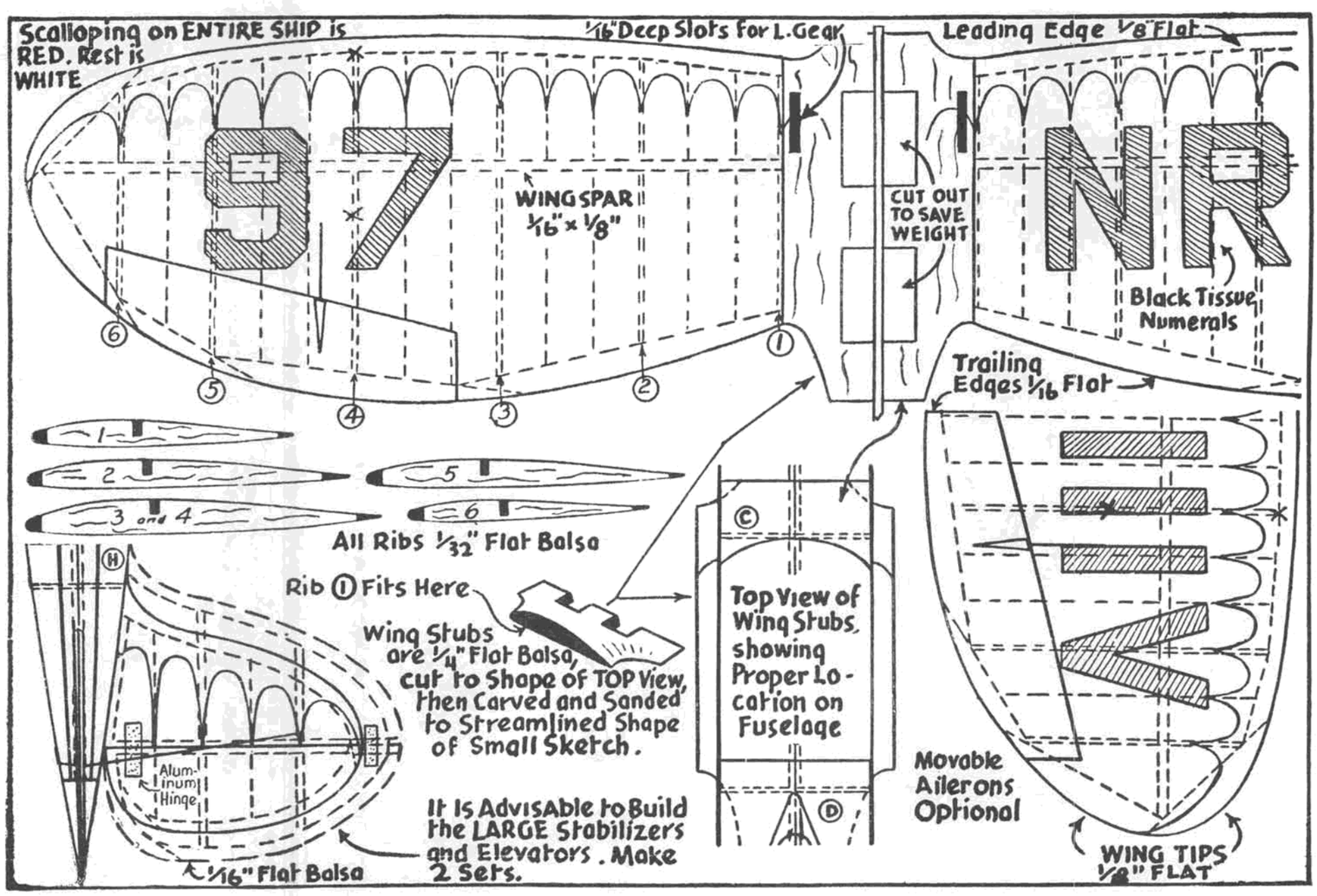
Continued on page 65



Next month's Peanut placed second at Las Vegas contest; 40 seconds under a 25 foot ceiling. It's the Robin HR-100 Tiara.



—*Model design by Ted Vogel.*



Andy Faykun, Los Angeles, California, launches his model of Jim Cahill's "Super Clodhopper," during O.T. Wakefield contest at Lake Elsinore.

FREE FLIGHT

By BOB STALICK

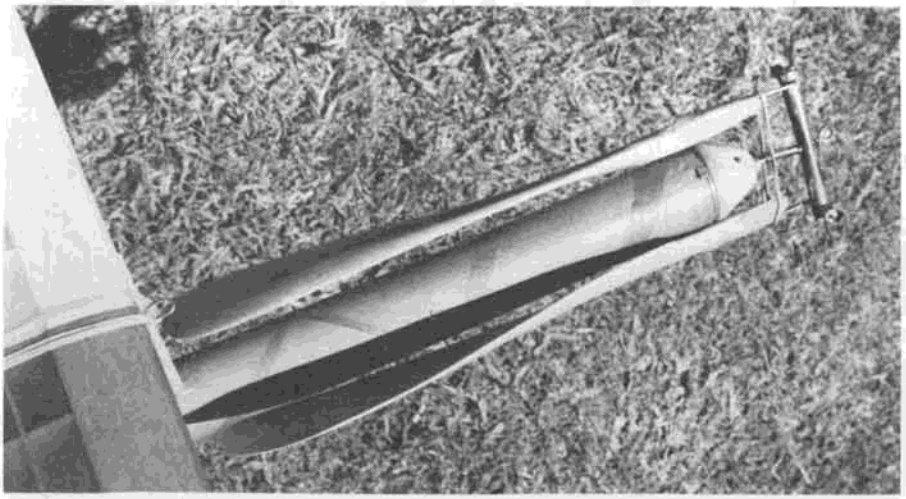
NOTE: Late word from AMA is that FAI Power engine run will be 7 seconds, instead of the 8 seconds previously reported.

The changes in the economy, 1975, the MODEL BUILDER Peanut postal, the CIAM passes new rules affecting FAI Events, the AMA Contest Boards work on changes in AMA rules structure . . . the times they are a changin'. Even Sheik David Ben Watziztrum moves from this country to seek wider flying spaces, say some . . . to escape from wrathful free flighters, say others. No longer is a bird in the hand worth much . . . other than a messy hand. All of this introduction is to serve notice that there are some things which have changed so much that they have returned to what they used to be. Now, there's change!

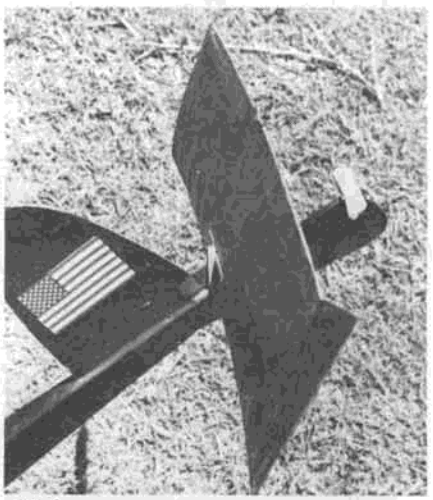
MYSTERY MODEL

This is a "Gotcha." A gotcha is a model that you've seen before but can't quite place. This ½/A ship first appeared in the model press in 1957. Name it and you win a valuable prize from MB but you've got to be the first in line.

(In case there are readers out there who think we don't know our (bleep) from our elbow about Mystery Model Identification, we'd like to clear up an



Folding prop installation on a Coupe. As blades fold, rubber band slips back on shaft, holding blades flat against fuselage. Hanging blades could cause spin-in, also get damaged in landing.



Coupe DT. Plywood shims glued to stab platform after flight tests. Coupe is fun event.

error in the December issue on Page 43 in the "Free Flight" column.

We stated that last month's Mystery Model was Dick Korda's "Powerhouse", when actually we should have said that it was the Sept/October Mystery Model. Things can get confusing when you've got one issue with the printer, one in production at the office, and one being mailed. See what we mean?

Anyway, the MM for November was the "Sea Hawk" by Chuck Hollinger, and it was first correctly identified by John James, of Orlando, Florida.

A lot of people wrote in about Russian Modeler Vladimar Matveev's "Dragonfly", which was brought to the U.S. by Bob Hatschek, but the first person to identify this Wakefield was Dan McDonald, of Greenville, Pennsylvania.

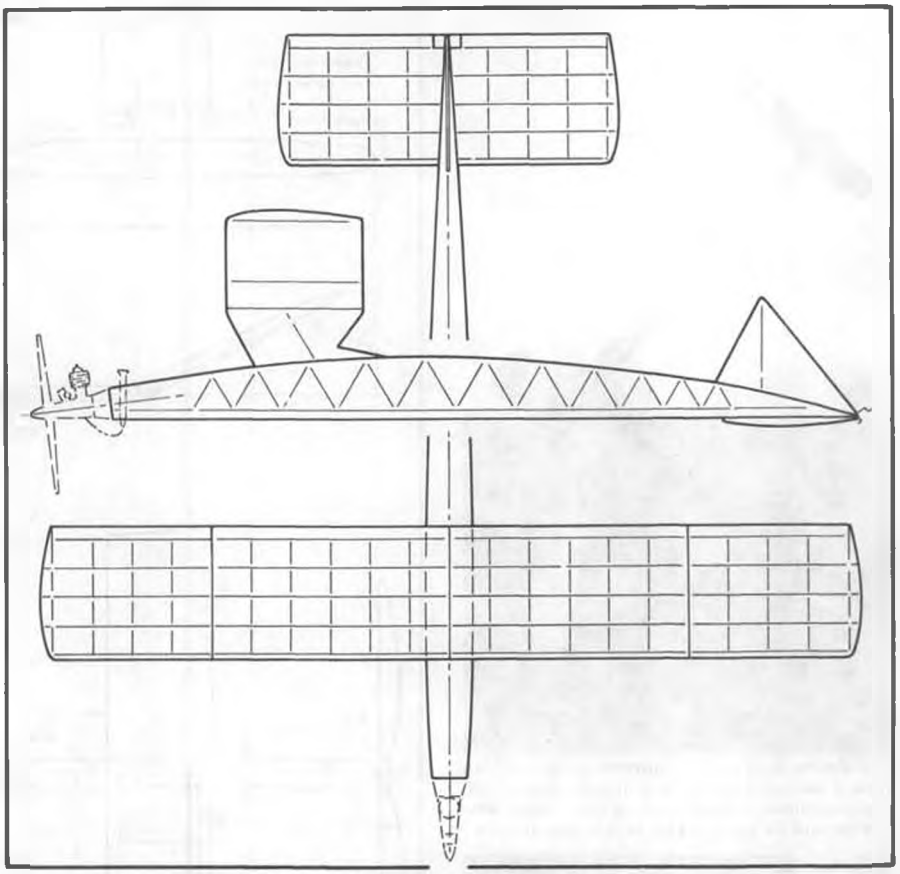
And finally, to bring us up to date, January's Mystery Model was Yugoslavian, Slobodan Babic's 1957 World Champs winning Nordic A/2. The first correct identification came from Bob Greider, Larkspur, California. wcn)

DARNED GOOD AIRFOIL – The Clark Y

Not enough has been said for the Clark Y. This foil is perhaps the basic flat-bottomed airfoil used in more free flights than any other. It has been thinned, folded, spindled and even mutilated. When all is said and done, it is still the all 'round performer . . . never exciting, but always dependable. Thinned to 7 or 8%, it functions well as a stabilizer section. Used at around 9%, it is excellent for AMA gas classes. Hard to beat and easy for building.

MODEL OF THE MONTH . . . John Lenderman's AMA Record Coupe

I happened to be present when John Lenderman set the old 80 gram Coupe record with this model in 1970. (A rule change to 100 grams has since wiped that record out). The day was nearly dead calm and the ship drifted so little, that John was able to catch it as it D.T.ed. I believe that had it not become very dark . . . the flying stopped at official sundown . . . John could have continued maxing well beyond the amazing 18 consecutive maxes he made on that cool February day in Tacoma, Washington. Now, with Coupe returning to the 80 gram rule (see below), this ship should be back in the running as a top notch performer and record setter. *(Maybe the record should be reinstated! wcn).*

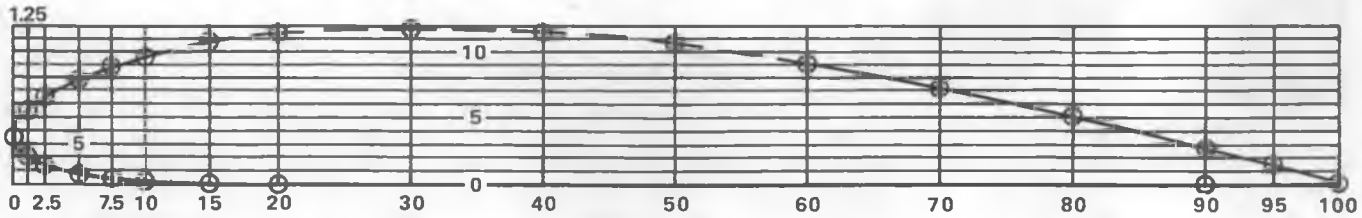


MARCH'S MYSTERY MODEL

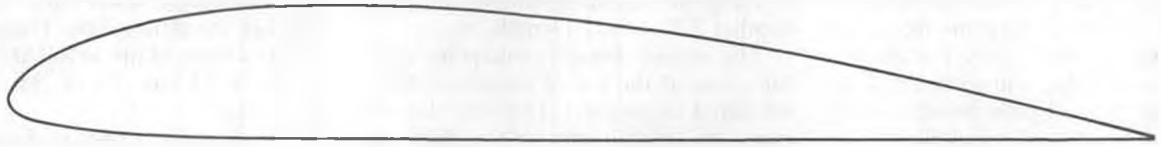
HOW TO READ DGA CHARTS, or, How I Became An Instant Airfoil Expert in One Painless Lesson.

Old big mouth, your columnist, has suggested that readers of the column sit down and drop me a line concerning what they would like to see in MB F/F. Well, that's just exactly what G.F. Shaw, of Pocatello, Idaho, did. And good suggestions he had, too. I will be covering some of them in the near future. But the one which I am featuring this month is his question, "What do all of those numbers on the Airfoils mean to me?" Well, G.F., here goes:

The best source of airfoils information I have run into is contained in sev-

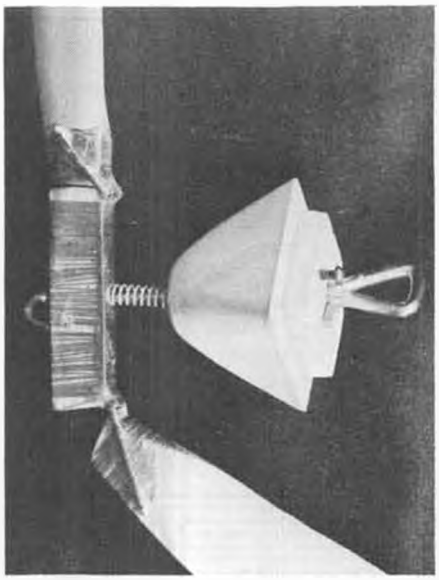


DARNED GOOD AIRFOIL – CLARK Y

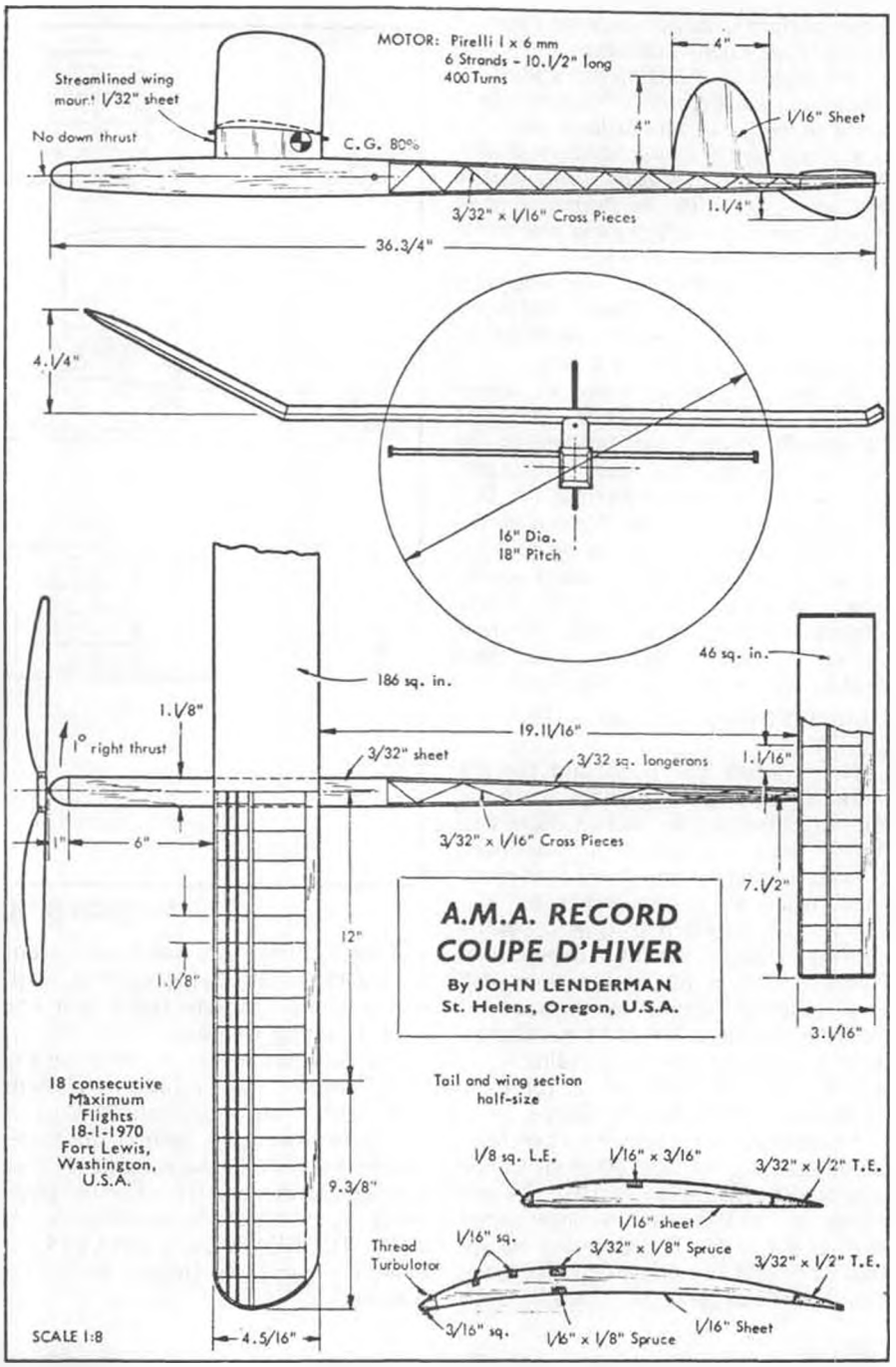


STATION	0	1.25	2.5	5.0	7.5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	3.5	5.4	6.5	7.9	8.8	9.6	10.7	11.4	11.7	11.4	10.5	9.1	7.3	5.2	2.8	1.5	0.1
LOWER	3.5	1.9	1.5	0.9	0.6	0.4	0.1	0	0	0	0	0	0	0	0	0	0

F/F Editor Bob Stalick launching his FAIMan. New 7 second engine run will seriously affect unstreamlined models such as this. Closer attention will be required to design and airfoils.



Nearly completed nose assembly for Coupe model using FAI Models' front end components. Easy assembly is typical of Coupe construction, good start for beginners.



Record holding Coupe D'Hiver (80 gram) by John Lenderman, first published in "Willamette MC Patter" and then in the Aeromodelling Yearbook.

eral publications . . . most of which are presently unavailable, except to collectors. One was done by Larry Conover in the AM Annual for 1961, another was actually a series which spanned several years, in Model Airplane News, and was by Gerry Ritz. This feature was carried during the mid-sixties and offered a special foil each month (sound familiar?). Other sources include the Airfoils Handbook, now carried by FAI Models Supply, and the book, "Airfoils." carried by NFFS.

In brief, the numbers which are included with every airfoil featured in MB F/F refer to the height of the top or bottom curve, from the base line, in percentages of chord length. The total chord length is 100%. The top line of numbers refers to stations along that 100% length, with 0 being the front of the leading edge and 100 being the rear of the trailing edge. The second number is 1.25% of the total length, the third number 2.5% of total length, etc.

The second line of numbers indicates the curve of the top of the airfoil, again measured in percents. This time the percents are tied directly to the thickness of the airfoil. Thus, the height of the top curve of this month's DGA at 1.25% behind the leading edge is 5.4% of the total length. Convert this into fractions of an inch. If the airfoil is 10 inches in chord, then the height of the foil at station 1.25 is .54 inch, etc.

The bottom line of numbers refers to the curve of the bottom camber line. Once again, this is measured in percents. With the Clark Y, this number at the 1.25 station is 1.9, which if you converted to a 10 inch chord wing would place the lower curve line at .19 inch off the datum line. Therefore, the total thickness of the airfoil at the 1.25% station is .54 less .19, or .35 of an inch thick.

This process is easy to do as long as you are keeping the wing chord lengths in even numbers, especially if the numbers are divisable by 10. Obviously, such is not usually the case. One device that

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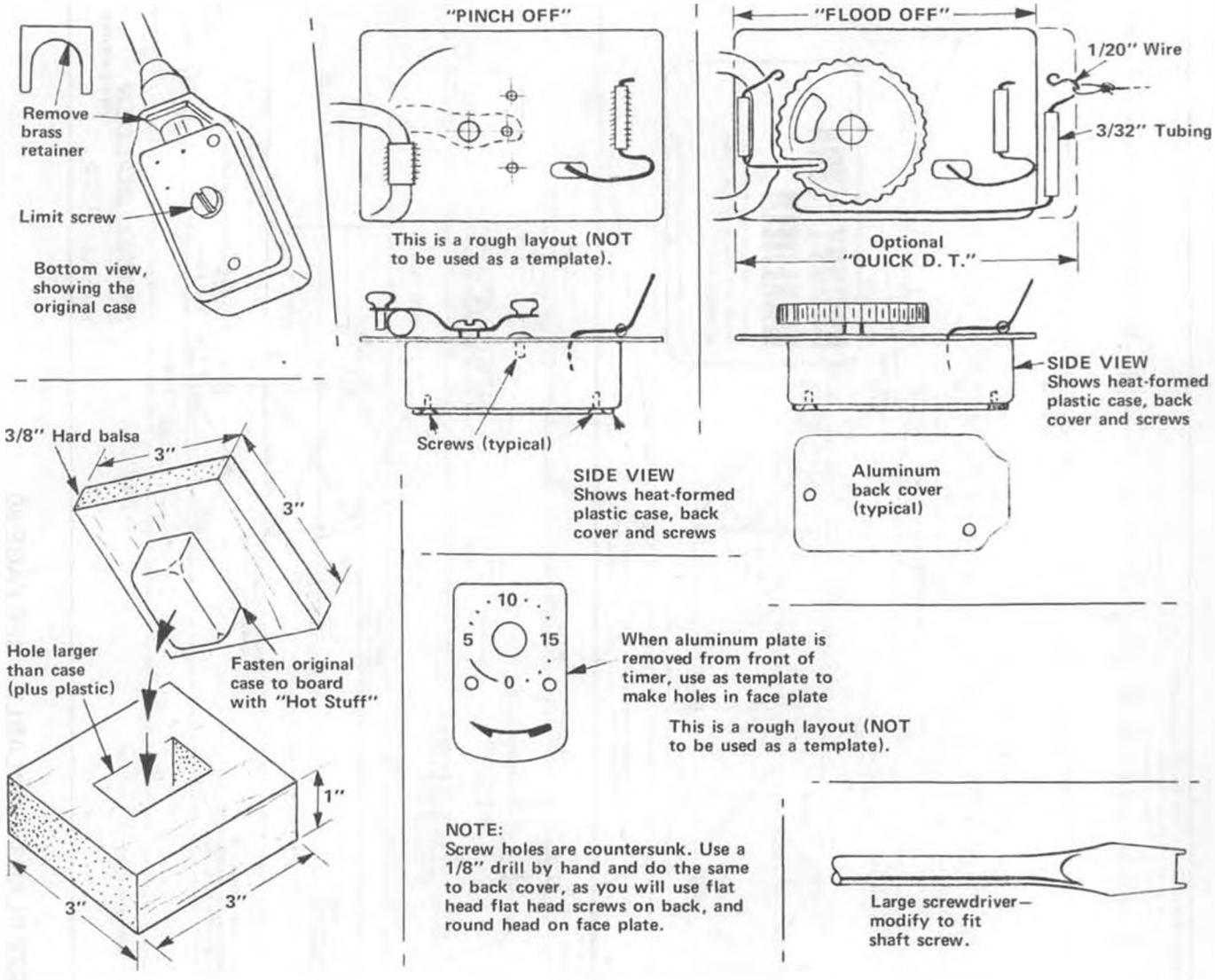


U-MAKE-IT ENGINE TIMER

By BILL "Satellite" HUNTER

Here's a relatively inexpensive, yet exceptionally reliable engine timer that most anyone can build. Materials are easy to find, and all of the instructions are presented clearly, and step-by-step.

• We get numerous requests from modelers all over the world asking where they can get a good quality timer. We have been making our own from camera timers with MAX success for almost a year. The cost for these timers is far below that of any "model intended" timer on the market. And the quality? Well, it's everything you could expect. It's strong, it's dependable, and best of all it's available!

Materials:

1. "Focal" brand Universal Self Timer, Code #20-28-94, from $3.50 to $5.00. Available at K-Mart Stores.
2. Brass shim stock, .01, by K&S: Hobby shops
3. 1/16 brass tubing: Hobby shop
4. 5/32 brass tubing: Hobby shop
5. 1/32 Piano wire: Hobby shop
6. Heat form plastic, .015, by Sig: Hobby shops
7. 1x3x3 and 3/4x3x3 inch hard balsa

Tools:

1. Small straight slot screw driver
2. Large straight slot screw driver, modified (see drawing)
3. Soldering iron
4. Electric drill
5. 1/16 and 1/8 drill bits
6. Set of small files

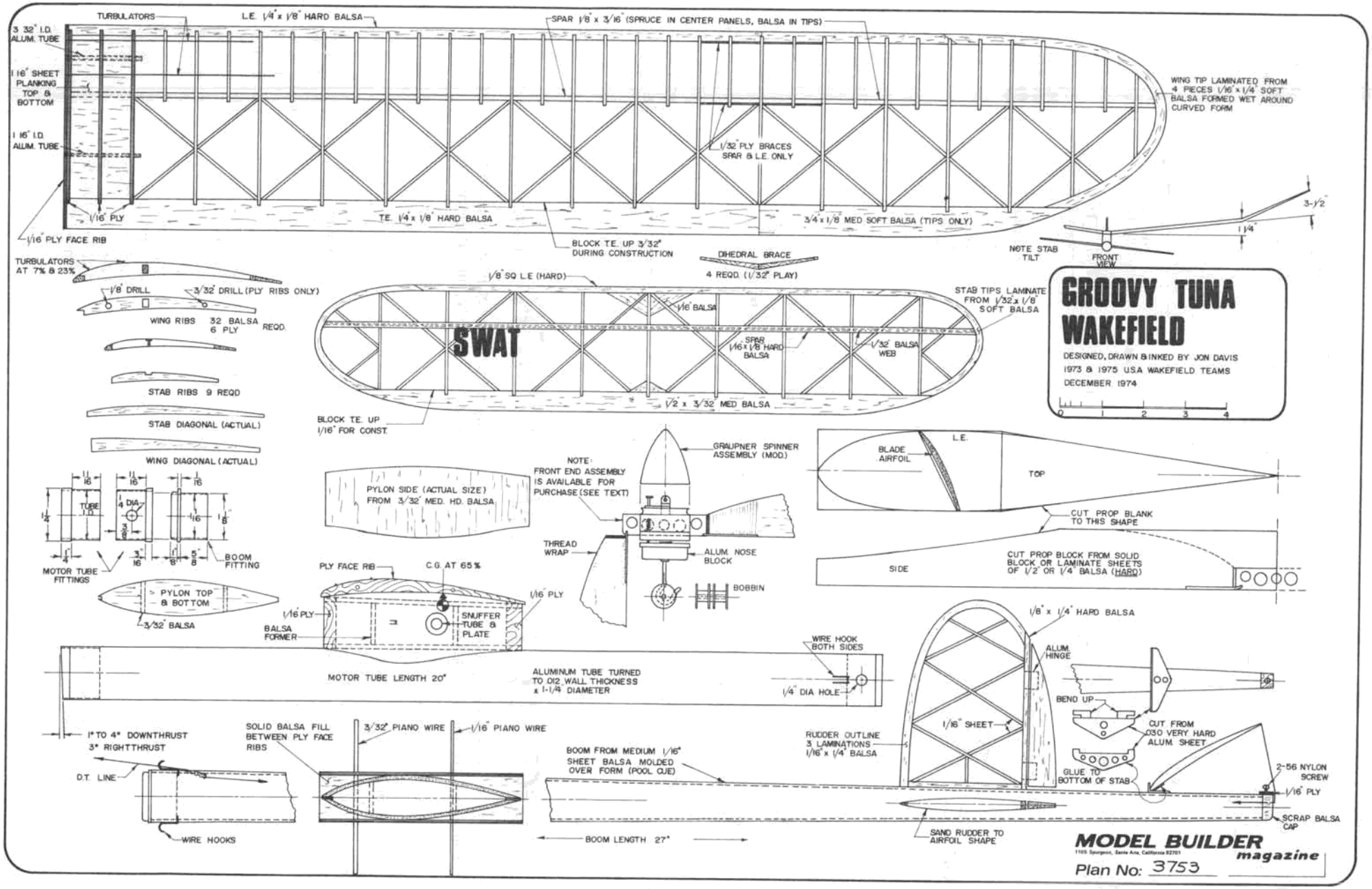
Basic Timer Conversion: Special notes will follow for functions. Remove timer from package. Remove wheel, using modified screw driver. SAVE ALL PARTS. Remove the two screws from top of case. Note that they are countersink type. They will be used on the bottom later. Remove two screws from back cover and use small screw driver to pry brass retainer out of inside of case. This retainer holds the chrome protrusion to the case, and once removed, the protrusion will fall off. The timer will now come out of the case with a slight bit of jiggling. When timer comes out, a brass arm will also fall out. This arm is of no use, so it can be set aside.

Cut a piece of brass shim stock to shape for your face plate, using the aluminum piece removed from timer front as a template to make holes in face plate; 1/8 inch for shaft and 1/16 inch for screws. Sand or file off any burrs, and mount on timer, using the round head screws (originally taken from back of timer). Looking at the bottom of the timer you will see a black steel ratchet that will be used to start and stop timer. Using a pin, put a mark on the underside of face plate next to the ratchet. Remove face plate again. Now face plate is ready to be made for a particular function or functions.

"Pinch-Off" (Refer to illustrations):

Cut a piece of 1/16 brass tubing 3/8 inch long and a piece of 5/32 tubing 1/4

Continued on page 59



FULL SIZE PLANS AVAILABLE – SEE PAGE 80

Fellow team members again, Bob White and Jon Davis, after winning team trials at Taft, along with Willard Smitz. Note that Jon was using the 33% stab in Taft's mild air. Carl Taylor photo

GROOVY TUNA

By JON DAVIS . . . Twice FAI Wakefield team member (1973, 1975), presents his winning design. If you're serious about the event, try this one. "Sorry, Charlie . . . F/F modelers prefer tuna fish that can fly!"

Groovy Tuna was designed for the 1973 World Champs in Wiener Neustadt, Austria. The objective was to produce a model capable of performing well, both in the light early-morning lift, plus the stronger afternoon turbulence. Groovy Tuna meets both these requirements relatively well, but there is a bit of sacrificing which had to take place to come up with an all around model. Groovy Tuna is happiest flying in light air. If you want nothing more than a thermal-pig, then build a stock "Maxine" (M.A.N., 1970). The Maxine is as tough as an old boot (Fortunately it flies much better than an old boot.).

For those of you who are wondering where the name Groovy Tuna originated, I suppose some explanation is in order. Thomas Koster, of Denmark, built a power ship called "Hot Tuna." Who could leave a name like that alone? (By the way, "Hot Tuna" is also a San Francisco rock band.) Well, one night I went in to have supper, and there before me sat a spinach and tuna casserole which the cook had named "Groovy Tuna." I couldn't resist using the name. I was even going to hang some of the spinach from the trailing edge for effect, but I soon scrapped the idea. What a great psychological effect it would have on the competition to have your model come flying out of a giant casserole bowl with tuna and spinach hanging from it! Er, uh . . . oh well, not such a good idea.

DESIGN

The design of Groovy Tuna (the airplane, not the casserole) is pretty straight-forward in most respects. Compared to the "Maxine," the wing was stretched a bit, the stab size was reduced, the rudder area decreased, and the moment lengthened. Groovy Tuna uses an airfoil which is a copy of John Gard's Unlimited-Rubber model. The prop is a Schwartzbach with no changes.

Groovy Tuna climbs up fast and its redeeming feature is the glide. Here in Albuquerque, in early morning air, the model will do just over three minutes (3:05 to 3:10). In the early morning air at Taft, it would do right at four minutes. There were some models doing more than this . . . most notably John Gard's model . . . but they were not competitive in the afternoon thermals.

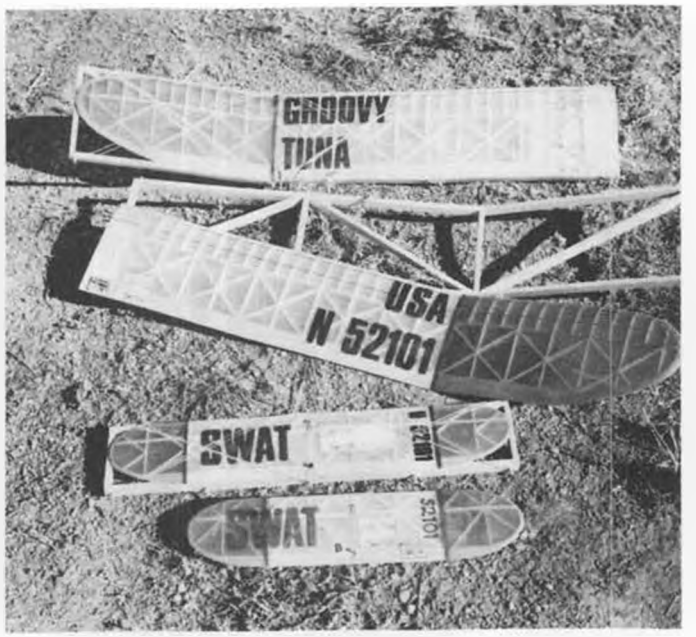
For those of you of an experimental nature, the Groovy Tuna has flown with a stab size of only 33 square inches. The normal size is 44 square inches, and this is considered small. The smaller stab would let one put a few more inches in the wing, but it should only be flown in extremely dead air. It simply can't handle the turbulence with such a small stab. Forty square inches appears to be the lower limit for an all around, stable Wakefield.

BUILDING

The Groovy Tuna is not a beginner's model. If you want a simple, easy-to-build and fly model, then build a Maxine. The wing of Groovy Tuna is simple, and the internal spar, though somewhat of a pain, is strong. The easiest way to cut out the opening in each rib for the spar is to use an aluminum template with a small hole (.030 diameter) drilled at each corner of the spar rectangle. When the rib is cut, simply poke a pin through each of the four holes and then use a small knife-blade to connect the holes. Presto (or is it zap?), and the hole for the spar is cut. The three inner ribs on each wing are 1/16 ply, with holes drilled for the aluminum tubing. The wing tips

Aluminum tube fuselage, Graupner spinner. Note fuse position. Jon singed wing trying to light fuse with match! Come ON, Jon!

Jon's retriever (wanna bet?), Sarah Hutchinson, holds "Tuna". Albuquerque, NM flying field in background.



Wings and stabs are kept in jigs to prevent warps. A little extra care goes a long way. Note two sizes of stab; 44% and 33%. See text.

are laminated from four pieces of 1/16 by 1/4 soft balsa soaked in water for 15 minutes, and curved around a form. The stab is also simple, the tips being made in the same manner. Don't forget the webbing under the spar, as it gives it a lot of added strength.

The pylon is made completely of 3/32 balsa. The top of the pylon is made by placing a solid balsa core between two outer ply ribs and then sanding this to the wing airfoil shape. Holes are drilled all the way through the block and the wing wires are inserted. A hole down through the top, intersecting the wires, gives a place to epoxy the wires to the block. Using your own discretion, make the pylon *strong*. I use Hobbypoxy Formula 1 to secure the pylon to the aluminum motor-tube. It must be a *secure* bond.

The boom is formed from 1/16 sheet balsa, soaked in water, and wrapped over a form. This is wrapped with an ace bandage. After it has dried, remove it from the form and glue the seam with an epoxy-type glue.

The motor tube and front-end are hard to make, since you need a machine shop. They are available, fortunately, for purchase! The front-end is the same one used on the Maxine, which Jim Taylor sold for awhile. He has ceased production, but now I am making them, using the same dies. The complete front-end is $12.50p.pd., and the aluminum motor tube and two fittings are $16.50p.pd. Order (now!) from:

"HUBS"
c/o Jon Davis
303 Fontana N.E.
Albuquerque, New Mexico 87108

The noseblock can be made of aluminum or of laminated wood.

Use your own ideas and discretion when building Groovy Tuna. Personalizing a model to suit one's own taste is generally helpful and more rewarding.

TRIMMING

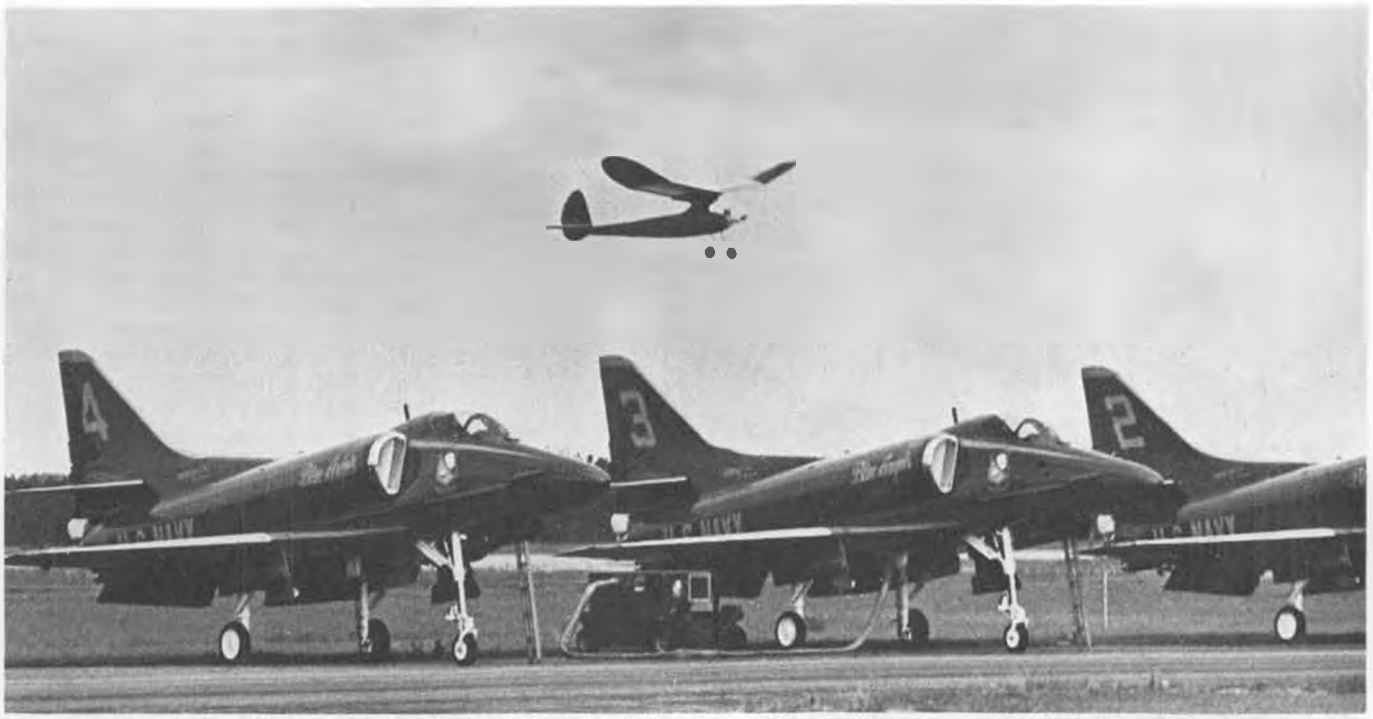
Before flying, be sure that the wing and the stab are flat. Washout in both tips is O.K. but the center panels should be flat. The stab should be tilted approximately parallel to the inner right wing panel. The rudder tab should be set straight. Grind a couple of degrees down and right-thrust into the nose doubler.

Hand glide the model for a fairly slow, right-hand glide. First flights should be made with about 100 turns, launching slightly up and right. Groovy should climb out all the way with the nose up. If it tends to flatten out at the end of the motor run, then take out

Continued on page 67

Hours and hours of flight testing Wakefields can get to a guy after a while. Afraid you're permanently DT'ed, Jon.

Jon discloses a portion of the ritual that assures top results from the rubber. It takes 25 minutes to perform, requires 2 days to recover.



Captivating picture of Jack Bolton's Playboy Senior gliding in on final, with Navy Blue Angels' A4F "Skyhawks providing the background. Scene was at NAS Pensacola, and photo was taken by Pnesacola News Journal staff photographer.

PLUG SPARKS

By JOHN POND

Last month we were yakking about spark engines and the all-important accessories. To help spur further interest in ignition engine use in radio control old timers, the R/C contest for limited engine run events at Taft on March 16 will feature 35 second engine runs for those employing ignition motors. Of course, the more powerful glow engines will still be restricted to 20 second motor runs. How's that for the latest gimmick?

With a lead-in like that, we are going to continue our little gems of information on ignition flying.

Last issue we talked about spark plugs. It is a well known fact that some spark plugs will make an engine start easier and run faster. The writer is still partial to Champion plugs; if you can find them!

Among other things like coils, batteries, etc., we will take up in subsequent issues, probably the item that draws the least attention is the hook-up wire. Believe it or not, this is the most important! You can run on low batteries, poorly set timer points, and a "hot" coil, but if you can't get the juice down the wire, you are dead.

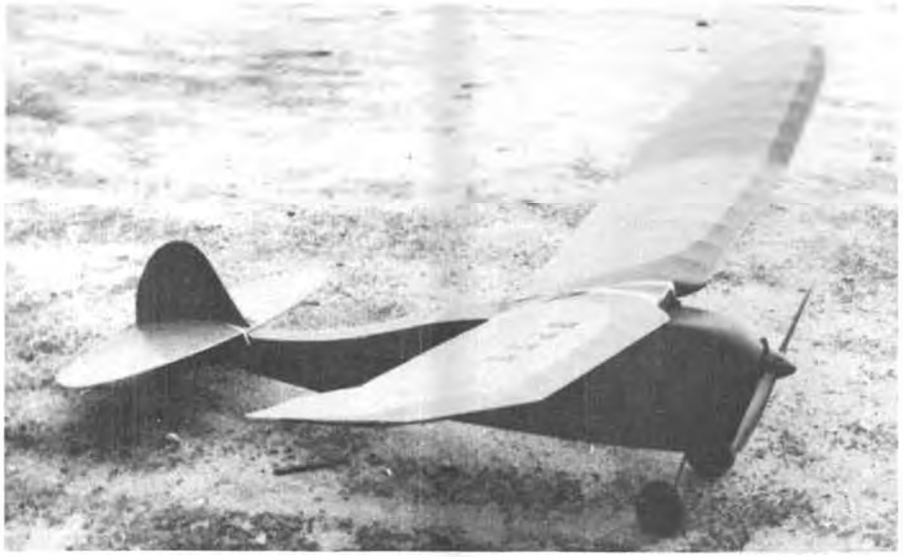
Particular attention should be paid to the high tension lead. This should be well insulated, yet *flexible*. Use a simple lightweight clip to the plug. A rigid connection is to be avoided at all costs. With the original type ignition wire for automobiles being hard to find, the best thing to use is radio test wire. There are several types, but be sure it is the stranded type!

The balance of the ignition wire should be radio wire, at least 20 AWG. It is color coded, so make sure you get red for the positive and black for the negative. You will always know where you are. So many times, the writer has seen a modeler struggle for an interminable amount of time to get his motor started, only to kill it when switching over to the internal batteries and finding the boosters were reverse polarity.

In using radio wire, make sure all joints are pre-tinned for use of a hot soldering iron, because any prolonged length of time sets fire to the wire. No big deal however, you can easily blow it out. By why be a hambone?

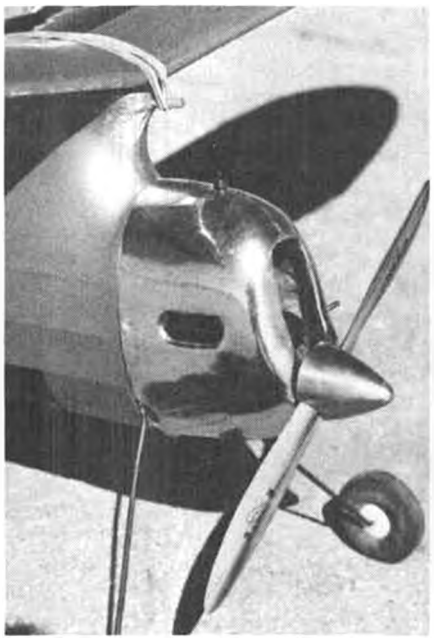
Wiring should be secured so that the engine vibration does not cause undue swinging of the wire with resultant break-

F. L. Swaney, with his good performing, DeLong 30 powered Alert.



Sal Taibi's Green Hornet with (what else?) Forster 99. It will perform at the Denver SAM Championships . . . and it really is green . . . two-tone, yet!

J. C. Pucket tuning his Dennymite (for the umpteenth time!) in a Turner Special. Persistence pays off, he took second at Nationals Old Timer event.



No, it's not a polished aluminum cowl. Red Barrows did an excellent job with chrome Monokote on his New Ruler!

Red Barrows again, this time with his green and gold Sunduster. Webra Speed 60 will have to come out under new SAM rules.

age and/or cracks. Try and find those on the field! As bad as cold solder joints! Some modelers prefer to glue their wiring to the sides of the fuselage, while others carefully sleeve them through the bulkheads. Main thing is to avoid wires that flop around.

By now you are saying to yourself, "Why bother me with elementary details?" Mister, I have news for you. Pay attention to the details and the big items will take care of themselves! How many times have you cranked on an engine for a considerable length of time and when it finally starts, you are so relieved you heave it in the air lest it quits on you again. That is strictly a case for "crashville!".

Several months ago, we carried the notice that an old time controline contest was to be held in the Chicago area. No results have been received despite prodding letters.

However, in the meantime, this columnist was the recipient of news from John Miske, Jr., of the New Jersey Garden State Circle Burners. Miske claims they have staged contests since September 4, 1970. The events have been staged in conjunction with no less than eight other contests. The O/T controline has been gaining in popularity every year.

The most popular models seen at the meets are Super-Zilches, All-Americans, Barnstormers, and others in the 1950 era. As John says, it is great to see planes with real character again, and on top of that, they fly great!

Miske also provided a seven page rule booklet, complete with illustrations of the stunts as used under the 1951-52 AMA rules for Precision Acrobatic Flying.

In nutshell form, rules specify that the design should have been available in kit or plan form prior to December 31, 1952. A list of eligible designs is appended to the rules. While no appearance points are awarded, a bonus of 10 points is awarded for those using spark ignition engines for power. In addition, those models not employing wing flaps receive an additional 20 points.

Those modelers interested in further information on old time controline flying should contact John Miske, Jr., 415 Clifton Blvd., Clifton, New Jersey 07013. The way the rules are right now, they could be incorporated directly into the SAM rule book. This is something to consider in the future.

FORSTER COMES BACK!

Another of the old time ignition engines is in for revitalization. M-G Engines, P.O. Box 6026, Denver, Colorado 80206, has acquired all the spare parts and manufacturing dies for the famous Forster (no, it's not *Forrester!)* engine. Before you get over-anxious, until a decision is made on what engines to remanufacture, there are *not* enough parts to build any complete engines right now.

Send 25 cents and any special questions you may have to Bob Greer, Sales Manager.

FLYING FIELDS UNLIMITED

Did you ever hear of the situation where there are too many flying fields? What a modeler's dream! This is exactly what Cdr. Bolton (Mr. Lakehurst) encountered when he retired to Pensacola, Florida.

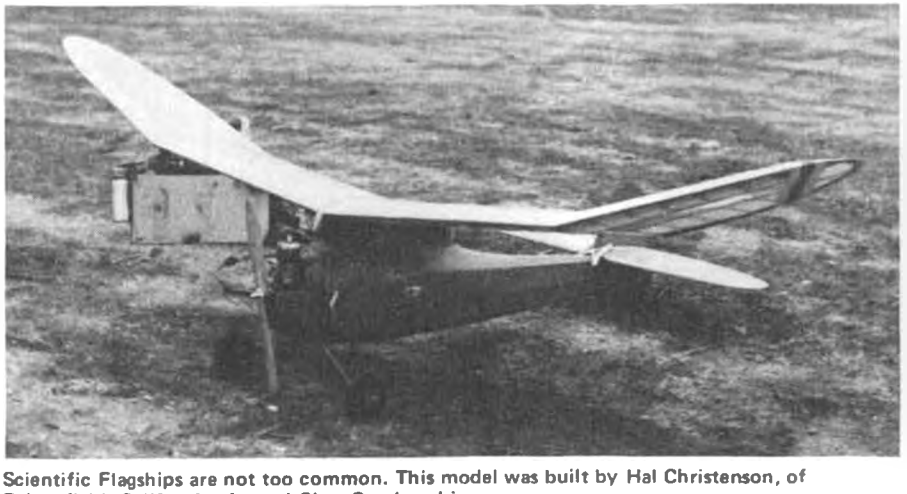
When Jack first arrived at Pensacola, he was looking forward to re-visiting the fields. He put his models in the car and drove to Site 8, a mile square helo site similar to old Mile Square in Southern California. He found a few modelers flying free flights; among those, a gorgeous Ohlsson 60 powered New Ruler. From there he drove 8 miles to old Corey Field, where he took several flights. Seeing that everyone had left, Jack packed up and drove back to Ellyson Field (a quarter mile from his house!). He found a few more modelers there and spent the rest of the day there. Fields he failed to visit were old Bagdad, Spencer, Sarpley, and Silverhill. What a problem!!

As Jack says, modeling suffers from this fragmentation, as you can never depend on a convivial group at a specific site at any given time. This is what modeling is all about; getting out with the boys and enjoying yourself. All this writer can say is, that we should have it so tough!!

Jack concludes his letter with the comment that he has organized a 15 member SAM Club at Pensacola. Better watch out for those Florida boys at Denver! Look what they did to the National AMA Model Championships for the last two years in R/C stunt. Ouch! They have some great free flighters down there too, so get your stuff in top shape.

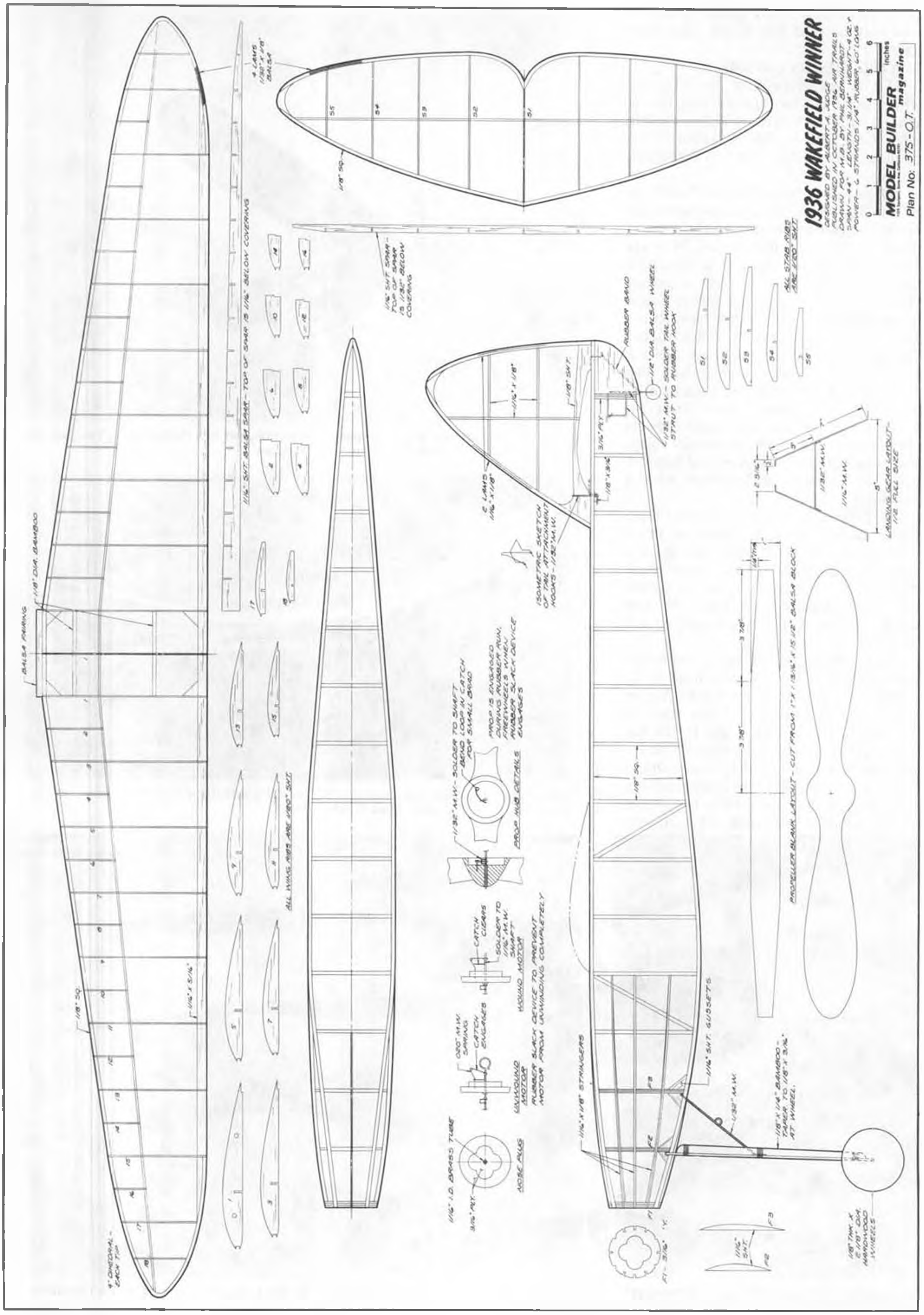
Incidentally, in a name selection con-

John Pahlow holds his beautiful blue and white Monokoted R/C Powerhouse. You can also see his "Big John" biplane in the R/C column of this issue.

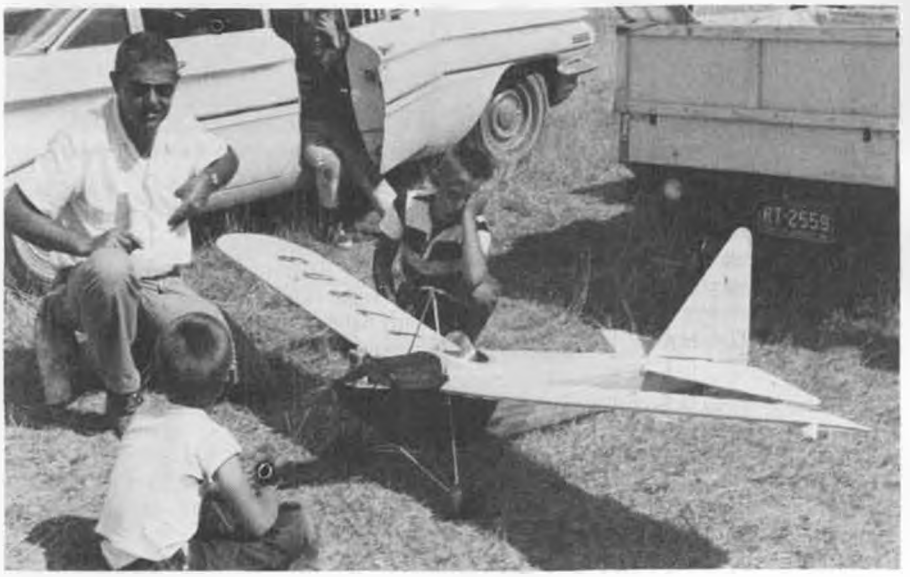


Scientific Flagships are not too common. This model was built by Hal Christenson, of Bakersfield, California. A good Class C pylon ship.

Stunning red and cream Ohlsson "Speedmark", built and flown at Lake Elsinore by scale great, Danny Lutz, now working at Kraft Systems in Vista, California. Dan also restores Model "A" Fords, has prize winning show cars.


1936 WAKEFIELD WINNER
DESIGNED BY ALBERT H. JUDGE
PUBLISHED IN OCTOBER 1936 AIR TRAILS
DRAWN FOR M.B. BY PHIL BERNHARDT
MODEL BUILDER magazine
Plan No: 375-O.T.
ALL WING RIBS ARE 1/20" SHT.
ALL STAB RIBS ARE 1/20" SHT.
BALSA FAIRING
1/8" DIA. BAMBOO
RUBBER BAND
PROP HUB DETAILS
NOSE PLUG
LANDING GEAR LAYOUT
PROPELLER BLANK LAYOUT

A rare 1938 "Corsaire", designed by Belgium's Van Wymersch, and faithfully reproduced by John Haggart, of England.



Al Snowden flew this good looking Buhl Bull Pup (Sept/Oct '74 MB) at the last Denver SAM Championships. It flew quite well, too!

Very sanitary front end of the Van Wymersch Corsaire by John Haggart, with cowl removed.

1936 WAKEFIELD WINNER

OLD TIMER Model of the Month

Designed by Albert A. Judge
Redrawn by Phil Bernhardt
Text by Bill Northrop

Lord Wakefield, of Hythe, first put his famous cup into model competition in the year of "Lindy," 1927. By 1936, the cup had hopped back and forth between the U. S. and Great Britain, and was currently residing in the United States. It had been brought here by Gordon Light's 1935 winner, which was proxy flown by T. H. Ives on one O.O.S. flight of 7:20, which averaged out to 2:26.6, better than any other. We have the plans for Gordon's ship too, if you are interested.

The 1936 British team came to the U. S. with their models, and when the dust cleared, Albert A. Judge had the highest average (4 minutes, 9 seconds) . . . and the Wakefield Cup!

Judge's model featured clean, simple lines, and was indicative of the trend away from the previously popular motor stick. Judge also incorporated a rubber tensioning device, something very new for the day, and permitting his use of 6 strands of 1/4" flat rubber 60 inches long! His device looks very precarious, at best, and we'd recommend something more up to date. Another suggested revision would be to add 1/64 plywood braces (they'll bend to the sweepback required) on the front and back sides of the main spar at the dihedral breaks.

Incidentally, the Wakefield rules were beautifully simple in those days; cabin or fuselage models of 200 sq. in. wing area, with a 5% (10 sq. in.) plus or minus tolerance . . . minimum weight of 4 oz. (with rubber) . . . and minimum fuselage cross section area of $L^2/100$. Time was the average of three flights.

test, one wag came up with SOTS. (Southern Old Timer Society). Looks like they will end up with Pensacola Vintage Aircraft Modelers.

CLUB NEWS

The writer often wondered what happened to the old SAM 7 club designation that used to characterize the SF Vultures before the advent of an R/C Soaring Glider Club. Well, now he knows!

Received the "Yankee Flyer," saying there is indeed a SAM 7 Club. This is their name, "SAM 7," not related to the SAM #7 Flying Aces or SCAMA Club. Are you thoroughly confused now? "SAM 7" has been extremely active sponsoring four meets a year for the past two years. Their Spring Rally will be held just as soon as the Connecticut River flood waters recede.

They have also issued a challenge that contestants can have all the free beer, soda, and hot dogs they want. They have yet to be run out of supplies! The present schedule for contests calls for the Spring Contest on June 1 (!!), the Summer Outing on July 13, and the East Coast Old Timer Championships on September 21.

Tom Lucas also took this writer to task for misstating the facts at last year's Lakehurst Champs. It wasn't the Flying Aces Club that did so well (although I thought SCAMA dominated free flight), it was SAM 7 who took home 15 of the 34 F/F trophies. Can hardly beat that!!

* * *

Almost reported missing the Utah State Aeromodellers Annual, which featured three old timer events. The big annual O/T events were dominated by the new SLAM Club, taking just about

Continued on page 62

Mile Square Track, Fountain Valley, California. Note immovable, permanent border. Tough on cars, but reassuring for barefoot spectators!

R/C AUTO NEWS

By CHUCK HALLUM

Imagine after 3 hours of racing that the first and second place cars are on the same lap. But that's what happened in the 5th Annual Southern California 3 hour Enduro. The team of Mike Morrissey and Don Amedo won the Enduro, with Gene Husting and Earl Campbell only a half a lap behind. They were running just as fast at the end as they were at the start. As one would expect, there were all sorts of little problems that beset each team, but the last half-hour or so was really exciting.

The site of the Enduro was a new track at Mile Square Park, in Fountain Valley, California. It's a county park which has areas for R/C planes and land sailers as well. Over the next few years, it will be developed into a real showplace, with grass covered berms around the track for spectators, and picnic areas. Permanent track layouts and facilities have not yet been established, and the county is waiting for our recommendations.

Many teams showed up for practice on Saturday. The Pomona area racers (Thorp, Camp, Charbonneau, Citro) were there early, and got their cars sorted out and left for home by 2 p.m. The Los Angeles area and local Orange County guys (Morrissey, Husting, Kroells, Campbell, Thompson, Albu, Amedo, Jianas, Watson, Deans, Rold, Towry, Kimbrough, Stallings, Carone, Cade) were still thrashing around as the sun was going down. Also, Arturo Carbonell came down from San Jose, and had his car working well . . . by far the quickest of all the racers. Since Arturo had no teammate, he asked me if I'd drive with him. So I got a chance to drive his car for several tanks of fuel. As expected, I looked like a beginner with his car. The driving characteristics were very different than any of the local cars. The very strong engine and tight clutch (full engagement at fairly low speed) gave low speed power oversteer. After a few tanks I was getting a feel for the critical throttle position, and was doing better. As with most cars, the faster you could keep the car going the better it seemed to handle. I had several corners down pretty well, but through the infield esses . . . Ouch!

On Sunday, all cars entered had two 10 minute and one 5 minute qualifying session. The fastest 3 single laps were used as the qualifying time. Carbonell had the fastest qualifying time. Eleven cars were able to get in the race. So now there was about a 20 minute break while everybody got their final preparations done. A staggered start was used to begin the race; Carbonell (and myself) on the inside front, Amedo (and Morrissey) next, Husting (and Campbell) 3rd, with the rest trailing out behind. As one can expect, even with a staggered start and 3 hours of racing ahead,

Mike Morrissey at the helm . . . er, wheel during the Enduro run.

Don Amedo looks to Mike for instructions during pit stop.

Earl Campbell applies lip control in an attempt to catch the lead car.

Associated Electric's Gene Husting pumps fuel during pit stop. Note engine exhaust.

everybody wanted to get to that initial corner first. With eleven cars it was a mess. Amedo broke out first, Carbonell and Husting both got nerfed, and the race was on. After about ten laps, Carbonell was about 50 ft. behind Amedo. When Amedo pitted, Carbonell led for a few laps, but about one lap from our first planned pit stop, the engine died . . . out of fuel. So Amedo went back into the lead, with Husting in second place and Carbonell down about 3 laps.

Anyway, Amedo and Morrissey managed to lead the first couple of hours even though they seemed to be having radio problems. Jim Cade and several others weren't so lucky, as their cars bashed the wall. After a complete tire change, I relieved Arturo. Within a couple of tanks of fuel I was finally starting to do pretty well . . . even in the esses. We were still running third at about the two hour mark. Then, going down the back straight, the car took a hard left and went into that immoveable wall. Damage to the steering forced us to retire. Apparently the crystal had come out of the receiver.

A short time later, Morrissey concluded that their car problem was in the transmitter, and changed the battery. That was it, but in the meantime, Husting/Campbell stretched out a ten lap lead. But that didn't last . . . car battery problems for a while, then a battery change, cut the lead to four laps with a half hour to go. With Campbell and Morrissey driving, that last half-hour was quite something. On the final pit stop, Morrissey got onto the same lap as Campbell, who had a longer than normal pit stop. Finally, as the sun dropped below the clouds, Morrissey took the checkered flag a half-lap ahead of Campbell. Dick Camp/Carl Citro took third place just a few laps off the pace and John Thorp/Ray Charbonneau took fourth.

All I can say is, I was sure glad that it was over. Portions of the race seemed like a destruction derby. There were numerous radio problems and other assorted things which caused the cars to blast the immovable border/retaining wall (4 X 4 posts stacked three high and permanently affixed to the surface). I'm sure we will have to do something to provide a more forgiving perimeter in certain areas.

MISCELLANEOUS RAMBLINGS

One thing which I forgot to mention in the series on engine rebuilding, was spiral grooves on the front of the crankshaft to eliminate oil leakage. In the past, numerous racers used a double shielded bearing on the front to eliminate oil leakage. However, spiral grooves can be cut on the crank between the intake port and the front bearing to throw the oil back toward the engine. The sketch below shows the direction of the spiral grooves to be cut. A hand grinder with a cutoff wheel can be used. There should be about 5 or 6 grooves around the crank with about a 45° angle to the centerline. Don't worry about perfect spacing or angles. The grooves should be about .010 deep. Action of the grooves is similar to a propeller pump.

* * *

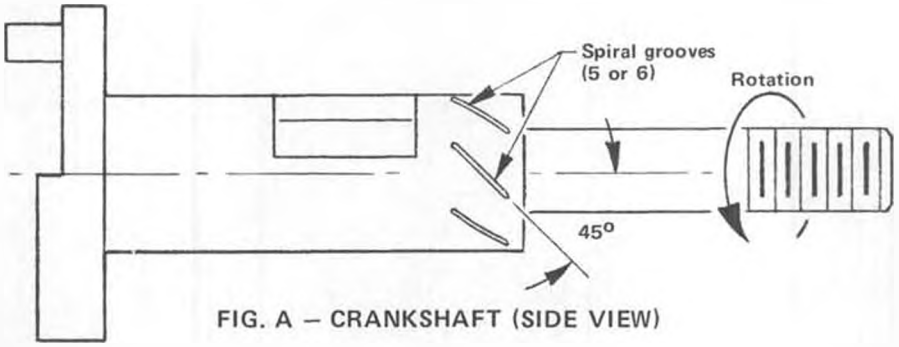
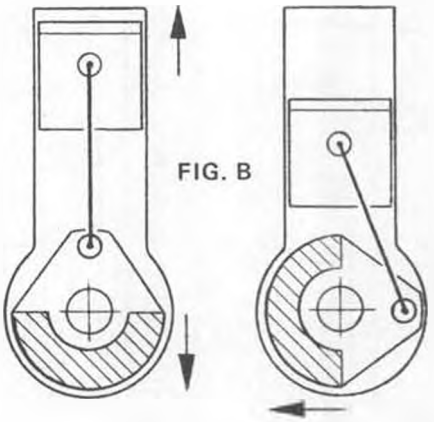


FIG. A – CRANKSHAFT (SIDE VIEW)



Transfer of primary out-of-balance force in 90° of shaft rotation.

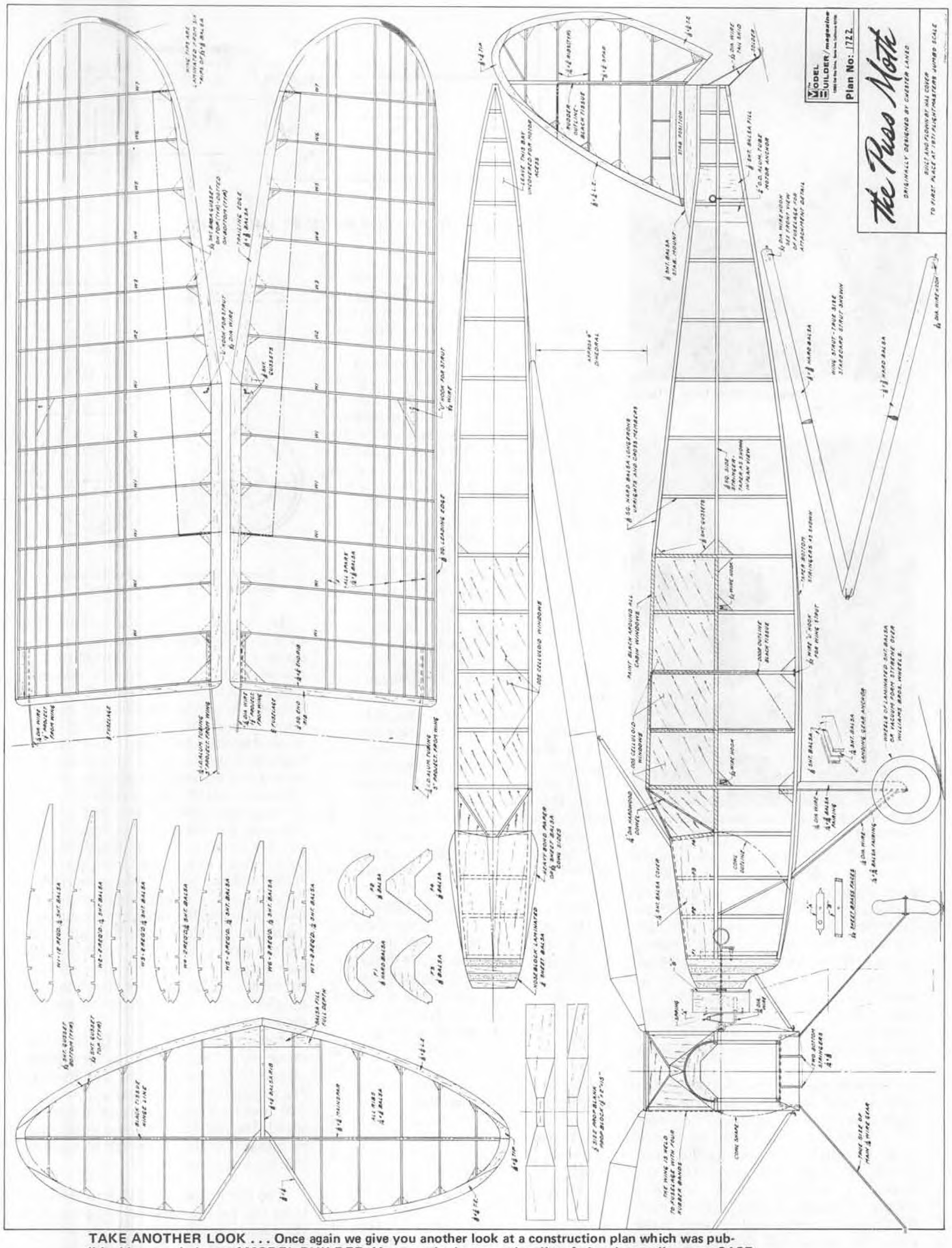
In the past, numerous people have used lay-down engines, hoping to reduce up and down vibration transmitted to the rear wheels. This may or may not happen, depending on the crank counterweight. A single cylinder engine can never be perfectly balanced in all directions. Usually, the crank counterweight balances a portion of the piston and rod weight, but this in turn introduces lateral vibration. (B) If the weight is heavy (almost the same as the piston), the vibration parallel to the cylinder is low but the lateral vibration is high. With a light counterweight, the lateral vibration is low and the parallel vibration is high. So you can see, lateral vibration may be worse than parallel vibration . . . depending on counterweight size. I would imagine the guys running the Taipan engines have played around with counterweights to reduce vibration. Lay-down engines do give a lower c.g. and a better appearing Formula car, though.

I was very happy when Dick McCoy mentioned that he had tried the tapered outlet on carburetors (as discussed in my engine hop up articles) and noted a 200 rpm to 300 rpm increase in top end speed. He said he now has instrumentation that is accurate enough to measure this kind of a change.

* * *

The trend here in Southern California is to use muffler pressure to pressurize the fuel tank (more in a future article). It seems that the engine runs steadier

Continued on page 58



TAKE ANOTHER LOOK . . . Once again we give you another look at a construction plan which was published in an early issue of MODEL BUILDER. You can obtain a complete list of plans by sending your SASE.

R/C MULTI CHANNEL

THE CONTENDER—The first all-balsa R/C model you can build in just 8 hrs. Wing Span: 54" Eng.: .29 to .60. Kit RC-15 **$44.95**

KWIK-FLI III . . . World and twice Nats. winner. Designed by Phil Kraft. Span: 60" Eng.: 45 to 61 Kit RC-12 includes jig for true straight wing. **$57.50**

R/C NOBLER Radio version of the winningest stunt model of all time. Wing Span: 51" Eng.: .35 to .45. Kit RC-14 **$36.50**

R/C SCALE AND STANDOFF SCALE

S.E.5.a Never before has a R/C scale model been designed with such attention to the most insignificant detail. Wing Span: 52" Eng.: 45 to .60 Kit RC-13 **$57.50**

MUSTANG P-51 . . . A standoff scale model that only a ruler can tell from a true scale plane. Wing Span: 60" Eng.: .40 to .60. Kit RC-16 **$54.95**

WARHAWK P-40 . . . Now—in answer to your many requests. Span: 60" Eng.: .40 to .60. Kit RC-17 **$57.50**

R/C COMPACTS

HEADMASTER . . . America's best R/C trainer, for up to 3 channels. Span: 48" Eng.: .09-.35 Kit RC-11 **$23.95**

TOP DAWG . . . Single or multi-channel for sport or pylon racing. Span: 39.5" Eng.: .049-.15 Kit RC-10 **$19.95**

SCHOOLMASTER . . . Single or multi channel with rudder, elevator and engine control. Span: 39" Eng.: .049-.090 Kit RC-8 **$13.50**

SCHOOLGIRL . . . Span 32" Eng.: .020-.049 Kit RC-9 **$12.50**

SCHOOLBOY . . . Span: 29" Eng.: .010-.020 Kit RC-3 **$8.50**

SEMI SCALE STUNTERS

HAWKER HURRICANE . . . Span: 42" Eng.: .19-.35 Kit S-51 **$12.95**

CURTISS P-40 TIGER SHARK Span: 42" Eng.: .19-.35 Kit S-50 **$12.95**

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FLYING MODELS

for those who insist on the

VERY BEST!

CONTROL LINE SCALE MODELS

SUPER FORM PREFORMED FUSELAGE SHELLS FOR FAST STURDY CONSTRUCTION

P-40 WARHAWK Span: 28" Eng.: .15-.29 Kit S-1 **$16.95**

P-47 THUNDERBOLT . . . Span: 27" Eng.: .15-.29 Kit S-2 **$16.95**

P-51D MUSTANG . . . Span: 37" Eng.: .29-.35 Kit S-3 **$23.50**

½A FORM-FLITES (SCALE U/C)

ZERO . . . Span: 18" Kit S-20

HELLCAT . . . Span: 18" Kit S-21

THUNDERBOLT . . . Span: 18" Kit S-22 **$4.50**

CONTROL LINE · STUNT PLANES

REPEATED NATIONALS AND WORLD CHAMP.

NOBLER . . . Winningest plane of all time. Span: 50" Eng.: .19-.35 Kit N-1 **$22.95**

NATIONAL AYSC PLACE WINNER

JUNIOR NOBLER . . . For expert or novice. Span: 40" Eng.: .15-.25 Kit N6 **$12.95**

PEACEMAKER . . . Superform for fast construction, exceptionally durable. Span: 46" Eng.: .15-.29 Kit N-7 **$14.95**

FAMOUS FLITE STREAK FAMILY

NATIONALS COMBAT WINNER

FLITE STREAK . . . Combat or stunt flying at terrific speeds. Span: 42" Eng.: .15-.35 Kit N-2 **$11.95**

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JR. FLITE STREAK . . . Span: 31" Eng.: .15-.25 Kit N-3 **$8.95**

BABY FLITE STREAK . . . Span: 24½" Eng.: .049-.099 Kit N-4 **$4.95**

COMBAT STREAK . . . Span: 42" Eng.: .19-.35 Kit N-5 **$10.95**

STREAK TRAINER . . . Span 33" Eng.: .15-.19 Kit N-10 **$12.95**

CONTROL LINE COMBAT MODELS

COMBAT CATS . . . Two complete models in one box. Span: 39½" Eng.: .19-.35 Kit N-8 **$12.50** (2 models)

COMBAT KITTENS . . . Span: 22¼" Eng.: .049 Kit N-9 **$8.50** 2-models)

TOP FLITE MODELS, INC. 2635 S. WABASH CHICAGO, ILL. 60616

Choppers . . . . . *Continued from page 19*

8 lbs., has a 54 inch main rotor, and four channel radio. Well Cliff, if it flys as well as it looks, you've got a real winner!

Cliff is also constructing a mold for a Bell UH-1, and intends using the same mechanics as in the Bell 47. He advises that any modeler scratch-building a collective pitch system should be *very* careful to have all pitch rods and linkages built tight and strong in order to eliminate any possibility of slop, or "give" in the system. Control rods can and do bend under load, so be careful! Another thing he recommends is to hook up the throttle so as to be fully open at 2/3 of the transmitter stick travel, with a 1/3 override travel for more collective. This is similar to the Kavan Jet Ranger set-up. Tieing in the collective pitch with tail rotor via a mixing lever is also very desireable, to reduce left/right torque when changing pitch. Thanks much for the data Cliff . . . we look forward to your fine inputs to the column!

The mail and R/C helicopter data cards continue to come in . . . Here are a few additions to the growing list:

John W. Stoebe, 40-35 190th Street, Flushing, New York 11358. Graupner Bell 212, needs help in flying the "darn" thing!

Tommy Dennison, Box 83, Meadowview, Va. 24361, (703) 944-3924. Kavan Jet Ranger, needs help in trimming and flying. Share building skills.

John DeBano, 32289 Judilane, Roseville, Mich., 48066, 293-2898. Scratch building own chopper, needs help with rotor blade control and r.p.m. requirements.

Alan M. Piercy, P.O. Box 267, Castle Rock, Wash. 98611, 274-4293. Hegi Cobra, Kavan Jet Ranger. Would like to exchange ideas on original designs.

Les Urban, IC-1 R-Div., USS Joseph Hewes, DE 1078, FPO N.Y. 734-5159 (Homeported in Charleston S.C.) DuBro Shark, DuBro 505.

For the past two weeks, I have been constructing a Graupner Bell 212 helicopter and taking lots of pictures in the process. Normally, I build a helicopter (or any other kit for that matter) by occasional reference to the instructions, and just letting the pieces fall into place . . . Ha! This time, however, I'm doing it by the book because I was so impressed by the great quantity (and quality) of information supplied with the kit. The present plans call for a kit review in next month's issue of MODEL BUILDER, and followed by a detailed adjustment, trimming and flying report the next month. So far, I'm very impressed with the way it's going together, but it sure does take a lot of time to cross-reference the English instructions with the German plans.

That's about it for this session fellas, gotta get back to my 212 building.

BCNU next month. ●

R/C Auto . . . . . *Continued from page 55*

and holds the mid and top end setting better. The pressure system forces the fuel to the engine so that effects of acceleration and cornering are reduced, as compared to atmospheric or "chicken-hopper" tanks. The tank is built in the usual manner; sump, riser with rat filler, and vent tube. The only thing which should be done is to place the vent at the highest point in the tank, The pressure line from the muffler is connected to the vent. Vent placement should be above the fuel level because: When the engine is idled down, tank pressure can blow fuel out the vent and into the muffler! With a low vent, fuel consumption will appear high and a poor initial idle may occur. The fitting to use in the muffler is an old fuel inlet nipple off of a Perry carburetor. Drill and tap a 6-40 in the muffler for the fitting (a 6-32 tap will do if you don't have a 6-40). Use care in filling the tank initially before starting the engine, because you can flood the engine with the fuel dumped in the muffler. Either disconnect the pressure line or squeeze it shut during initial tank filling.

Well, thats' thirty for today. See you next month. If anybody out there wants a specific topic discussed, write to me,

c/o Model Builder Magazine, or to Chuck Hallum, c/o HRE Inc., P.O. Box 4658, Irvine, Calif. 92664.

Good luck in racing for 1975. •

Snowcar . . . . . *Continued from page 29*

sheet aluminum.

DETAILS

Do not omit the 1/8 inch music wire rear ski stabilizers. They were added after the photos were taken and *must* be included. These stabilizers control toe-in, and without them, the rear skiis will not track properly. Also, do not omit the spring-loaded cable on the front ski, as this prevents the ski from "digging in." Another steel fishing leader is anchored to the rear of the front ski . . . this is positioned to allow enough slack for turning while at the same time preventing the ski from overloading the servo. I stripped a set of servo gears before adding this cable!

The radio equipment can be installed at this time. Position the gear as far to the rear as possible, in order to keep the nose light. Use a "Z" bend in the nose ski pushrod for servo protection. If your servos are not particularly strong, I would advise ganging two servos together, via a parallel jumper cable, for the nose ski. If you plan to use a vertical antenna for the receiver, epoxy an 1/8 inch brass tube in the cabin top for a music wire antenna.

FINISHING NOTES

I have built two Snowcars. One is covered with Silron while the other is covered with plastic film; both of these materials worked well, so the choice is up to you. The window coverings were made from clear acetate and attached with Sig 1/4 inch striping tape. I made patterns from vellum and then transfered the outlines to the acetate. Finally, the 1/8 inch music wire propeller guard can be added. Bend this to shape, using the plan as a guide. This handy item has saved my Call-Air from extensive damage several times (including 20 mph "rolls"!).

I have found that my Call-Air Snowcar has added new dimensions to what were formerly "no-flying" winter days here in northern Minnesota. I would be pleased to hear from any modelers who build a Call-Air. My address is Box L, No. 1, Onamia, MN 56359. Good Luck!

F/F Timer . . . . *Continued from page 45*

inch long. Solder tubing at approximate locations shown. Tatone timer arm can be used, and 5/32 tubing should be positioned just inside the radius of the arm (see illustration). Tatone arm must be filed to fit shaft of the Focal (fit should be snug).

A piece of 1/32 wire is used to start and stop timer. Wire is bent the same for "pinch" or "flood-off" (see illustration). You will note that timer may stop short of pinch-off tubing, or not wind a full turn and/or be faster than desired length of engine run. In either case, turn timer over and remove the screw seen at center of bottom plate. This will allow timer to turn 360°, less the pinch-off tubing. If timer is too fast, position arm 1/8 inch away from tubing, unscrew retainer and remove arm. Rotate arm 180° clockwise and replace. Repeat if necessary. (See notes below).

"Flood-Off":

If flood-off is desired, make only two changes in described steps. The 5/32 tubing is *not* used. Instead, solder 1/16 tubing as shown, and use wheel that comes with Focal. A notch must be filed to release flood-off arm (see drawings). The limit screw mentioned above in the pinch-off instructions is left in for a flood-off system. However, if timer is too fast, unscrew the limit screw, letting the stop on the bottom gear go by. Then retighten. Repeat if necessary. Wheel must be positioned on shaft to release "flood-off" arm before gear stop hits limit screw.

Notes:

If, before you assemble completed timer, you will sand face plate with 400 paper and brush on a coat of K&B clear Super Poxy, the plate will stay bright and shiney.

We make a light-weight dust cover for the works, using Sig Heat-Form Plastic .015 thick. Cut a rectangular hole in a 1x3x3 inch chunk of balsa. Hole should be 1/16 inch longer and 1/16 inch wider than original case. Hole should be a rec-

tangle. It's not necessary to copy shape of case. Hole should go all the way through the 1 inch block. "Hot Stuff" (glue that is) original case to a piece of hard 3/8x3x3 inch balsa, square in the middle. Make sure case will go all the way into 1 inch hole 'till 3/8 is flush against top. Fit should be sloppy.

Cut a piece of heat-form plastic 4x4 and, using two pair of long nose or common pliers, hold it by two corners over the stove burner, set about medium. Wave it slightly until it's very limp, then plop it down on the 1 inch balsa and force original case all the way into the hole 'till the 3/8 inch piece is tight against 1 inch piece. Hold for 15 seconds or so, then separate and remove plastic. Trim flanges, position over timer works, and poke holes for mounting. Using a 1/8 drill, taper the existing holes in backing plate so as to accept flat head screws. Then mount dust cover and backing plate.

Securing Timer to Model:

G.E. Silicone sealant or "Silastic" Silicone Adhesive may be used under face plate to hold timer in place (also shock mounts it). These products may be found in hardware stores. ●

F/F ..... *Continued from page 44*

I use in plotting airfoils is a pocket calculator . . . it really cuts down on the pencil and paper work. In addition, I have obtained some gridded paper which is divided into tenths of inches. This keeps my lines straight and really helps.

One handy tool that you should have, that should be obtainable from most any stationery store, is a small ship's curve . . . the one I have is plastic and about 12 inches long. The curve is used to connect all of the little dots that you end up drawing on the grid to mark the airfoil thickness at each station. It provides you with a way of smoothing out the rough edges and forming a good looking airfoil.

How's that for a starter on answering some questions?

THE CIAM ACTS . . . AND HOW!

In December, the CIAM met in Paris and discussed rules changes for FAI events. Those that most affect us free flight types are:

1. Coupe d'Hiver: A change back to 80 grams total weight, including motor 10 grams, from the previous 100 grams. Dave Whatzizstrum ought to be happy now, along with a lot of others.

2. FAI Power: A change in engine runs from 10 seconds to 8 seconds, to take effect during 1976.

3. FAI World Championships Flyoff Procedures: All three FAI International Events (A/2, Wakefield, Power) will use a progressive flyoff system, beginning in 1975, with one minute added to each round after a total max-out.

4. Indoor: In World Championship Competition, another attempt may be made for any flight of less than 30 seconds, and only if the model comes to rest when it touches the floor will the flight be terminated.

Although these rules appear to have a profound effect on FAI events, and maybe they will, the effect is less than some that were proposed would have had . . . such as cutting power runs to 7 seconds, or reducing rubber motor weight in Wakefield to 20 grams.

Whether the U.S. FAI Committee will institute these rules changes into the 1977 program is yet to be determined, but odds are in favor of such a change, given the predisposition of the committee to emulate as much as is practicable, the World Championships conditions and rules.

AND MORE RULES . . . AMA STYLE

The first go-round of the AMA rules-making process is complete as of December. There were a total of about 13 proposed rules changes directly affecting free flight indoor and outdoor. The next step is the counter proposal step, which allows all of us to get in on the act once again. Unfortunately, very few of our number really does much about contacting the local F/F Contest Board member, before he votes. It is only after he has voted . . . usually based on his best seat-of-the-pants reaction . . . that we take it upon ourselves to let him

know our displeasure with his crummy vote. Now, you have another change to get your two cents worth in . . . the new AMA rules making procedure gives every modeler ample opportunity to sound off. Just address such soundings to your local CB member. Names are printed in every issue of Competition Newsletter, as well as periodically appearing in the Model Aviation magazine published by AMA. Speak up or forever curse at yourself.

TIPS AND THINGS

Propellor balancing: Use whatever means you have to check your power model prop for the heaviest blade, even a nail or screwdriver will do. Mark the hub or blade on the heavy side. Now, here's the simple secret: Place the light blade opposite counter balance. To do that, use the following rule: Put the lightest blade at the 3 o'clock position with the crank turned counterclockwise against compression. This positions the heavy blade on the counter balance side of the shaft. The engine will run more smoothly in all except the most extreme cases, such as; racing engines running at over 18,000 rpm, or using blades that are extremely out of balance. If either of these, the blades will need some trimming to get the best performances.

Mixing Epoxy: Mix epoxy cements on a plastic coffee or ice cream lid. When excess epoxy has hardened, flex lid and it peels off, leaving a clean surface for the next batch. Store epoxy tubes in an upright position to avoid leakage and sticky fingers.

Bending Tubing: Copper tubing is the thing to use in making up fuel tanks. Trouble is, some of it is so hard that it is difficult to bend it without getting "kink-itis." So what to do? Get a propane torch and heat the copper to a red hot glow, then let it slowly cool to room temperature. After that, it bends very easily and can make those smooth curves you always see on other fellow's ships.

HUMOR SECTION

It's been a couple of months now since this column has featured the best . . . and the worst of modeling humor. For those who have been searching for this section, here 'tis. For those who haven't even missed it, skip to another column.

Axioms. An axiom is a truth reduced to its simplest and most expressive language. Herewith are some axioms as they pertain to our favorite hobby:

1. The stabilizer will always warp so as to assist the wing in fatal spiral dives. Fatal spiral dives always break off wings and stabilizers. Repaired wings and stabilizers will always warp.

2. A person staring at an airplane in flight punches holes in the air, causing the model to fly badly. The more people staring, the more holes, resulting in a crash.

3. Interior details of scale models can usually be seen more clearly after the first flight.

4. Old airplanes get heavier due to gathering excess ozone and meteorite particles, and sometimes shreds of old downers stick to wings.

5. When something which works is improved, it doesn't work as well.

And finally some Nostalgia Notes: How famous would these planes have been if:

The Zipper was called the Button? The Skyrocket, the Fizzler? The Sunduster, the Moon Mop? The Super Quaker, the Mediocre Methodist? The Pacific Ace, the Atlantic Deuce? Or the Miss America, the Mrs. West Covina? The Dinky Dollar Demon, the Tremendous Ten-Cent Angel? The Powerhouse, the Water Works? If the Playboy had been the Playgirl, would any red blooded American youth have built it? How about the Riser Rider and the Downer Diver?

All of the above lifted, complete and unabridged, from "Flightplug," edited by R.G. Brickner, for the SCIFS of Southern California.

See you all next month, right here in the pages of MODEL BUILDER. •

F/F Scale . . . . . *Continued from page 35*

Dave Shipton, in his home, selling only model airplane supplies. Since then, it has branched out into other hobby sup-

plies, including crafts. The house eventually became crowded, so the decision was made, and work started in 1971, to remodel a barn which had been standing idle at the Shipton farm for about 20 years. Wooden pegs and square nails testify to the age of the barn. Weatherboard on the outside, which was replaced, was carefully saved and used inside the barn for paneling for walls and counters. The original doors have also been used inside for doors and counter areas. Other old and unusual items in use are wooden pump rods, feed bins from the cow stalls, wooden nail kegs, cider press, iron kettles, a fernery, and a 1921 cash register!

The hay mow (upper floor) of the barn is now used as a museum for models, as well as bits and pieces of real historic aircraft, i.e., wings of the Dole Derby entry, "City of Peoria," Jenny propellers, Pietenpol Sky Scout frame, Monosoupape engine cylinders, American Eagle fuselage frame, Jenny instrument panel.

The grass areas around the barn are used for flying all types of models. Since April, 1973, the R/C area doubles as a restricted landing area for light aircraft. It is a 1300 foot grass landing strip. If you need supplies, you just fly on in. This is probably what every modeler dreams of having. Oh well!

Hobby Hideaway carries eight different diesels manufactured by Davies Charlton, of England, from their famous D.C. Dart (.8cc) to the 2.5 Rapier. There is an .059 Heron and a .091 Snipe, also from England. From Progress Aero Works (P.A.W.) there are three engines available, and from Australia, a couple of Taipan's diesels. Dave also has quite a supply of spare parts on hand for these engines.

For the Ukie fan, Hobby Hideaway manufactures a couple of semi-scale profile models for .049 power. One is the Dewey Bird and the other is the Polan Special. At any rate, whatever your diesel requirements are, drop them a line . . . their address is a cinch to remember, Hobby Hideaway, Delavan, Ill. 61734 (see ad in this issue).

Another MB advertiser is, appropriately named, Vintage Aero. This unique outfit has the greatest address . . . 1 The Glen, Tenafly, N.J. 07670. What do they manufacture? Just about everything that was produced in the old, old days. They also handle many of the newly manufactured goodies for the rubber power enthusiast. They produce a 3 foot flying model replica of Ideal's Nieuport monoplane. This kit is identical to the original kit manufactured more than 50 years ago! The wood is partly precut, it has a propeller blank, carving book, beautiful spoke wheels, brass fittings, ballbearing shafts, etc.

In addition to this kit, there are several other Ideal model kits available, plus reprints of many of the old publications, such as 1913 Harpers, "Demoiselle," and "Compressed Air Engine," to mention a few. There are many unusual accessories, including basswood.

Vintage Aero has a slick 1975 catalog with 20 pages of modeling delights for only a buck.

I want to thank all of you who have taken time to write and suggest areas that you would like to see covered in this column. Those of you who have yet to let your ideas or suggestions be known, can mail them to Fernando Ramos, 19361 South Mesa Drive, Villa Park, Ca. 92667, or c/o MODEL BUILDER, 1105 Spurgeon, Box 4336, Santa Ana, Ca. 92702. ●

Plug Sparks . . . *Continued from page 53*

all the places that were given, with Jay Jackson and Mark Fechner leading the charge. Keep 'em coming, fellows!

* * *

The Thermal Thumbers (in Southern California) announce that their Annual O/T Wakefield contest (they also have modern the same day) was blown out and had to be re-scheduled. Old timer rubber has caught on so good in this club they now feature a perpetual Wakefield Team Cup which includes Wakefield, Coupe d'iver, and O/T Wakefield

events.

No doubt about it, as SCIF editor Brickner said, 1975 is going to be a banner year for old timer activity. With an energetic President, Joe Beshar, things are really popping!

SAM SPEAKS

The official SAM publication, "SAM Speaks," is undergoing a considerable resurgence under the able editorship of Bob Elman who is also the Midwest Area Vice-President. Among the more important items noted in the latest issue is the re-establishment of Postal competition. Lin Haslan, of the Salt Lake USA Club, has taken on the job of setting rules and events for SAM postal contests. He is also hopeful of starting a film library with the profits, and if costs permit, restoring some of the old films.

Although the first two meets will be history by the time this article hits the stands the next event will be in April, with .020 replica and combined A.B.C. gas.

Meets are scheduled to be held every two months. For further info, write Lin Haslan at 3731 South 5450 West, Salt Lake City, Utah 84120.

PLANS NEWS

Gordon Codding, 4572 West 147th, Lawndale, Ca. 90260, informs the columnist he's selling off all his plans and miscellaneous items. Gordon has primarily been a good source of original factory drawings for World War I airplanes. The series of misfortunes that have dogged Gordon for the past few years have culminated in the decision to move away from the Los Angeles area. He still has a few O/T plans that may be of interest to the modeler.

LAST WORD

Don't ever retire! You will be working for the toughest boss in the world, namely, YOU! The columnist is presently holding down three jobs, not to mention his extracuricular activities. What he needs is a nice steady job to rest up on. Haw! •

R/C Soaring . . *Continued from page 23*

for advertising space on the wings!

Summary: Remember the basic idea behind this article. You can save time, money and problems by making your super-ship an enlarged version of a model that has already proven itself.

Use proportional dividers and/or a "cheat stick" for making direct measurement enlargements. Do not change the design in any way, unless you have no choice. The wings and stab should be built of balsa and have laminated spars. Anything goes on the fuselage, as considerable weight is generally required to balance one of these big models. Better to build weight in than to add lead!

When you go to fly your super-ships, make sure a power winch is available. Big, light models fly slowly, so don't try to take her up too quickly. The Windfree in the picture snapped on 80 lb. test line three times before we figured out what was happening. Slow pulsing resulted in an excellent rate of climb, similar to the regular size Windfree.

Good luck on your super-ship, I hope to see it in the sky someday myself. •

Hannan . . . . . . *Continued from page 37*

and Chris Christensen, Doris and Bob Haight, and Bob and Jan Mickelsen. All in all, a most memorable event.

THE BAMBOO BIT

J. Tom Laurie points out that bamboo requires a few special techniques:

1. Always split it down the middle (not off to one side)

2. Only use the portion of the material next to the "varnish" coating.

3. An Ungar soldering iron is perfect for bending, and is much less trouble than the sheet-metal form and alcohol burner suggested in the old model aircraft books.

HOW'S THAT AGAIN?

Every once in a while we try to read a little theory, since we are often accused of conducting our aeroplaning activities by empirical methods. So when a copy of AERODYNAMICS by F.W. Lanchester, turned up, we fought our way through it. As an example of the contents, this little gem was pulled out of context: "If we suppose the vessel

to be an ordinary jar of liquid placed in the scale pan of a balance, there is a certain obviousness in the fact stated: The weight of the whole will be just the same whether a weight rests inert at the base of the jar, or whether it be falling uniformly through the fluid. When, however, the principle is applied to bodies aerodynamically supported in the free atmosphere the matter is not so self-evident; here, for example, we find that the weight of a parachutist is borne by the earth's surface almost from the moment he leaves the car (cockpit), and his presence overhead, or the presence of a passing flight of birds, could be detected barometrically if we possessed an instrument of sufficient delicacy".

With that, we put our delicate typewriter away for another month. •

Peanut . . . . . . *Continued from page 39*

inch flat, cut curved as shown, and glued to the end of each rib. Hold these edges securely with pins until they are dry. Next make the wing tips, (two pieces of one-eighth-inch flat balsa for each wing) gluing them to the leading edge and to the rear of ribs six. Each trailing edge is built of three pieces of one-sixteenth-inch flat balsa. These should be tapered to an edge before the wing is covered.

"Note that ailerons are merely indicated on this model. Make them movable if you wish, but a ship of this type is extremely sensitive to controls, so I'd advise you to simply indicate them with an ink line on the covering.

"When the wings are dried, mount them to two wing-stubs, which in turn are glued to the fuselage. These stubs are carved from one-quarter-inch flat balsa, cut to the outline shown on the wing layout. Then carve and sand to shape. At the point where the wings are glued to the stubs, the stub is carved to the exact shape of rib one. The stubs add to the streamlining of the whole job.

"It will be necessary to remove part of the stringers, and part of formers "C" and "D" to give the wings a secure mounting. The two wing-stubs are glued to the keel, as shown. NOTE: Be sure that the left has a greater angle of incidence (leading edge higher and trailing edge lower) than the right wing. This

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offsets the absence of ailerons and keeps the ship from rolling because of prop torque. Now replace the pieces of stringer that you cut away, and sand the whole job carefully.

"The scale elevators and stabilizers on your plan will, in many cases be sufficient tail surface for this model, but the larger surfaces are better for flying. The outline pieces are cut from one-sixteenth-inch flat balsa, and connected as shown, with ribs of one-sixteenth-inch balsa strips. As in the wings, the real job had the same number of ribs as are shown by the dotted lines.

"For flying purposes, the two shown by double dotted lines give enough strength without too much weight. When the tail surfaces are dry, add the aluminum hinges by slitting the balsa framework and gluing the aluminum strips into place. You will get a better cover job if you cover the tail surfaces before mounting them to the fuse. Consult the view of the ship for the proper horizontal position for mounting these parts.

"Since the landing gear will not interfere with covering, add it next. The wing drawing shows the right point for gluing the struts to the wing stubs. For added strength, cut a slot in each wing-stub (about one-sixteenth inch deep, and long enough for the strut), then glue the struts firmly in place, pinning them securely until dry. The distance between the wheel pants (width of axle) should be three and three-eighths inches. The axle is one continuous piece of music wire, running through and between the wheel pants.

"Next comes the cover job and the painting of all exposed wooden parts. The nose-block is painted a solid red. The landing gear, struts and pants are white, trimmed red inside of the color lines shown on the drawing. The tail-skid and the cover over the cockpit are white; the wheels black. Give the propeller several coats of silver dope, then one of clear.

"From former "A" back to former "C," the fuse is covered with red tissue. The rest of the fuse, and the wings and tail surfaces are covered with white tissue. Then, the red scalloped patterns (made of red tissue very carefully cut out with scissors) are doped on over the white tissue. These patterns are shown on the drawing.

"Before applying the red patterns, water-dope the whole ship and let it dry tight. Then apply the scallops, a small section at a time, by laying them in position and carefully gluing them down with clear dope and a camel hair brush. On each side of the fuse there is a long, triangular red streak that runs from the red cowling at "C" back to the tip of the rudder. All letters and numerals are of black tissue, applied with clear dope. These may be hand-cut, or purchased from model plane shops very reasonably.

"When all the scallops and numerals are on, give the ship one or two coats of clear dope for a finishing touch. Then add the thread landing and flying wires. These are of stout black thread, running from the pants up through the wings (at points marked "X") and into the fuse. Draw them very tightly, and anchor them at all points of contact with drops of glue. Beside being ornamental, these wires add greatly to the strength of the landing-gear and wings. Note especially one set of wires that run from the pants up into the fuse, at former "B." These should be made of wire instead of thread,

since they will act as a protection to the wings. Secure them well with glue.

"With the addition of ink lines around the cockpit and one around the fuse between "B" and "C" . . . a celluloid windshield . . . and the six exhaust ports, your Israel "Redhead" is complete! What do you want next? •

Groovy Tuna . . *Continued from page 48*

some of the down-thrust. As the winds are increased, Groovy should climb very steeply at first and then shallow out some, all the while turning sharply to the right. On full winds, the model should make about 2-1/2 to 3 turns before the prop folds. It should then go into a gentle, slow right-hand glide.

Groovy Tuna employs a 16-strand motor for a fast climb. The run will be anywhere from 28 to 30 seconds, depending on your location, etc. Here in Albuquerque (5,000 ft), the motor run is usually 23 to 26 seconds. In Taft (sea level), the motor run was usually over 30 seconds.

Getting the power pattern just right is difficult, and takes many test flights. My own models generally have a lot of right-thrust, almost no down-thrust, and slightly left rudder. Wing warps are tricky . . . I don't really know enough about them to use them properly. I usually push the model right into the edge of a stall in both power and glide, however, I'm not really sure this is the right thing to do.

NOTIONS, POTIONS, and TRIVIA

I use Pirelli rubber, er, uh Filatti that is, with a glycerin-green soap lubricant. The motors are broken in by stretching them seven times the original length for 15 minutes. If you really want to have a good climbing model then wind the s(bleep) out of the rubber: You're going to break a lot this way (nerves included), but it's worth it.

I have an idea that by changing the airfoil a better model might result. Either the B-7406 or the Bogart airfoil, which Bob White uses, would be good. If anyone tries it, I would be interested to hear the results.

Good luck flying Groovy Tuna! If you have any questions, please feel free to write. No doubt some aspects of the model are vague.

P.S. Don't write and ask for the recipe for the casserole . . . it wasn't very good! •

Curtiss Racer . . *Continued from page 21*

For a fully detailed coverage of the history of the R-6 racer, see "The Journal of the American Aviation Historical Society, "Volume 15, Number 2, Summer 1970, available from A.A.H.S., P.O. Box 99, Garden Grove, Calif. 92642. For Curtiss D-12 engine history, see "The Curtiss D-12 Aero Engine," Smithsonian Annals of Flight, Number 7, which may be purchased for 75 cents (a bargain) from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. •

F9C-2 . . . . . . *Continued from page 13*

cut out of the bottom. The cowl flange is 5/16 wide. Cut the bottom out as close to the line as possible. Save this piece as we will use it later. Cut the pan at the handle mounting boss to achieve a diameter of 6-3/8 inches (approx. 2 inches). Carefully working the ring, bend to this diameter. Make a doubler of aluminum 1/2 x 3/4. Clamp the doubler and pan ring in place and bolt or rivet together. Cut the flange at the top for machine guns as shown. Drill and file a hole for the glow plug connection. File and sand all rough edges to final size. Drill and countersink for four 4-40 flat head screws as shown.

Assemble eight Williams Brothers plastic "Wright J5" cylinders and valve rods. Install six full cylinders, using G.E. Silicone. Make sure surfaces are clean. Cut the other two as shown with a hot knife and install in the same manner. Prime the cowling with K&B primer and set aside to dry.

SHROUD

This is made from balsa, either a solid block or built up of 1/2 inch sheet. Cut to rough diameter, then turn in a

lathe or hand drill to the shape and size shown. Carve inside to shape. Cut cooling holes as shown. The other cut-outs are for the carburetor and needle valve clearances. The mounting straps are cut from .015 aluminum. Bend to shape and install to shroud with 2-56 nuts and bolts. This assembly is now fitted to the fuselage with the engine in place. Transfer the strap holes to bulkhead No. 1. Drill bulkhead for 4-40 blind nuts and install nuts. The assembly is bolted to the bulkhead with 4-40 cap screws. Final sand and dope to smooth surface. Prime with K&B primer.

EXHAUST RING

That coffee can that has been kicking around needs some rework. Cut the top off, making a ring 9/16 wide. Make a clip and solder to the ring as shown. With the ring overlaying the front view of the engine assembly, cut nine stacks of 3/8 brass tubing, 1-1/2 inches long, at a 45° angle. File the tubes to match the arrows shown . . . the arrows represent the tube direction in the front view while the tube is sweeping 45° to the rear. Mark each one and its ring position, then set them aside. Bend the wire support . . . solder to the ring. Cut the ring as shown between the wire support. Set the engine in position on the mounts, set the ring around engine, slide cowl mounts in position. Note the ring fits in the slots in the mounts. Fasten engine and mounts with 6-32 bolts. Center the ring to the engine center line and mount with a sheet metal screw through the clip and into bulkhead No. 1. Solder the stacks in their positions. Install the cowl assembly. Mark the stacks flush with the outer surface of the cowl. Disassemble all parts from the plane. File or sand all stacks to the marks.

Install ring assembly and solder the clips and gun tubes as shown. Clean and paint dull black.

COWL MOUNT

Using the scrap from the fry pan bottom, make the supports. Mount the maple blocks as shown. Contour the blocks to fit the inside of the engine cowl assembly. With the engine and supports in place, slip cowl in place. Transfer the screw holes to the blocks. Drill and install 4-40 blind nuts. Use flathead 4-40 bolts to install the cowl assembly.

DETAILS

Make up the details shown; carburetor heater, wind screen, oil cooler, gunsight, lights, steps, arrest lug, aerial tripods and headrest.

Prime the carburetor heater (use the brass tube for the fuel tank overflow), steps, oil cooler, arrest lug, and tripods, and install. Paint the wind screen frame, gunsight, lights and headrest. Install these after all the painting is complete.

PAINT

The F9C-2s were very colorful. The upper surface of the top wing was orange yellow. The bottom of the top wing and the lower wing were silver. The fuselage, undercarriage, hook-on assembly and struts were gray on the blue black tails (1934). Prior to 1934 the fuselage, undercarriage, tail surfaces and hook-on assembly were gray. The rudder was striped as shown. The cowl, spats, fuselage band and the section leader's "V" were as follows: b/n 9056 red
9057 white
9058 blue
9059 black
9060 willow green
9061 lemon yellow
9264 unknown

The band and "V" were outlined with a black pin stripe. I used Pactra dopes on my F9C-2, however, epoxy finishes will work also. Apply two coats of clear dope and sand the rough edges of the silk. Apply two coats of K&B primer, sanding with 400 wet-or-dry in between. The fuselage, fin-rudder and stab-elevator were metal covered, so continue priming and sanding until all silk grain is gone. Paint as desired, mask (drafting tape only) for section leader color. Apply lettering and model numbers. I mainly used dry transfers by E-Z Letter Quik-stik, Westminster, Maryland 21157.

When all painting is completed, install the lights, wind screen, gunsight, head rest, radio aerial, rudder horn and cockpit capping (black plastic split tube).

FLYING

The Sparrow Hawk should come out at about 5 lbs plus. The heavy cowl and engine accessories should bring its balance to the position indicated. However, if not, balance as required. Check the engine and get a good idle and a smooth high speed. Fuel up and fly it. Hold full up and lead the plane . . . pull full throttle. As the plane accelerates, the tail will come up and in at least 1/3 lap, she should lift off. This plane is very steady even in the wind, the 60 gives it authority. Ease off on the throttle and let her descend . . . ease off more throttle . . . slowly start holding more up. Throttle to idle and you'll have a perfect landing. Holding full up now, taxi back to your flight box. Great!

The information about the Curtiss F9C-2 "Sparrow Hawks" was gathered from the following sources:

Air Classics, July 1971, "The Great Sky Ships."
American Aircraft Modeler, Feb. 1969, "Center Fold."
Air Classic's Quarterly Review, Fall 1974, page 34.
National Archives, Washington, D.C. 20409.
Aeromodeller, April 1967, #161 Curtiss F9C-2 Sparrow Hawk. ●

Remotely . . . . *Continued from page 17*

duce a four-cycle effect.

"Since the first few runs will be without the muffler, some form of ear protection may be desirable. With the engine now running, throttle open all the way, adjust for a four-cycle running condition. If you have chosen the right prop, you will find that the rpm may be more than you expected, but yet a rich setting is realized. Don't let the engine get too hot. A few minutes running for now will do, and then shut it down and let it cool.

"You may notice the exhaust residue is rather dirty. This will be from the moving parts mating together. As you can see, any over-heating at this time could result in scoring of piston and damage to the engine internally. The next few runs will no doubt result in easier starting each time, and the exhaust should clear up somewhat. After an hour or two of short runs, each one lengthened time wise, you should be able to reach a rich needle setting and the engine hold a steady rpm. Some engines will hold a reasonable setting sooner than others of course, depending on the fit.

"At this time, it will be best to finish the break-in in the air. Many flyers make the mistake of over-propping the engine at this time. Remember, the needle setting is going to be on the rich side, the rpm will be down, so will the power and torque. The engine has not yet reached its peak, and it's still running on a break-in fuel. The idea now is to work or load the engine a bit, but not to the extent that it will overheat and quit during the flight.

"Providing you have chosen an engine with ample power for your size and weight of aircraft, there should be no problem. With these thoughts in mind, a few flights now with a rich setting will finish the engine break-in. You will notice a marked improvement in each flight, and now you can start selecting the proper prop, plug, and fuel combination for your particular engine and aircraft.

"If you have a good tachometer or access to one, you can now take some readings and evaluate your results. A tach is a good investment, and if used properly, will help a great deal in setting up an engine. You can note the rpm drop, if any, with the muffler installed. You may notice a difference in rpm's between props, although they may be the same size and pitch.

"Up to this point, we've talked about selecting and breaking in of an engine. Let's summarize, as this has pertained to engines in general:

1. Select proper engine for application.
2. Look it over good, inspect for flaws, etc.
3. Read instructions and test data.
4. Select proper accessories, muffler, spinner, etc.
5. Inspect internally before running, and tighten all screws.
6. Run rich, avoid overheating and overloading. Let cool between runs. Avoid running in dusty or dirty conditions.
7. Fly first flights on rich side, gradually progressing to proper fuel, props and plugs.
8. Take tach readings, see if you are getting maximum results."

Once your engine has been given the fair start described above, it should only need minor maintenance effort. The following suggestion for regular operation maintenance is suggested by Ray Pisar, as published in the January issue of "Vector," newsletter for the Miniature Aircraft Pilot's Association of Tempe, Arizona, edited by Don ("Dusty," what else?) Rhoades.

"Traditional post-flight engine care at the end of a day's flying usually consists of pulling the fuel line so that the engine cuts more or less dry, then squirting some 3-in-1 oil (or equivalent) into the intake and flipping the engine to disperse the lube. This works well at preventing gumming up and rusting of the engine, and to work toward easier starting the next time out.

"I started using a similar procedure, which I feel is substantially superior.

"It consists of a fair shot of WD-40 spray lube in the intake while the piston

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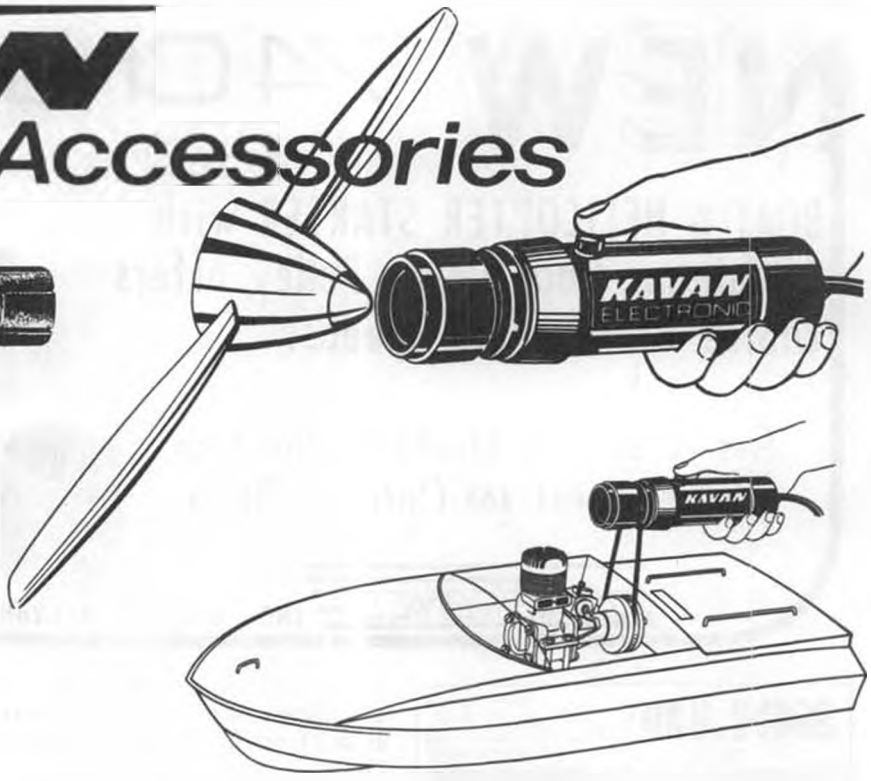

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is TDC (top dead center), hooking up the glow plug lead, and starting the engine on this prime. The engine will run on the inflammable solvents in the WD-40 and the running pressures involved will disperse and force the lube into all bearing areas. Two or three short 'prime' runs like this will purge out most of the old fuel from the engine, and protect the running surfaces better than the other method of adding oil on top of the castor oil. Note that the fuel line is disconnected throughout this procedure."

SPEAKING OF ENGINES . . .

We have just received word of a new American glow engine, the Fitzpatrick 60 R/C "Super Schnuerle" sport engine. The Fitzpatrick brothers, Charlie and Mike, of 326 Swinton Ave., Throgs Neck, New York 10465 . . . phone (212) 597-2685 have sent us the following information on this engine:

"It has been in design, development and testing for over three years.

"New internal design innovations achieve an extraordinary new level of performance on ordinary sport fuel. Several patents have been applied for in the U.S., as well as internationally.

"The [engine] is producing between 1,500 to 2,000 rpm over the best performing Schnuerle sport engines, on standard pattern props. It has reliable low idle and throttle response and will include a silencer as standard equipment. The Fitzpatrick 60 also features highly efficient fuel economy, and its metallurgical design, coupled with ultraprecision machining, gives it very long wear characteristics.

"In addition to the standard R/C sport model, it will be produced in R/C helicopter, marine, Navy carrier, and rear induction racing versions. Production will be in 1975."

Looks interesting . . .

SCALE RALLY

As reported by Bob Petro, of Athol, Idaho, the first annual Henley Aerodrome Scale Rally came off quite well. Next year's rally will include free flight . . . and Peanut . . . as well as control line.

The World War I R/C event was interesting in that it was won by Frank Hill, Grangeville, Idaho, with a superb flying converted Sterling control line kit of the Nieuport 28! Frank used three channels (Kraft), but no throttle control on the Forster 29 engine (He sez the real ones didn't have throttle, so why should he!). Needless to say, the ship really moved, with only a 33 inch wing span. Snap rolls were breath-taking. Landings were very realistic.

When asked why he came up with a ship like that, Frank said, "Someone told me it couldn't be done!" Never say that to an airport operator who's a bush pilot and crop duster. *(Wow! Converted U-control scale 33 inch span WWI bipe with a no-throttle Forster 29 converted from ignition? Wouldn't you have told him it couldn't be done? wcn).*

TRY *THIS* ON YOUR PATTERN BIRD!

We saw an interesting photo in the January '75 issue of the great Japanese model magazine "Radio Control Technique." It shows a modeler *hand launching* a low wing, 60 powered, retracted gear pattern ship. If that's not unusual enough, the ships being launched inverted!

When you think about it, though, hand launching a low wing model inverted is sort of a cop-out. First of all, the modern seven or eight pound pattern

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R/C Helicopters: Interest only ☐ **Building** ☐ **Completed** ☐

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List special skills you might share: _____

Remarks: _____

ship with a one horsepower engine in the nose will practically VTO, so there's no concern about enough power to pull it out as long as you give it a decent heave. Secondly, if you've been in this game lone enough to have hand-launched many heavy R/C birds, you'll know that the biggest problem is trying to get a decent grip on the plane at or near the balance point. With a biplane or low winger, this is just about impossible, and launching such a beast can be plenty hairy . . . take it from a guy who has thrown everything into the air from a 3 pound Great Lakes on escapement rudder-only to a 9-1/2 pound Smog Hog on Bramco Reeds!

ANOTHER B.J.O.A. MEMBER

The Big John Owners Association welcomes new member John Pahlow, Granada Hills, California. John has completed a B.J. the First, from MB November '73 plans (No. 11731). It is decked out in 1930's military fashion, with Monokoted blue fuselage and yellow surfaces. Power is an O.S. 80 turning a Top Flite 13x5-1/2 prop, and control is by Kraft Radio. Williams Bros. contour wheels and sport pilot complete the accessories. Flying weight is 9-1/2 pounds.

As any self-respecting modeler would do, John made some mods to his B.J. Strip ailerons are used, the cabane struts were canted outward 30 degrees, and streamline plastic fairings (automobile door trim) were added to cabane and landing gear struts.

Though not noticeable in the photos, the wings were swept back slightly. Builders should watch themselves on this modification. B.J. was designed for the heavy builder, and will usually come out perfectly balanced, or even possibly nose-heavy. Any appreciable sweep back could make it too nose heavy. John's modification is so mild as to make no difference.

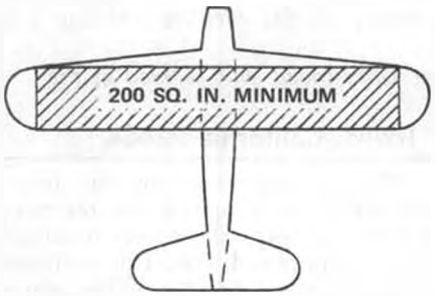
John's closing statement: "How does it fly? You know . . . just like the real one. Just beautiful!!

HALF-A- PYLON RULES

Dave Katigiri, whose "Cut-Less" 1/2A pylon racer appeared in last month's issue, sent us a run-down on the 1/2A racing rules being used in the Seattle, Washington area.

Basically, Seattle fliers are using the rules published in the May '71 issue of RCM, but with the following modifications that have come about as the result of actual experience.

Aircraft: Any planform shape as long as the minimum 200 sq. in. constant chord, minimum 7/8 inch thick shape can be placed within the modified (larger) wing.



Landing Gear: Fixed and Functional
Conformance: Deleted

Operation: A third (#3) pylon has been added to the course to spread the base turn radius for pilot safety. This results in a triangular course, with the base pylons spaced 80 feet.

Two types of starts have been used; simultaneous hand launch and flying starts. The latter is done with engine start and launch any time after start of a 1-1/2 minute countdown, ending at minus 15 seconds. The last 10 seconds is a verbal 10 second countdown when pilots dive for the start line. An early start is considered a cut, with a penalty of one lap. A tape recorder provides a uniform way to start (this method is used in power and sail boat racing).

Pilots not airborne at minus 15 seconds are disqualified for that heat. This prevents a last moment launch through the start line at the drop of the flag. Also, the noise level around the pilots is reduced so the final 10 second countdown can be heard.

Flagging: None for calling turns; only flagging is done by cut judges.

Pre-race set-up and communication are both facilitated by a phone line system that connects the three pylon judges, starter, and the pits. The hand-sets are connected at points along the lines so that when the line is deployed, the pylon locations are positioned automatically.

IN CLOSING

Start scrounging around for a couple of Cox .049 crank and case sets. You'll wish you had 'em ready for next month's R/C construction project! •

C/L . . . . . *Continued from page 31*

1. Combat
2. Balloon breaking (not AMA style)
3. Racing

Stunt and speed are least popular with the young crowd.

Now, pick one or two events and feature them at EVERY contest your club or organization hosts . . . hopefully every month. Don't be tempted to change or switch the events around. Remember, the adult problem is inconsistency . . . Our Junior privateer cannot afford changes in equipment. He will build and repair and improve his skills and equipment if you leave him and *his* event alone. Also, don't drop an event because of a poor showing the first few times. You have to prove your sincerity to the Junior. You also have to put notices in the schools every month for each contest. Be consistent, and the Juniors will show up.

Those of you who really care should get the names of one or two interested Juniors and invite them to go to out-of-town contests with you. This really has a lasting effect on the Junior whose parents don't participate.

If you can get the first part of your program going, then you might discover something extra. Juniors want to know who among them is consistently the best. To satisfy this desire and promote more interest, a system of earning points toward proficiency ratings works very well. This can also be used as a means of moving Juniors up into regular AMA class competition.

The system I use is simple and requires a minimum of effort (I'm lazy). First, a bar graph is drawn on heavy paper. It can be displayed at each contest and filled in at the end of each contest day. This way, no one will have to keep a record book. A separate chart is required for each Junior event.

I award points to fifth place in a contest. First place receives thirty points, and each place after moves down five points. All contestants, from sixth place on down receive five points for entering. Everyone gets something! Skill ratings are Novice, Advanced, and Expert, with breaks at fifty and one hundred points. When a Junior earns enough points to move to Advanced rating, he is not allowed to fly with Novices. If this separation is not used, then many novices become discouraged when the hot shots keep winning (sounds familiar, doesn't it?).

When a Junior reaches Expert with this score system, he is ready to fly successfully in AMA competition (don't discourage him if he wants to try AMA sooner). The quickest a Novice can move to Advanced is two contests, with two consecutive first or second place wins. That doesn't happen too often. Usually, three or four contests is average.

Anyone interested in more of my methods and specific club rules that I use, can look up the article about my club, written by Jerry Litwak for the April '74 issue of M.A.N.

The separate but equal Orbiting Eagles of Greater Omaha is forming a special Junior and beginner club within its regular club. The Junior Club will have its own officers and will have the authority to add items to the club program. This sounds like a good way to allow the Juniors to 'do their thing.' Good Luck.

FROZEN FINGERS

The Eugene Oregon Prop Spinners Club has some suggestions for the folks who have to fly in the frozen regions.

First, figure out a way to hook up lines with gloves on.

Ordinary batteries lose most of their power in extreme cold due to the retarded chemical reactions, so hook up two

batteries in parallel, or use a high amp 2 volt wet cell. Try to keep the batteries warm if possible. Use a standard or hot range glow plug. Sport fuel with less than 10% nitro will not handle the cold.

Adventuresome types can prime with liquid or spray ether, but disconnect the battery first. If you are desperate, use a propane torch to warm the head.

MACA – 2

The Miniature Aircraft Combat Association was started about a year-and-a-half ago and slipped out of sight. Bill Allen, of Illinois, and Tom Southern, of Texas, are pumping fresh blood back into the organization through the MACA newsletter. Membership is $9.00 a year. Line tanglers contact Tom Southern, 2207 Paul, Longview, Texas 75601, or Bill Allen, 418 Fairmount Dr., DeKalb, Illinois 60115.

JED'S BELIEVE IT, OR WHO CARES

A crash-proof airplane has never been flown. (Think about it).

MOUSE RACING

This month we will race in miniature. Mouse was originally intended for a Junior or beginner race event, and as such, has merit. However, Mouse is not a super-easy event for Juniors or open flyers, as many have found out. It is a fun event, but requires some special thought and techniques.

Before I can tell you how to be successful in Mouse racing, I must express my opinions about the rules. AMA rules list two categories; one for unlimited engines, and one for reed valve engines. Races are fifty and one hundred laps, and there are required pit stops.

Here in California, we fly one class only. Races are 140 laps, with no short heats. Any engine modifications or parts are permitted, but a Babe Bee tank must be used . . . Also, no pit stops are required.

The main difference in the two sets of rules is the limited fuel tank and pit stops. The first reason we limit the fuel

tank size is to make sure that brute power is not all-important. Some attention must be given to economy, or all your time will be spent on the ground and not in the air.

Second, the small motors and models do not lend themselves to the use of shut-off's, making it difficult to pit on time if you have too many laps.

It must be explained here that it is possible to tune a 1/2A engine to fly fast for 50 to 60 laps with a Babe Bee tank. So, under these circumstances, one would need a shut-off for AMA race rules! The use of a Golden Bee or Black Widow tank would be out of the question in a 50 lap race with one required pit, or even a 100 lap race with two required pits.

Since I am not the only person in Southern California to get both speed and laps from a Cox product, it was necessary to limit the tank size and lengthen the races. If you find two classes of Mouse too much to handle, then try our system, we like it.

A BETTER MOUSE TRAP

For some reason, Mouse racing brings out the weird in model builders. Things like pod-and-boom fuselages, arrow shaft bodies, ultra-high aspect wings, super-small wings, models with almost no stabilizer at all, and hideous cowls. Every weird idea that cannot be used successfully in other racing events seems to show up in the Mouse racers.

Guess what? Those things don't work for Mouse racers either.

A model based on good design principles is required if you really want to enjoy Mouse. The wing must be big enough to support the weight of the model. The tail must be large enough to stabilize the wing and maintain a 0^{o} angle of flight. If the model flys with the tail down or requires some up elevator, then it is losing speed.

The fuselage should be built up to maintain smooth airflow past the wing and tail. A profile body is "dirty" aerodynamically, and also allows vibration to rob your engine of power. The built-up body also allows the bellcrank to be put out of the way.

The full size plan is of my Half FAI Mouse racer. It is a scaled down version of my Nats winning FAI team race design. The model is extremely stable and smooth flying. At least 8 or 9 of these have been built in my model club and all were successful. Two were first time models, and used as trainers! I hope the plan is self explanatory, since I don't want to write building instructions.

As in all racing models, the engine is the heart of the package, and must be carefully selected. Cox makes three different .049 cylinders: the single port, double port, and Tee Dee.

Don't toss out the single port as a waste. Properly fitted, it can be extremely fast and have superior range, compared to the other types. The double port, as used on the Black Widow, has shallow half-round bypass ports and is the best compromise between power and economy. The Tee Dee cylinder has deep square-cut twin ports and is not necessarilly the hot tip. The Tee Dee ports were designed for the front induction motor that can pass large quantities of fuel.

The smaller amount of fuel that can

get by a reed valve becomes lost in the ports, the velocity drops, and the engine becomes less efficient.

Around 15 to 20 laps with a stock Tee Dee cylinder and Babe Bee tank are average . . . but that can be changed. First, acquire as many engines as possible. Right after Christmas you can wheel and deal around the neighborhood for all the broken plastic airplanes, dune buggies and race cars. Also, swap meets provide an unlimited supply of 25 and 50¢ engines that are just as good as the $10.00, over-the-counter ones.

Separate all the pistons and cylinders first. Now clean them with fine steel wool or Scotchbright, and use soap and water, not oil. Rinse the parts in lacquer thinner and wipe dry. Now, with a dial caliper, check the cylinders for taper. Measure the top and the bottom. The ones with the most taper will be the fastest ones.

The piston and rod socket will have to be tightened if the motors have been run at all. For this, you must have a Kirn-Kraft re-setting tool. Try for about .002" slop. That is pretty tight, but will still permit easy movement. Now you must try all of the pistons in each cylinder, one at a time. The piston can not touch or drag when it hits the exhaust ports, and should not stick or get snug until the crown is a 1/16 past the bottom plug land. When the piston crown is held even with the bottom plug land (T.D.C.), it should fall free when released.

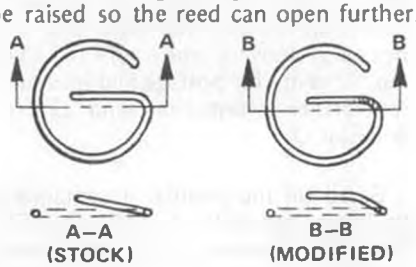
You will find an amazing amount of variance in piston fits, so be patient and be sure the piston meets all three tests.

Now check crankcases. After washing in lacquer thinner to remove all oil, check for free spin. Move the crank pin to bottom dead center and rock the shaft up and down. No movement should be evident. The piston hitting bottom distorts the case, so check it.

There are three glow head shapes also . . . The low compression dome which gives smoother running, easier needle setting, and more laps; The old style trumpet head (identified with three thin fins); and the new high compression head with a squish band (two thin fins). The new head gives more power, but needle settings are more critical.

The reed value needs special attention also. The raised seat should be polished with 800 paper so the reed will seal smoothly.

The retaining spring cross wire must be raised so the reed can open further.

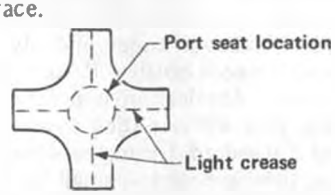


Bend the wire carefully, as shown in the illustration, but do not have it rise above the edge of the reed housing, or the rod will hang up.

When you start turning high rpm, the reed will 'float,' and not shut fast enough because it is so thin and weak. Some people put in two reeds to stiffen up the action, but they can twist opposite and close off the port (bad scene). Other folks snip off opposing petals and spot-solder the 'strip' at the ends to a regular reed. This works well if you do it right. If you get too much solder, it won't flex. If it comes loose when running high rpm, your motor will eat it.

Once upon a time, Cox made thicker reeds for Space Hoppers. Great if you can find them!

The system I use is very simple and cheap (my mind works that way). I put a very gentle crease on each petal, but do not touch the port seat. Do this with the edge of a 6 inch steel ruler and one sheet of paper under the reed on a hard surface.



I do not drill out the venturi. Be sure the small 'O' ring is in place inside the tank.

Have an extra opening in the fire wall from the top to prevent dirt and grass from packing against the air inlet. Also, you can prime the venturi that way. When flying, plug or cap the outboard tank vent. This adds 5 to 10 laps right *now*, because it prevents siphoning in flight.

Use a 5x3 Cox grey prop or a Tornado 5x3 nylon prop. The Cox grey prop is better, but the model will have to be equipped with a landing gear, because they break very easily.

Fuel: Cox Custom Blend for race cars will provide more speed and laps than Cox Red Label racing fuel. Blue Label glow fuel will give more laps than

Red Label, but less speed.

Fox Missile Mist has good speed and laps, but not as good as Custom Blend. If you mix your own fuel, include some castor oil, 5 to 8%, if you normally use synthetic oil. Half A's will not give maximum performance without some castor.

Here is one fuel formula that will give a boost in laps without sacrificing any other good performance qualities (starts and speed):

6% castor oil
12% N.P.G. (synthetic motorcycle oil)
20% nitro
20% isopropyl alcohol
42% methanol
100% Good Stuff

CONSTRUCTION TIPS

Glue tube extension nozzles. Not an original idea, but this time they come in a new convenient design. Peyton Products, of Orange, Cal. (See ad in this issue), is marketing a clear plastic glue nozzle that fits snugly on the end of any standard glue tube or bottle. I tried them on Ambroid tubes and also on Titebond squeeze bottles. Result: They work great! Application is precise and accurate, glue will not stick to the plastic, and a standard T-pin closes the end. At first, they appear too small to allow sufficient flow, but then, first impressions are often wrong. The impressive Jed Stamp of Approval goes to Peyton glue nozzles. Remember, tell them you saw it in MODEL BUILDER.

THOSE FORMULAS

Bill Lovins, of Denver, Colorado, wrote to ask about fuel formulas listed in a previous issue of MODEL BUILDER. The article was about diesel team race fuel. The titles and issues for team race information that have been published to date are as follows:

May '74: Layout drawing for FAI team race model by McCollum-Hodgkins team. Also team race engines.

June '74: Team race diesel fuels

November '74: Diesel engine operation

Back issues are available if you don't have these. Order any of the above, at $1.00 each, directly from MB's business office. •

Counter . . . . . *Continued from page 7*

accurate detailed plans (from original construction drawings), motor installation diagrams, decals, and building instructions, as well as an 8-page illustrated historic documentation of the original airplane, along with an 8 by 10 glossy photograph.

In addition, there will be optional back-up accessories available to complement the plans.

The first example of Gene's plan kit to be produced is the Heath "Baby Bullet" 1927 Air Racer. It is being offered in two sizes; Peanut (13 inch span) and 1-1/2 inch scale (27-1/2 inch span) These sell for $3.50 and $6.00 respectively. Vacuum formed cowls for the Heath are also available in both scales, at $3.00 and $5.00. Also, a super detailed epoxy-resin molded engine is available for the 1-1/2 inch scale model costing $10.00. Literature is available for $1.00, which will be applied toward first purchase.

* * *

At long last, the REMCO .29 ignition engine is being shipped. Produced by REMCO, P.O. Box 22414, Denver, Colorado 80222, the .29 is a brand new engine, the first all new model airplane ignition engine to be manufactured in more than 20 years. It is *not* a converted glow engine. Price of the new engine alone is $42.50. With a complete ignition package (coil, condenser, spark plug, and high tension lead), the price is $51.00. Add $1.25 for postage and insurance.

REMCO produces its own brand spark plug, which sells for $2.50 plus 50 cents for postage and insurance. The company is also making a chain-type spark plug tie-tack (Or lapel pin, with the chain removed) which sells for $5.00 plus 50 cents for postage and insurance. For further information send 25 cents to REMCO.

* * *

Based on the popular acceptance of the Pacer, Ace Radio Control, Box 511, Higginsville, Missouri 64037, is introduc-

ing another 1/2A powered mini-RC pattern ship . . . this time, the "Mach-None," an obvious take-off of Norm Page's popular Mach-1. The little 40 inch span ship employs a minimum of two channels of miniature radio, operating aileron and elevator. It weighs 20 to 23 ounces, and is fast-building, with its molded canopy and foam wing. Cost is $19.95.

Looks like a great idea for fuel/energy conservation, and also for the non-competitive flier who wants to get an inexpensive taste of the backbone event of R/C competition.

* * *

Hartman Fiberglass R/C, Argenta, Ill. 62501, is offering a parts package for "Sport-Pro," a mid-wing, Harley Michaelis-designed, R/C glider, which was featured in Feb. '75 Flying Models. The span is plus-or-minus 100 inches, with 605 sq. in. area. The parts package includes fiberglass fuselage halves, seaming tape, one-piece fiberglass hatch-canopy, 1/16 x 3/8 spring steel wing supports, and drawings and instructions for fitting bottom and top spoilers.

* * *

Greater accuracy than $200.00 laboratory grade vacuum tube voltmeters, is claimed for an expanded scale voltmeter being marketed by Craft-Air, 5651 Kelvin Ave., Woodland Hills, Cal. 91364, and costing only $16.95.

Designed to analyse airborne radio battery packs, you can determine the following with this instrument:

Flight time available before each flight.

Voltage available to receiver and servos.

Condition of flight battery.

You can also cycle your airborne pack to prevent "memory," detect shorted or weak cells, and plot voltage vs. time curve at simulated load. The instrument is designed to be used with any four-cell (4.8 volt) nickel cadmium battery pack, and has a one year guarantee.

* * *

Tern Aero Co., Inc., P.O. Box 66398, Chicago, Ill. 60666, manufacturers of a great line of rubber scale flying models, has made up an interesting new "Walnut Scale" emblem for promotion of the Tern Aero line of models up to 18 inch span. A set of the decals, about 1 to 1-1/4 inches in size, will be given away with each order for the company's 35 cent catalog. Tern Aero hopes the decals will help to generate further interest in Peanut Scale and allied model activity.

* * *

The following publicity statement pretty well describes the 1974-75 Aeromodeller Annual, published by Model and Allied Publications Ltd., P.O. Box 35, Bridge St., Hemel Hempstead, Herts, HP1 1EE, England. It is hard-cover bound, contains 144 pages, and marks the 27th year of its continuous production.

"This annual survey of past achievement and prospects for aeromodellers covers a broad spectrum of interests. Thirty of the world's most interesting flying model designs are included in dimensioned drawings. Championship winners, record breakers, outstanding developments in conventional and unusual forms of model aircraft, are provided for the readers to study in depth. Free flight and control line types of all categories are covered, to make this annual a ready reference for all who make flying models. Special emphasis is placed on the techniques for ducted fans, which are fast becoming popular. Lead features include an updated survey of small scale indoor models, the new 'Peanut' size, which suits Club activity, and at the same time offers a new kind of local park flying. Technically-minded have a controversial article on model aerodynamics, while the practical man has data on making a bubble machine to detect thermals, or a bearing indicator. Topical features cover hints and tips on variable incidence tails, etc. A full mixture to suit all tastes, as ever predicting the future trends. This year's volume maintains the proud reputation now upheld for 27 years of continuous production."

* * *

Novel Products, Box 11, Mountlake Terrace, Washington 98043 is offering "Modeler's Flag" stickers. Adhesive-

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faced to attach to inside of car window (check your state laws), the 3 by 5 inch red, white, and blue stickers indicate "R/C," "C/L," and "F/F" . . . of course, it's still up to you to explain to someone what the letters mean . . . if they should ask. If you're not a modeler, but happen to be a Roman Catholic, a Confirmed Leftist, or a Fading Fascist, you still might want some. They're 60 cents each, postpaid.

* * *

Hi Johnson, of same name Model Products (now don't write to Same Name Model Products!) 11015 Glenoaks Blvd., Pacoima, CA. 91331, has come up with a clever new control horn for R/C and C/L models.

First of all, the new horns are molded of "Richform" ASA plastic, a material that is compatible to many regularly used model cements (Ambroid, Testors, Aero Gloss, Duco, epoxies, "Hot Stuff," etc.) also MEK, acetone, lacquers, nitrates and butyrates.

Taking advantage of this characteristic, Hi has developed a horn attachment that eliminates the necessity for nuts and bolts or wood screws. The horn is slipped through a slot in the control surface and then a slotted "collar" is fitted over the other side. When covering and finish has been accomplished, the horn is mounted and glued permanently in place. Simple . . . And inexpensive . . . Four horns and collars sell for 79 cents!

* * *

"Scuff Guard" is the name of a new, transparent plastic material that is being offered by Allied Hobbies, 8655-2 Belford Ave., Los Angeles, CA. 90045. Supplied in 1 by 12 inch strips, it has a strong adhesive back that cures with age. Great for scale models, where its almost invisible transparency doesn't interfere with color or finish, yet protects the covered areas (underside of wing tips, glider fuselages, boat keels) from abrasion of concrete, dirt, etc. Price is 98 cents per piece. ●

Workbench . . . . *Continued from page 4*

as we go on to describe Monokote, the "out types" begin wondering what kind of a "trip" you can get out of a sheet of plastic film!

Next thing you know, someone's gonna think a glow engine is a substitute for a bottle of booze . . .

* * *

Dr. James S. Hedges is another of those Rip Van Winkle type modelers who has just rejoined the ranks after a 20 year "sleep." In a recent letter to John Pond, by way of our editorial office, Jim laments that he doesn't know any free flight, much less old timer free flight buffs, in his area. He says flying space is kinda scarce in this pine tree covered neck of the woods, Charlotte, North Carolina. If you're there free flighters, contact Jim at 3800 Rosehedge Lane.

S.A.M. R/C RULES

The Society of Antique Modelers (some of them are young) has new rules proposals to vote on for R/C competition. Unfortunately the proposed power loading rule doesn't give a fair shake to ignition engines. As most anyone knows, a good ignition 60 has about as much power as a glow 29, yet the power loading proposal makes no exception.

Noting this lack of consideration for the engines that epitomize old timer modeling, the SCIF (Southern California Ignition Flyers) Club, under leadership of its 1975 president, Al Hellman, is soliciting support for the following resolution, or cross proposal, for the OT/RC S.A.M. rules:

"We agree that the new proposed OT/RC rules for establishing power and wing loading limitations represents a logical control for glow engines.

"However, in the interest of maintaining and furthering authentic OT model flying, the use of ignition engines should be encouraged. Ignition engines can be either those manufactured originally as such, or glow engines converted to ignition with the use of ignition points, coil, condenser and batteries.

"The present proposed rules are as follows:

1. Power loading not to exceed .10 cu. in. engine displacement per 225 sq. inches of wing area.

2. Weight loading to be not less than 10 ounces per sq. foot of wing area.

"Therefore, we propose that glow engines and ignition engines may be used in the same RC events, Class A, B, and C, based on AMA designations by displacement.

"Further, we propose that the power loading limitation, Item (1) above, need not apply to ignition engines. Weight loading, Item (2) above, will apply for all engines. Engine run time to be the same for both glow and ignition."

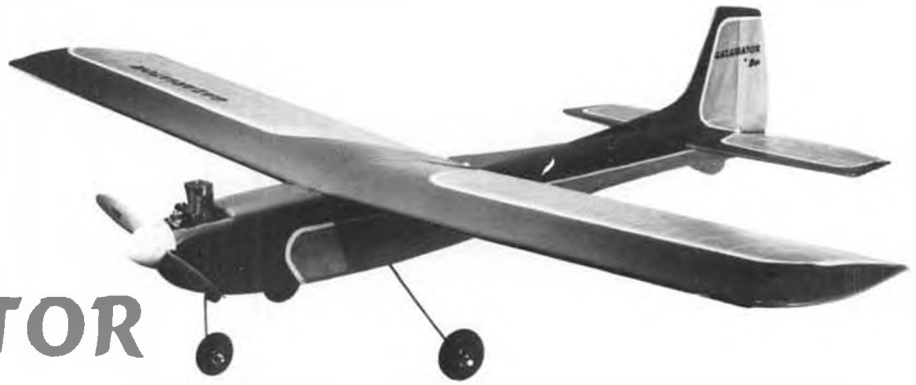
In our opinion, this suggested revision of the proposed loading rule makes a lot of sense. By virtue of their characteristic power to weight ratio, the ignition engine will be self-governed when it comes to power loading. As more and more ignition engines are being successfully flown in R/C old timers, they should not be practically ruled out by putting them on an equal displacement basis with glow engines.

While you're at it, compare the cost of a gallon of 3-to-1 gas and oil mix to a gallon of glow fuel!

HAVE YOU LOOKED THESE OVER YET?

KIT FS 32
SPAN 68 in
LENGTH 52½ in.
AREA 800 sq. in.
FOR ENGINES .50 to .61

$51.95



GAZARIATOR

(Super Fledgling)

For The Sport Flier...
...And Especially the Newcomer to .60 Radio Control Flying

If you are a Sport Flier or a newcomer to R/C then this is your ship. It's a good looking plane that builds easy — goes together fast — plenty roomy for any equipment — rugged for hard use — flies comfortably and is just the right size, for a .60.

AND ABOUT THE KIT IT SELF . . . Fuselage sides are one piece with ply doublers back past the wing. Only a few bulkheads and a shaped top make for almost "instant fuselage." Torsion main gear & sprung nose gear (or fly it as a tail dragger). Aluminum engine mounts, etc.

The complete wing is built on the work bench without having to remove it which eliminates warps — All parts are die cut, carved, etc. Balsa sheet cover keeps warps out and makes for a tough wing. Tapered Strip Ailerons are simple to install. Wing is installed just like the low wing jobs, using dowel pins and nylon screw in maple nut block, like it ought to be. No rubber bands to deteriorate or slip or tear up.

Elevator and Rudder are sheet. Stab & Fin is built up and sheet covered to keep it flat . . . so that's it, a fine kit of a fine ship.

Included is all the linkage hardware, pushrods, aileron and elevator horns, bellcranks, clevis, connectors, etc.

SAILFISH

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

Kit B23
$14.95

HEIGHT 32½"
LENGTH 24"
BEAM 5"

G1 Spanish Galleon
G2 USS Constitution
G3 Schooner Blue Nose
G4 HMS Bounty
G5 Golden Hind
G6 Pirate Brig

All Just $6.95 ea.

Authentic Replica Series

Every kit contains a machine carved hull, genuine metal castings of Cannon, Life Boats, Anchors, Steering Wheel, Stern Castles, Figurehead and many other castings as needed. Also Chain, Black and Tan Rigging Line, Printed Cloth Sails, Decals, Display Pedestals and all the rest that go to make an easy to build full rigged sailing ship that will gain in intrinsic value as years go by. Models truly worthy of a place in your home or any museum.

BeGINNeRs FUN SeRies

13 of 'em—2 at $4.95 the rest $4.50

If you really want to have some fun, then go out and get one or more of these nifty control line models. They're the easiest ones in the world to assemble—all wood, no tissue covering—only 6 to 9 parts, depending on the model (except the Fokker which has a few more, because of the struts). Genuine Nylon motor mount ready to bolt in place—Complete control system (less handle and lines) decals, landing gear, wheels etc.; which makes building a cinch and assembly literally in minutes.

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- ☐ "Secrets of Model Airplane Building." Including design, construction, covering, finishing, flying, adjusting, control systems, etc. 25¢ enclosed.
- ☐ "Secrets of Control Line and Carrier Flying." Including preflight, soloing, stunting, Carrier rules and regulations, Carrier flying hints and control line installation instructions. 25¢ enclosed. No checks. Only U.S. money orders or currency accepted.

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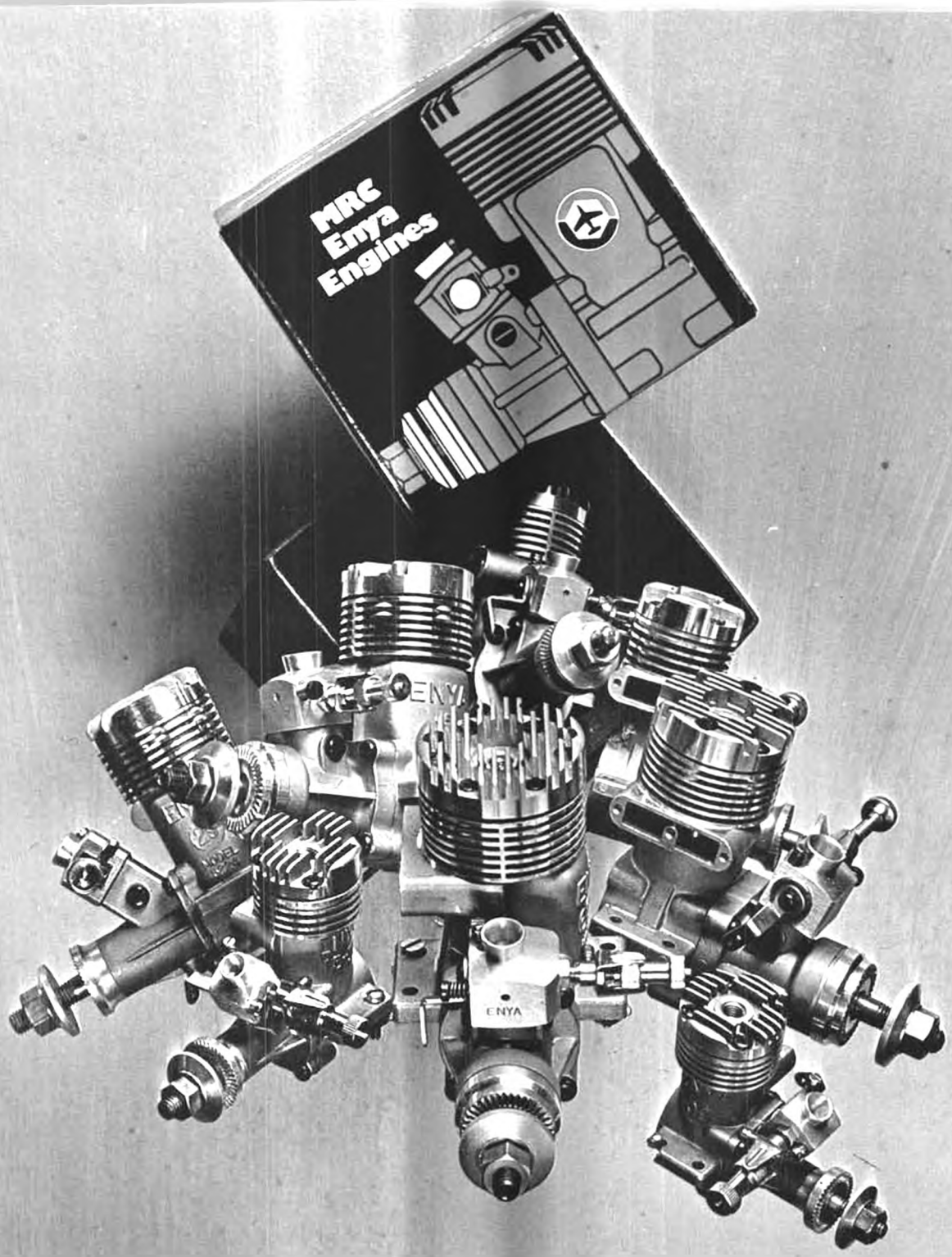

Cornucopia of Power

Variety is the spice of life, particularly for modelers—they build and fly aircraft of every size and application; pattern, racing or scale. They operate helicopters, boats and cars; imagination seems their only limitation.

To meet this infinite variety of need, MRC/Enya builds superb power plants that range from the pee-wee .09 III through the newest Enyas—.40 and .45 II that meet today's need for engines that can handle full size airplanes with reduced fuel consumption—to the brutish .60 III B that helped make Tsugutaka Yoshioka, the reigning World Champion. Enya has proven itself against the best. Within this cornucopia of power is your next engine!

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