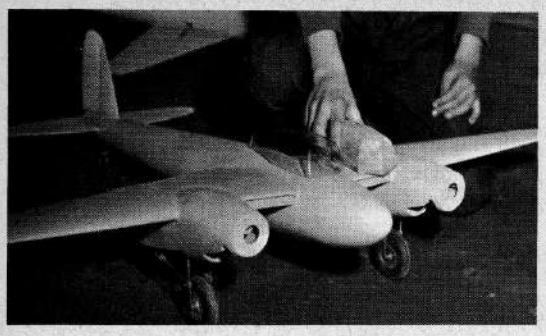
Canopy molded of lucite or plexiglas, see text.



.15 to .29 engines may be used. A gear jig is used to insure alignment duplicate assemblies.

TWIN .15 ENGINES . . .
and RETRACTIBLE LANDING GEAR . . .

Multi-Engined Controline Flying Scale

Wild appearance, dramatic markings make for an unusual scale design. Excellently proportioned.

De Havilland F.B. Mark VI

"MOSQUITO"

by Paul Palanek

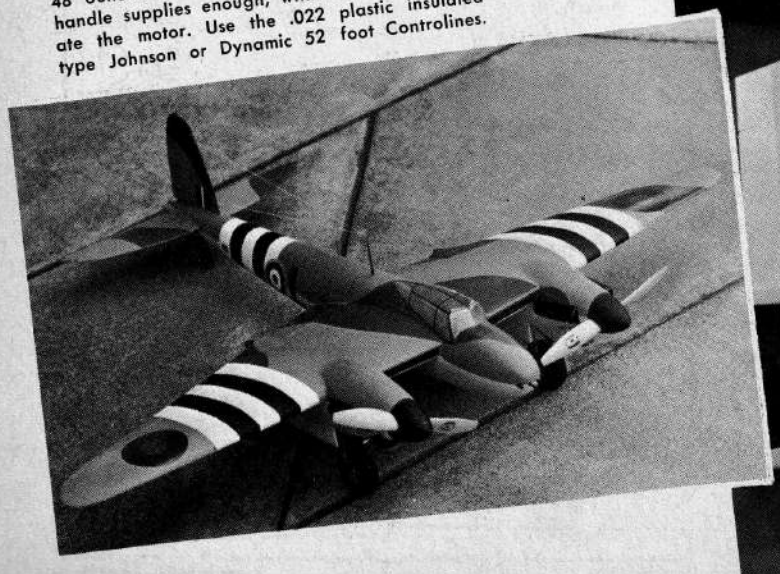
▶ The DeHavilland "Mosquito" was first conceived on the drawing board as a low-level attack bomber, and ended up famed as a fighter. It was truly a versatile warplane, a highly successful bomber and one of the world's most potent fighters of its era. Its great speed and tree-top evasive qualities captured the imagination of all who knew it, and it will forever retain a special spot in the history of military aviation.

The scarcity of top priority metals at the time forced the choice of materials toward plywood and balsa, and new structural techniques were brought to war in the wooden bomber. Our model then is closer to true scale than you might realize. The "Mosquito" was produced in many versions, modified constantly to meet the demands as were all WWII aircraft. The F.B. VI series went into action as a fighter-bomber in 1943, and bears markings applicable to all operational aircraft of the Allied Expeditionary Air Force, in June 1944.

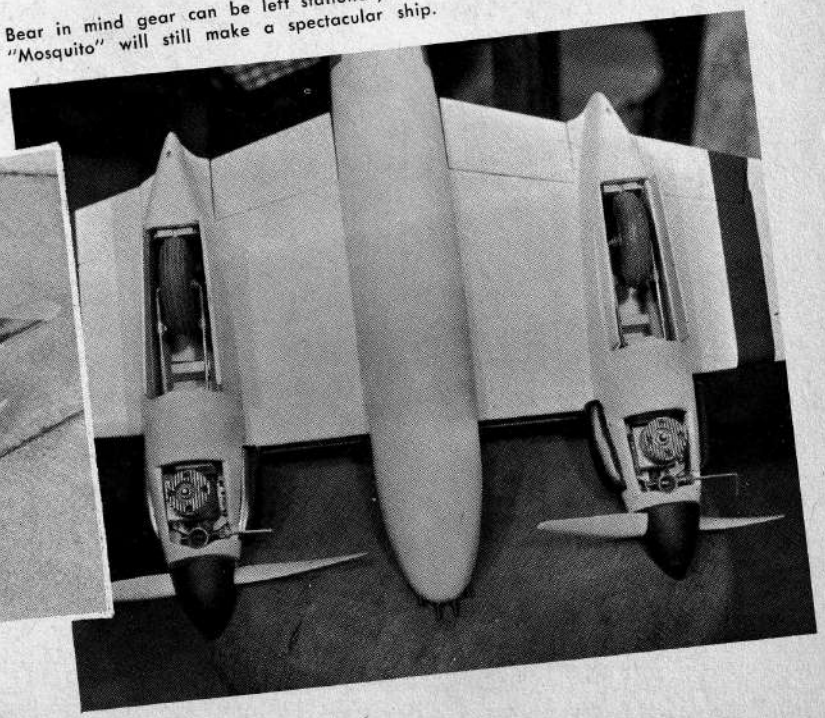
In addition to fixed armament of .303 machine guns, the F.B. VI "Mosquito" could carry a 2,000 lb. bomb

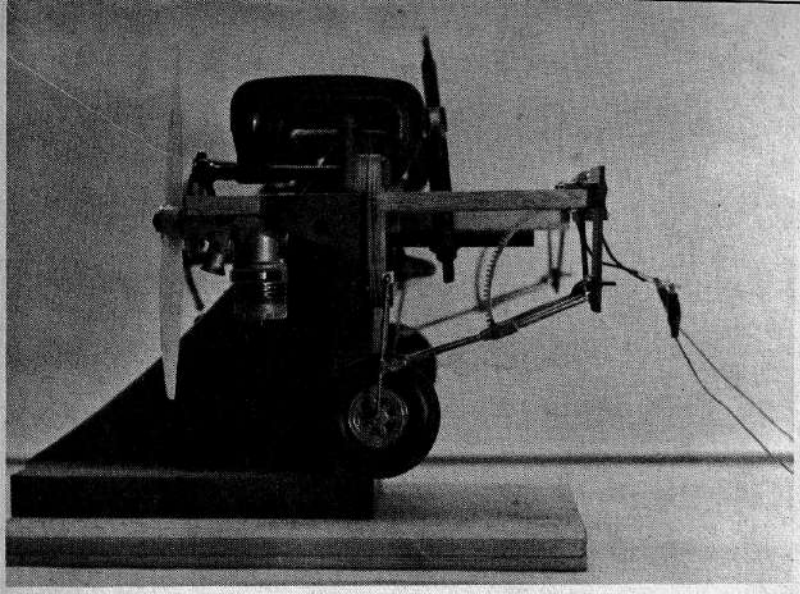
FULL SIZE "TIMELY" PLANS AVAILABLE

48 ounces ready to leave. 45 volt battery at handle supplies enough, with line loss, to actuate the motor. Use the .022 plastic insulated type Johnson or Dynamic 52 foot Controlines.

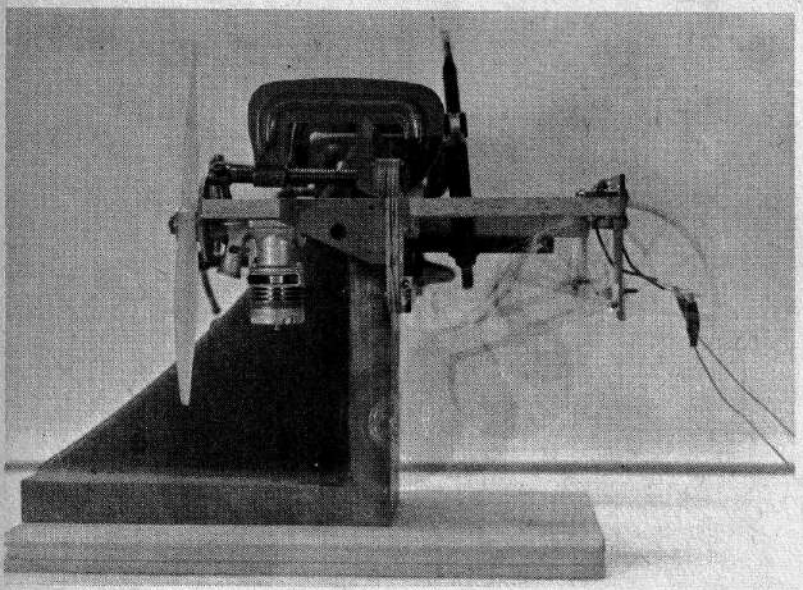


Bear in mind gear can be left stationary. The "Mosquito" will still make a spectacular ship.



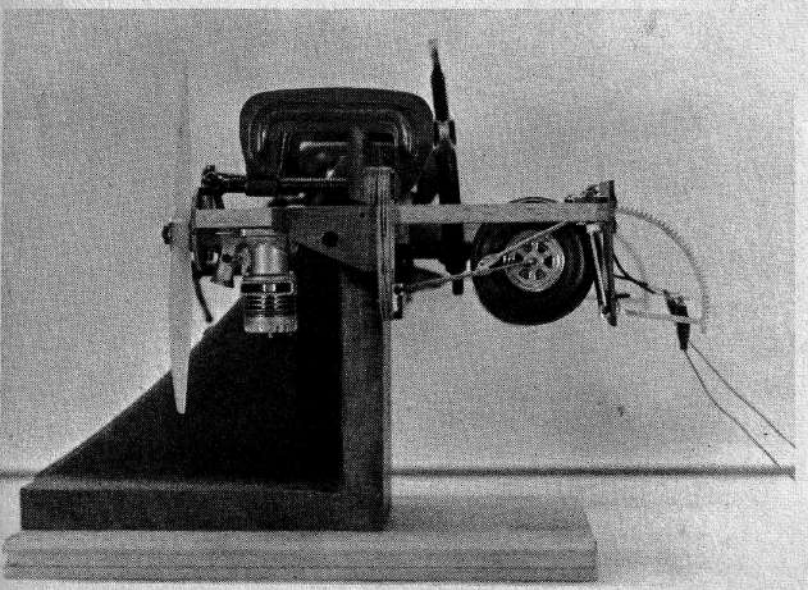


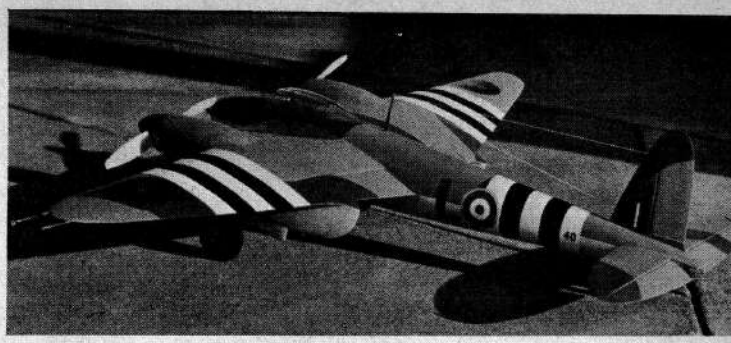
Gear down. Acme D2 tanks, 6 volts, Fox 15's.



Strain your eyes a bit, wheel seen retracting.

Gear up! Read how to bring down while you fly.





Wonder or Wilson electric motors used for the gear retraction, power supplied through lines.

"MOSQUITO"

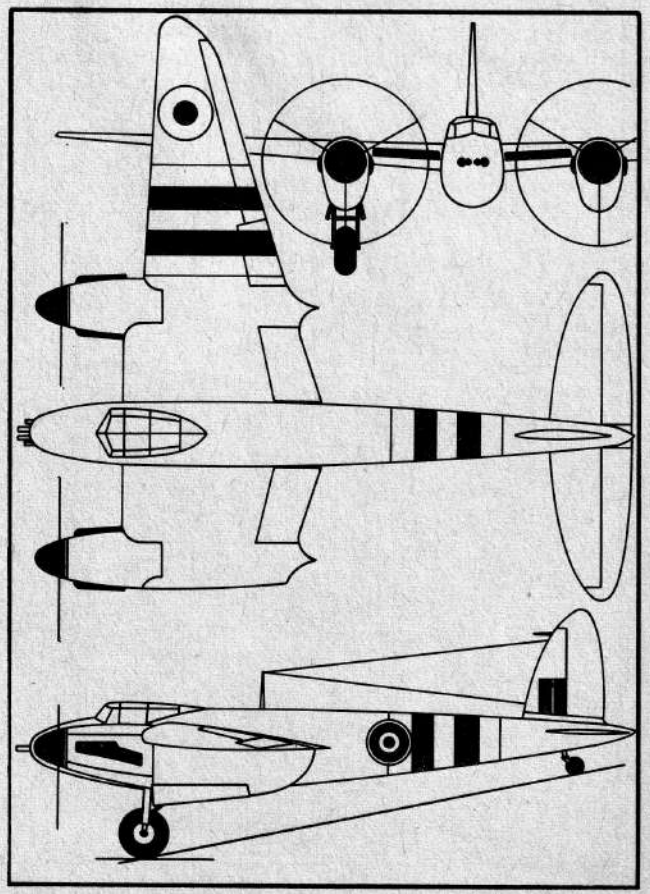
. . . continued . . .

38" wingspan, 28" overall. a sheeted and planked frame.

load and two banks of four rockets outboard of the nacelles. Power was two 1,620 h.p. Rolls-Royce Merlin engines, which raised its top speed capability to 378 m.p.h. Range was 1,120 miles, and armament varied from the four .303 machine guns to four 20 mm. cannons and eight 60 lb. rockets. Span measured 54' 2", by a length of 41'2".

Our scale replica of this dramatic aircraft boasts an electrically retracted main landing gear system. The design of the actuating mechanism is as simple as we could devise, and should not be too difficult for a good modeler with basic metal-working

(*Continued on Page* 40)



will absorb any dampness which might enter the envelope. Batteries are also easily protected in like manner, and a little finagling will house your servo or escapement in a suitable plastic or balsa box. This is just a trifle harder, as the torque rod, rubber must enter.

We have never suffered any R/C damage at all, once these simple precautions were taken. Time spent will be well worth it in trouble-free operation. Keep all switches well within the structure, shielded from water, and activated by an insulated rod. The same goes for the transmitter. If operated from a boat, encase in plastic or box to avoid water spray, keep your feet DRY and your hands DRY. The power supply of some R/C transmitters and receivers can be close to lethal when combined with a soaking wet unwary operator.

'Nuff said on that. In building the ship, the important thing is to keep weight down, all surfaces true, thrust adjustments indicated. Power is .049 through .10's, and expect wilder flight with the larger. A great deal of power is required to R.O.W., and it will take a good .049 and a light ship to get off. The .10 will drag it off fast, but somewhat over-power it once airborne. R/C can control this, and will make a good flier out of it with engine speed control. Free-flighter's can do it another way . . . a wire drag vane in the water which shifts the engine speed control into a medium range as the hull breaks off the water. You may of course want the full power once the design is trimmed out.

Ignore all else and get to building. Study the plans, select suitable wood, and decide on any modifications etc. you might want to include, as well as to R/C or Free-flight installations.

WING ASSEMBLY: All ribs are shown, two of each required. Cut from a medium grade. The airfoil is basically flat bottomed, with recessed spars. A 1/16" x 1/8" strip caps over the bottom camber to reinforce the spar notch, and avoid the typical undercamber warp that might otherwise result when the finished wing is highly doped. Optional if you like, seat the spars flat on the plan and save a little assembly time. A 1" trailing edge is employed, notched 1/8" deep for good rib joint. Wing leading edge is sheeted for durability and stressed to withstand landing jolts on the wing floats. Gusset the trailing edge and leading edge joints to keep wing intact. It should be noted that skin-stressed surfaces are not so hot when it comes to water-based craft. Tiny wrinkles will be visible during flying sessions, and a weak structure will flex under violent maneuvers. The framework should be a little more self-supporting, without the strength gained from the covering itself. As soon as the plane returns to dry air, the covering will become drum-tight once again.

Once the panels are joined with the balsa and ply gussets, the nacelle mount may be installed. Spare no effort on this, it must be well cemented between the two center ribs, braced with scrap balsa and further reinforced with the center-section sheet planking top and bottom. Sand the entire assembly smooth, double coat all cement joints and make ready for covering.

STABILIZER: This requires no ribs to be cut out as such. Leading edge is 1/8" x 1/2", spar is 1/8" sq., trailing edge is 1/8" sheet. The sheet may be left intact, or later sliced as indicated for elevator surfaces, trim tabs etc. Bevel toward extreme edge and sand to an airfoil shape.

Pin the leading edge, trailing edge sheet stock flat on the plan. Shim bevelled rear edge as necessary to keep stab symmetrical. Position the 1/8" sq. spar on the plan, and cut lengths of 1/16" x 1/8" to form the ribs on either side of the spar. Your stab is now assembled, and 1/8" in thickness. The simple butt joint of the 1/16" x 1/8" ribs would be prone to severe warpage if left as is, and for that reason each rib is capped top and bottom with medium soft 1/16" x 3/32" strips. As these are cut to length, trim to a taper fore and aft for an airfoil effect. This will minimize trimming and sanding when in position. The top camber strips may be installed while the stab is still laid out over the plan. Once dry, remove from the bench and cement lower camber rib caps in place in like manner. Add 1/4" x 3/8" stab tips,, 3/32" sheet at center-section, leaving slot for rudder on the upper surface. Trim and sand, slice off elevator areas and hinge if desired for R/C.

(*Continued on Page* 44)

THE MOSQUITO

(*Continued from Page* 10)

knowledge to tackle. Plans and photos show all necessary data on the gear, and we think you will get a lot of satisfaction out of its operation, for the time spent.

Those desiring to build a fixed gear may of course do so. It is not a "must", so this choice is left to the builder.

Our text will assume the retractible gear system will be built in, but those desiring a fixed type gear can install 3/32" dia. piano wire in a standard manner. So clear the bench, and let's get to building. . .

A bench mock-up of the retraction components as seen in the photos is your first step. It is so much easier to set up the gear, adjust it, and make it work with perfection out of the ship, than in the confines of the nacelle. It may then be installed at the proper time with the knowledge that all is functioning as it should.

Build up the mounts, gussets and formers comprising the nacelle structure, remembering that two nacelles are required. The drawings call out the various shapes and materials going into the retraction assembly.

There are four aluminum pillow blocks mounted on top of the mounts aft. On the inside of the well you will note the main gear supports, which are made of aluminum. The rear support is split to permit travel of the retracting gear segment. All linkage wire is 3/32" in dia. and fittings are of brass. Pivot points are 0-80 screws, which seem to be more than ample to sustain the loads imposed on landings. The gear segment is cut from a Boston Gear No. G-114. The driving pinion is a small gear to match the segment. This gear is soldered to the drive shaft coming from the electric motor reduction rods. All linkages are soft soldered.

Once the gear is attached to the formers, it should operate with a smooth action, no binding detectable. Test it for travel and alignment throughout the retraction cycle. For electric power on the bench mock-up we employed a "Wonder Motor" with a 100/1 reduction ratio, operating on six volts. Assemble your nacelles and retraction components as shown in the photos, complete with the motor. The drive shaft is soldered to the output shaft of the motor using brass tubing as a coupling. With a little patience sprinkled with trial and error, a smooth retraction will result. We should mention here that the retraction and extention cycle of the gear is terminated by eyesight while flying, rather than by limit switches and the like, in the interest of simplicity.

You will note in the photos a small jig is employed, serving as a soldering block to maintain constant length during the soldering operation. Using the jig method, parallel movement of the gears is assured.

With retraction behind us, proceed to build up the wings. A 1/4" balsa spar is used, with 1/8" and 1/4" sheet balsa ribs. All control surfaces (ailerons and flaps) are built up from sheet balsa and fastened to the wing during final assembly, just prior to painting.

The leading edge is built up from two laminations of 1/8" and 1/4" sheet stock. The 1/4" stock is fastened only when the upper sheeting is applied. The bottom sheeting of 3/32" stock is now added. The wing trailing edges are of 1/4" sheet.

At this point, dis-assemble the drive shaft from the motor drive and install each nacelle assembly in place on the wing, checking for proper alignment and cementing securely. Set aside and allow to dry, with an eye now and then to see that it remains correctly positioned. Next bolt the nylon bellcrank to the 1/8" plywood platform, place it into its spot on the wing and cement securely.

Proceed now with the fuselage. The structure centers around a full length 1/8" sheet balsa crutch. All formers are of 1/8" sheet also. To support the frail fuselage thus far completed, add a few strips of planking for support. When these have dried, cut out the crutch to allow the wing to slip in place. Set the wing at a three degree angle of incidence (positive) relation to the fuselage centerline. Cement it in place with the alignment carefully checked from all angles. The tailwheel may be added once the cement has set.

At this point we should again return to the retractible gear system. Cut out a portion of the crutch, and insert the "Wonder Motor", soldering the two drive shafts in place and aligning. When satisfied with the position, cement a 1/8" plywood platform under the motor and secure in place. The leads from the motor run to the brass lead-in tubing. Solder one lead to each. Voltage to operate the motor comes through the insulated flying lines available at the better-stocked hobby shops) to the .020 lead-ins, through the brass tubing and finally to the motor via its connecting wires. Secure a 1/16" wire pushrod to the nylon bellcrank extending beyond the tail-end of the fuselage. Note that a nylon type bellcrank is used, and should you be thinking in terms of a metal bellcrank, remember that the controline lead-in wires would have to be insulated, from the bellcrank, or a short would be caused by the bellcrank itself.

Proceed to complete the wing by adding the upper covering of 3/32" sheet balsa. At this point in construction, the nacelles should be completed, less covering. Install the Acme D-2 fuel tanks and complete the retraction installation. Add the 1/8" ply wheel well walls and engine mount gussets.

Spend your next efforts to complete the nacelles, using built-up sections of 1/8" and 1/4" sheet balsa. This applies to all areas. Be careful to allow travel room for the gear segment as the mechanism retracts. Once the block lay-ups have dried sufficiently, shape

the nacelles as detailed in the plan drawings. Apply a coat of clean dope (we used nitrate dope throughout on our model, including color) to all areas of the wing thus far completed.

The tail surfaces are simple, conventional in design and construction. ¼" balsa sheet stock is used throughout. Cloth hinges suffice for elevator movement, and a small Veco horn supplies the linkage. Both horizontal and vertical surfaces are brought to an airfoil shape, tapering to ⅛" in thickness at the tips. Sand smooth and apply a coat of clear dope. Next clip and bend the pushrod to required length and fasten to the horn. Cement the tail assembly to the crutch, parallel to the fuselage centerline. Once this has dried adequately, the fin and rudder may be attached and aligned.

The main task remaining is the planking of the fuselage. Many a new builder seems afraid to tackle this chore, but it is really a simple task, though it does require a degree of time and patience to fit and bevel as you go. A medium-soft grade of ⅛" x

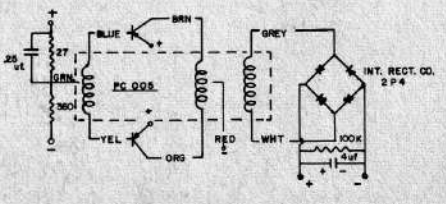
(*Continued on Page* 49)

CHANNEL CHATTER

(*Continued from Page* 19)

in series can be used. The transformer is a Model PC005 DC-DC Converter

TRX POWER PACK



Transformer available from Milwaukee Electromagnetics, P.O. Box 4476, Milwaukee 7, Wisc. for $4.95 ppd. Something for the tinkerers!

● So what are you or your club doing for the young and interested beginners?

Not too long ago we were asked, at one of our club meetings, what sort of stimulants we had run across in my travels around the country which had successfully brought new blood into the "old gang."

Our first thought was of the idea that the "KC/RC" boys dreamed up a couple years back when each experienced member "adopted" a new or potential R/Cer in their "big brother" effort. Each seasoned "big brother" took a relative newcomer under his wing and taught him some of the short cuts to successful modeling. And it worked wonderfully.

This club is normally very active anyway. But, on the one day we witnessed . . . a day when the "big brothers" were assisting their proteges, the activity was phenomenal. And the results completely satisfying. Newcomers were flying almost as if it were second nature, thanks to the steadying influence of having a mechanic, pit crew and plane launcher who knew what was going on and was readily available to help his "pilot" if the going got rough.

We decided to supplement this with a strictly .049 contest. This would immediately put just about everybody on a somewhat even footing. There is to be no restriction on control other than what the size of such ships will normally allow. With the possibility of hot stunters ruled out, the newer members should feel a little more at ease. It should be fun and we'll clue you on the outcome. In the meantime, how about hearing of your summer plans. We are still waiting for those pictures!! Push the right button. ●

INDEX TO ADVERTISERS – JUNE-JULY, 1963

While every precaution is taken to insure accuracy, we cannot guarantee against the possibility of an occasional change or omission in the preparation of this index.

THE MOSQUITO

(*Continued from Page 49*)

¼" strips is used for this operation, fitted neatly one against the other. Later the sanding operation will blend them into one smooth curvature. A soft block of balsa is used to form the nose on each side of the crutch, and the tail cone is assembled in like manner. Apply a coat of clear dope to the completed fuselage. For added strength and in the interest of a good finish, cover the entire model with a medium grade of silk. Upon completion apply several more coats of clear, sanding lightly after each application. After this, five coats of balsa sanding sealer are added. Fill in all pockets, seams and nicks with plastic balsa. No sense going to this much effort and falling down in the paint job.

The "Mosquito" is now ready for its war-paint, but first a canopy is required. Since nothing in the way of commercially available canopies comes close to the shape required, we decided to mold our own, and you may duplicate it in like manner, and gain the experience so often needed in this field at the same time. Molding is much easier than it might seem, and the method described here should be a breeze for you, and requires only the material, the pattern and your kitchen oven. The plastic used is 1/32" Lucite or Plexiglas. A balsa mold is shaped to the canopy contours and sanded smooth. Place the plastic in the oven for half an hour at 300 degrees, and remove and shape over the wooden form. Trim the canopy and cement it to the fuselage.

If at all possible, we suggest you spray the finishes on the model, rather than by the brush method. The under surface is a light powder blue or duck-egg green. Upper surfaces are of sandy-tan or light brown, with irregular stripes of olive-drab. The outer wing panels and fuselage aft are striped in the A.E.A.F. black and white colors.

Once all the paints and decals have been added and dried, wheel well doors and antenna mast are installed. Two good coats of fuel-proofer come next, then the thread antenna.

Fasten the Fox .15's in place, or other power of your choosing, bolting carefully in postiion at the thrust angles indicated. Modified 1¾" dia. spinners are used, fairing the hubs of the Tornado ⅝ nylon props. The model should balance with a nose heavy attitude at the point indicated. Add weight to the spinners if needed. 50 foot flight lines are recommended.

We mention that the model could handle engines from .15 through .29 displacement, however a .29 should be considered maximum. The all-up weight of our "Mosquito" is a reasonably light 48 ounces, ready to travel. This is a good weight to shoot for. Keep the poundage down by building neat and carefully. The overall span is 38¼", and .15's do it nicely.

For electric power we used a Burgess #5308 45 volt "B" battery. A DPDT toggle switch is used at the handle with voltage running through the insulated lines. The reason for this high voltage to operate a 6-volt motor is the line loss encountered over the 50 feet controline length. It really drinks up the current.

Curb your enthusiasm just a mite, till a calm day arrives. Test out your controlines, all action should be smooth, and pull-tested for safety-sake. By all means . . . stay far away from power lines and avoid making the obit-columns. Rev your engines and get out to the handle, with a reliable buddy assisting with the model. Take-off in standard down-wind ukie fashion, and avoid over-control on first flights. Keep it low and steady till you feel it out.

Once you see those wheels tuck-up in flight, we think you'll be a confirmed nut on the disappearing-gears. They add a little zest to every flying session. Have a ball, and park it on the grass when all else fails. Bye! ●