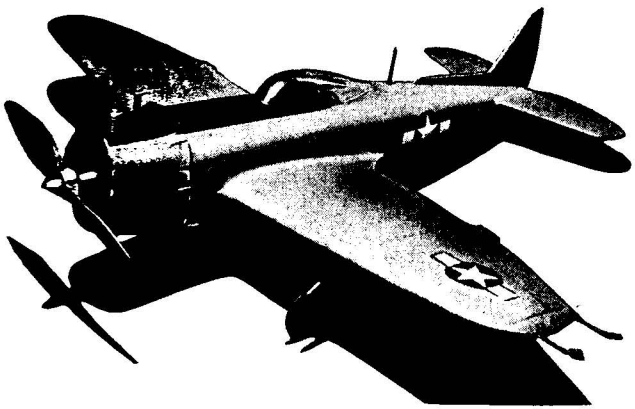
Thunderbolt by PMH Lewis



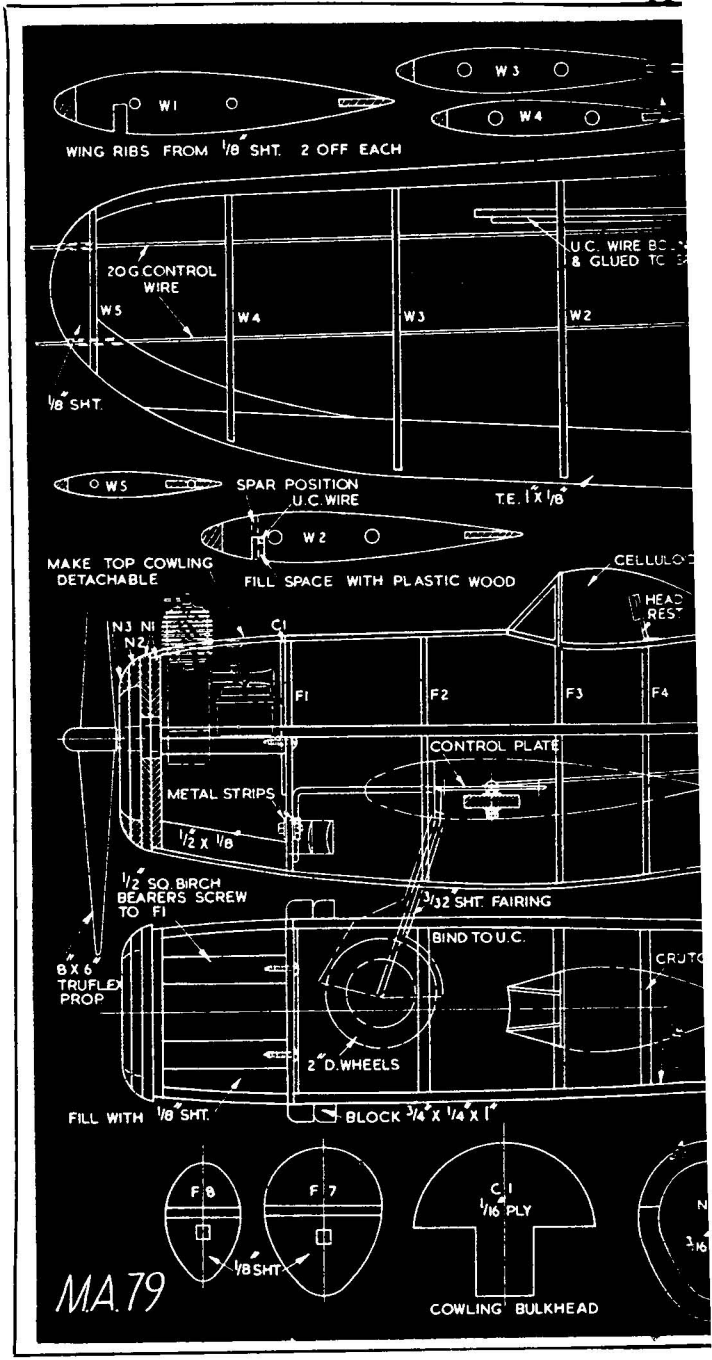
SCALE CONTROL-LINE MODEL

THIS completely scale model of the P47N Thunderbolt fighter of the late war will prove a worthwhile piece of work for the modeller who requires a C/L model which will provide a realistic appearance in flight and also one on which he can exercise his skill in finishing and construction.

Fuselage—Construction of the fuselage is commenced by building a crutch of $\frac{3}{16}$ square hard balsa directly on the plan view. Former *F*1 is next cut from $\frac{1}{8}$ in. thick plywood, and the two $\frac{1}{2}$ in. square hardwood motor bearers are cut to length and glued and screwed to the former. Former *F*1 is now cemented in place between the crutch side members. Formers *F*2 to *F*8 are cut from $\frac{1}{8}$ in. sheet, and an opening made in *F*3-*F*8 to accommodate the 16 s.w.g. push rod. These formers are now also cemented in their respective positions, above and below the crutch.

The $\frac{1}{8}$ in. ply undercarriage spar should next be cut as shown, and the 12 s.w.g. wire undercarriage shaped in one piece as indicated. The wire is bound to the spar with thick thread and the whole well coated with glue. This assembly is then fitted across the fuselage, and the undercarriage wire bolted in place with two small metal straps to former *F*1. The ply spar is well cemented to former *F*2.

The entire fuselage is now planked with strips of 3/32 in. × $\frac{1}{4}$ in. balsa from the top downwards. When the area around the wing root rib is reached the control plate should be installed after mounting it on the 1 in. × $\frac{1}{4}$ in. hardwood beam with 6 S.B.A.



FULL SIZE DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT 23, GREAT QUEEN ST., LONDON, W.C.2. 4s. 6d., POST FREE

nut and bolt. The 16 s.w.g. push rod is threaded through the formers and fitted to the control plate. The rest of the planking can now be carried out. Planking is continued up to the front of the engine cowling on the lower half. The front ring is laminated from $\frac{3}{16}$ in. sheet, *N*1, *N*2 and *N*3 being cut as shown. The top half of the cowling is next built up in the same way as the lower half. The rear ply former of the top half of the cowling has an extension piece to slot between the motor bearers and behind $\frac{3}{16}$ in. square hardwood strip to keep cowling in place. After cutting the opening for the cockpit the fuselage is sanded down to the smoothest possible finish. Make an opening in cowling to take motor.

Tailplane—The tailplane is cut to plan from $\frac{3}{16}$ in. sheet, and is cemented on to the $\frac{3}{16}$ in. sheet saddles which are in their turn cemented to the top of the crutch. The space above the tailplane is filled with a block cut to shape from soft balsa. The elevators of $\frac{1}{8}$-in. sheet are glued to the 18-s.w.g. wire bar after the control horn has been soldered to it. The ends of the bar are bent at right-angles to press inside the elevators. The elevators are attached to the tailplane by cementing them with tape hinges. The whole unit is sanded to section as shown and a smooth finish.

Fin—The fin and the rudder are cut to shape as plan from $\frac{3}{16}$-in. sheet and the dorsal fin from $\frac{1}{8}$-in. sheet. After sanding to section they are cemented to the fuselage. The fin is given offset to starboard, and care should be taken to see that it is not fouled by the elevators in their movement up and down.

Wing—The wing is made in two halves and is built directly on the plan. The leading edge is tapered from $\frac{1}{2}$ in. square to $\frac{1}{4}$ in. square, and the trailing edge is cut from 1 in × $\frac{1}{8}$-in. sheet. The leading and trailing edges are pinned to the plan, and the wing ribs *W*1 to *W*5 are now cut from $\frac{1}{8}$-in. sheet. Holes are cut to allow the passage of the control wires of 20-s.w.g. wire in the port wing. The ribs are butt jointed to the leading edge and are slotted to take the trailing edge. The wing tips are shaped from $\frac{1}{8}$-in. sheet. Ribs *W*1 and *W*2 are cut to slot onto the $\frac{1}{8}$-in. ply wing spar on which the undercarriage wire is mounted. $\frac{1}{8}$-in. sheet gussets are glued to the wing root ribs for strengthening.

The starboard wing tip is fitted with a lead counter weight to balance the weight of the control wires and lines. This should not be left out on any account as it helps materially in keeping the lines taught. The exact amount of lead can be found by experiment in balancing the model.

The two wing halves are slotted and glued to the wing spar and the fuselage. Dihedral angle for the wing is set at the tips at $1\frac{1}{4}$ in. on drawing.

Undercarriage—The 12-s.w.g. wire undercarriage is already in place and 2 in. diameter wheels should now be fitted to the axles. The excess wire is cut off and the wheels secured in place with small washers which are soldered to the axles. The 1-in. celluloid tailwheel is fitted to its 22-s.w.g. axle which is then bent to shape and bound and glued to its place on the underside of the fuselage. A drop of oil on each wheel bearing helps a great deal towards smooth take offs.

Details—The eight guns are cut to length from bamboo and placed in position in the leading edge of the wing. The cooling gills are cut from stiff card and glued to the top and lower halves of the engine cowling. The aerial mast is shaped from a strip of bamboo, and inserted in the top of the fuselage. The radiator and oil cooling vents are shaped as shown on the plan from small blocks of soft balsa. Undercarriage fairings are cut to shape from hard 3/32-in. sheet and bound and glued to the undercarriage legs. They are prevented from twisting by 20 s.w.g. wire supports which are soldered to the legs.

Covering—The whole model is covered with bamboo paper, and is given two coats of clear dope, and then two coats of silver or grey dope are sprayed on. The forward top deck of the fuselage painted black as an anti-dazzle patch. The U.S. insignia is placed on each side of the fuselage and on the top of the port wing and the underside of the starboard wing. The ailerons and flaps are marked in outline with Indian ink.

Motor—Any motor from 1.3 c.c. to 3.5 c.c. is suitable and this covers such types as Mills 1.3 and 2.4, Elfin 1.8 and 2.49, E.D. Mk. II, Competition Special and Mk. III, etc. An extension to the needle valve through the cowling can be used if necessary. A choke hole for starting can be cut in the side of the cowling or, if desired, the cowling can be replaced when the motor is running.

Flying—A smooth grass surface is advisable for take off and the tail should be allowed to rise when sufficient speed is reached. The model has been flying very successfully on 30 ft. and 40 ft. lines and looks exceedingly realistic in flight.