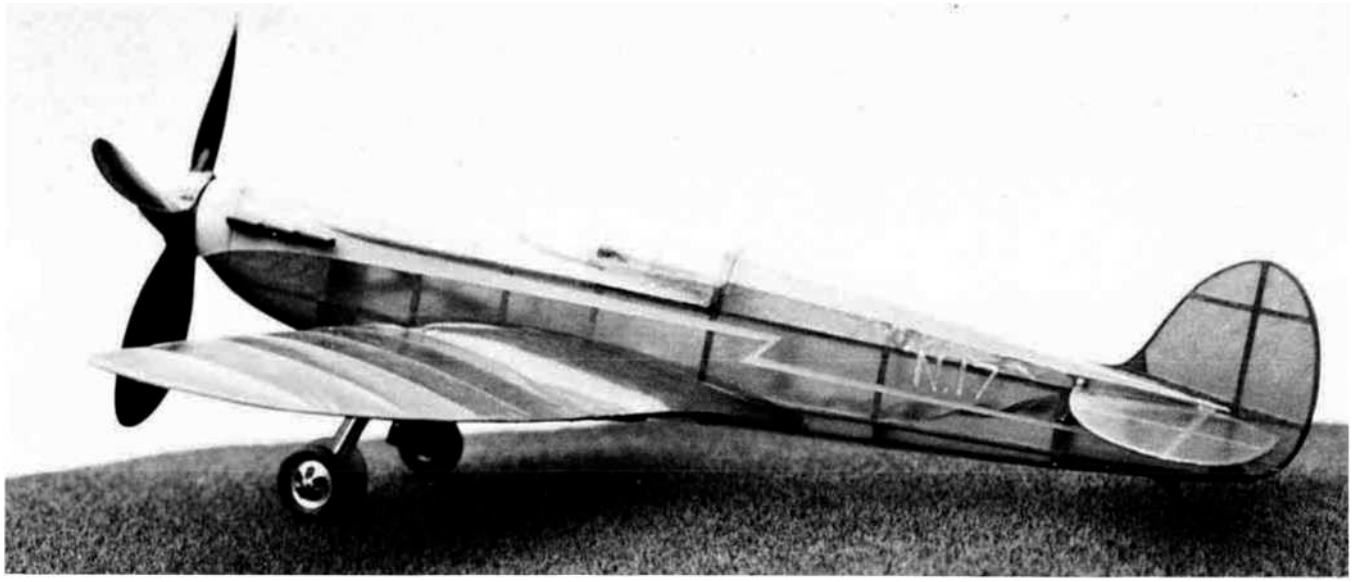


RAPID PEANUT - SPEED SPITFIRE

By WALT MOONEY. This month we have a hot peanut! Built with the Scale Rubber Speed event in mind, the Speed Spitfire disclosed a need for turbulators. Aerodynamics plays no favorites!

• Perhaps one of the prettiest fighters ever built, the Spitfire was even nicer, in my viewpoint, as converted from the Spitfire I to a special standard (Type 323) for an attempt at the World's speed record. This airplane ... there was only one Spitfire so converted . . . was specially cleaned up aerodynamically, with a shortened wing, flush riveting, a cleaner canopy and a smooth glossy paint job. It was equipped with a more powerful engine that required the installation of a larger radiator and oil cooler. A special fixed-pitch four bladed propeller was used.

Both Heinkel and Messerschmitt produced airplanes that outstripped the Spitfire's speed capabilities before it had a chance at the record, so no record attempt was made with it. But from my point of view it sure looks nicer than either of the aforementioned aircraft.

This Peanut version was built for the Flight masters Speed contest and is quite rugged. It was flown with two loops of quarter flat rubber and enough balancing clay on the nose to put the CG directly above the wheels, in an attempt to hold down the climb. It achieved almost 30 mph, which is almost twice what you can expect if it's flown for duration with one loop of 1/8 or 3/16 rubber. As a speed model it had the glide of a streamlined brick . . . literally straight down.

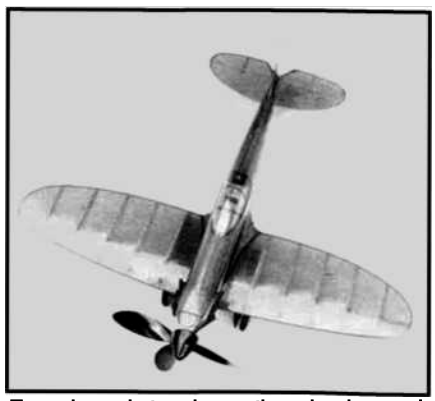
It was then entered in the Flight-master's Annual, in the Peanut event. Although it made several qualifying flights, none of them were of much duration, and all the landings were violent to say the least. It was OK during the high powered part of the flight, but as the motor ran down, it would pitch either up or down with an ensuing dive into the ground . . . either later or sooner.

After some thinking, a suspicion that perhaps there were airfoil flow problems were entertained: Suppose the relatively smooth airfoil . . . there are no exposed spars on the original model ... is suffering from laminar separation as the model slows down and enters a critical Reynolds Number air flow. If so, turbulators should modify the flow conditions, prevent the separation, and stop the violent changes in downwash over the tail, which cause the pitch up as the model slows down.

A thread turbulator was installed on the top surface of the wing at about the15% chord point . . . that is, about half an inch behind the leading edge at the fuselage juncture.

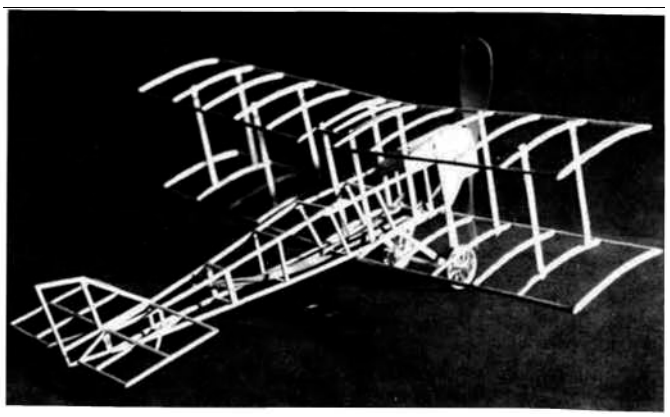
Lo and behold, it worked!

The model would have flown better, perhaps, if it had notched spars on the upper surface.



Top view photo shows the pleasing and distinguishing lines of the Spitfire.

This one-off version of the famous fighter was built for one purpose. to establish a speed record. Others exceeded its max, unfortunately.



Next month's project is the DH-6. Previously designed as an all-sheet model, this built-up version is lighter, and a better flyer.

This is why an alternative typical rib is shown on the plans. These ribs, because they are solid, can be made from one thirty-second sheet balsa. Obviously, the weight of the model will have an effect on its speed and an effect on its aerodynamics. A lot of ballast modified our model's behavior, both by moving the CG forward, which is more stabilizing, and by increasing the speed, which may have helped to prevent an airflow problem.

So, build your model of the Speed Spitfire with whichever type of wing structure you desire, and if you have flying troubles like I did, try turbulators.

This model is built using conventional techniques throughout, with only a few exceptions which will be covered in detail.

The surface outlines are laminated. Because the outlines are ellipses or at least smooth curves, lamination seemed the right way to go. If balsa laminations arc to be used, they should be 1/32 by 1/16 in size and enough laminations to make the width shown on the plans. If model railroad basswood is used, the wing laminations need only result in a total width of 1/16, and the tail laminations need only be two of the thinnest available. Previous issues of Model Builder Magazine have defined the technique quite well. (July and December, 1972).

The landing gear uses a torsion bar suspension or shock absorbing system. Bend the wire as shown after threading it through a short length of 1/16 diameter aluminum tube. Poke the wire back through the rear spar and cement the tube to the front spar. This installation can flex until either the wheel or the leg strikes the wing lower surface without breaking any structure.

The tail surfaces can be left flat without adding balsa pieces to the streamlined section shown without affecting the looks very much.

The propeller consists of two North Pacific plastic props notched half way through at the hub and epoxied together. The spinner is an old Kayson plastic one, notched to fit over the four bladed prop and epoxied in place after the propeller hook has been installed. This means you will have to remove the rubber from the propeller hook and wind it directly if you want to use an indoor winder. Usually, I prefer a winding loop bent in the shaft in front, but it would louse up the looks of the model here too much.

The upper wing fillets are made of bond paper. You will need to use the cut-and-try method to get them to fit. Make sure they fit, and then cover them with blue tissue before you cement them in place.

Blue tissue was used on this model. It has one unfortunate characteristic not found in lighter colors. Whenever there is a tissue lap joint, there is a darker blue where there is more than one layer of tissue. The best that can be done with tissue alone is to try to keep these laps only over a structural member. (This was not done very successfully on the model in the photos, I fear). Perhaps a better way would be to use Fernando Ramos' technique in painting the model with Floquil model railroad paint in a nitrate dope base.

Note that the oil cooler, as shown on the front view, goes on the other wing.

When installing the fuselage upper stringers, continue the top three clear back to the aft end of the fuselage box. When dry, sand them to the proper contour. Later, when installing the horizontal tail, they will have to be cut free from the back of the fuselage box to allow the insertion of the tail.

Other than the effect of the structure on the surface contours of the aircraft, the only intentional deviations from scale are the size of the horizontal tail and the diameter of the propeller, both of which have been enlarged.

The great god of the thermals, "Hung," loves Peanuts. Let's go feed him.