

PART I

A complete construction article.

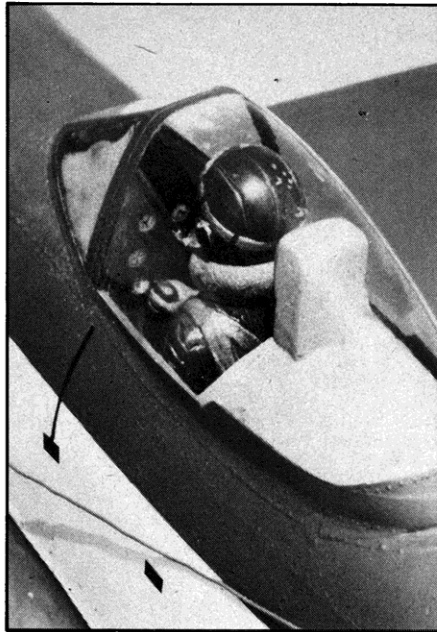
HAWKER'S MAGNIFICENT SEA FURY

Model and construction article by Don Williams



One of the most beautiful, fastest, efficient prop driven fighters ever built gets the treatment. In this first installment on the Sea Fury, Don Williams, well known Texas scale builder, presents a construction article on his stand off scale, 1-1/2" to the foot all balsa version of the Hawker airplane—for those who prefer the all balsa medium. In the next issue of SR/CM we will present another complete construction article on the Sea Fury, this one based on a fiberglass fuselage model developed by yet another highly qualified author and model builder. This model will also be in the scale of 1-1/2" to the foot and the fiberglass portion of the fuselage will be made commercially available, along with the full size plans for both versions, through the well known Bob Holman Plans Service.

Along with the second portion of the Sea Fury extravaganza, we will also be publishing historical information pertinent to the model builder, as well as numerous black and white photographs and color profiles which will lend themselves nicely to scale contest documentation. Look for the Sea Fury in a number of attractive paint and markings schemes.



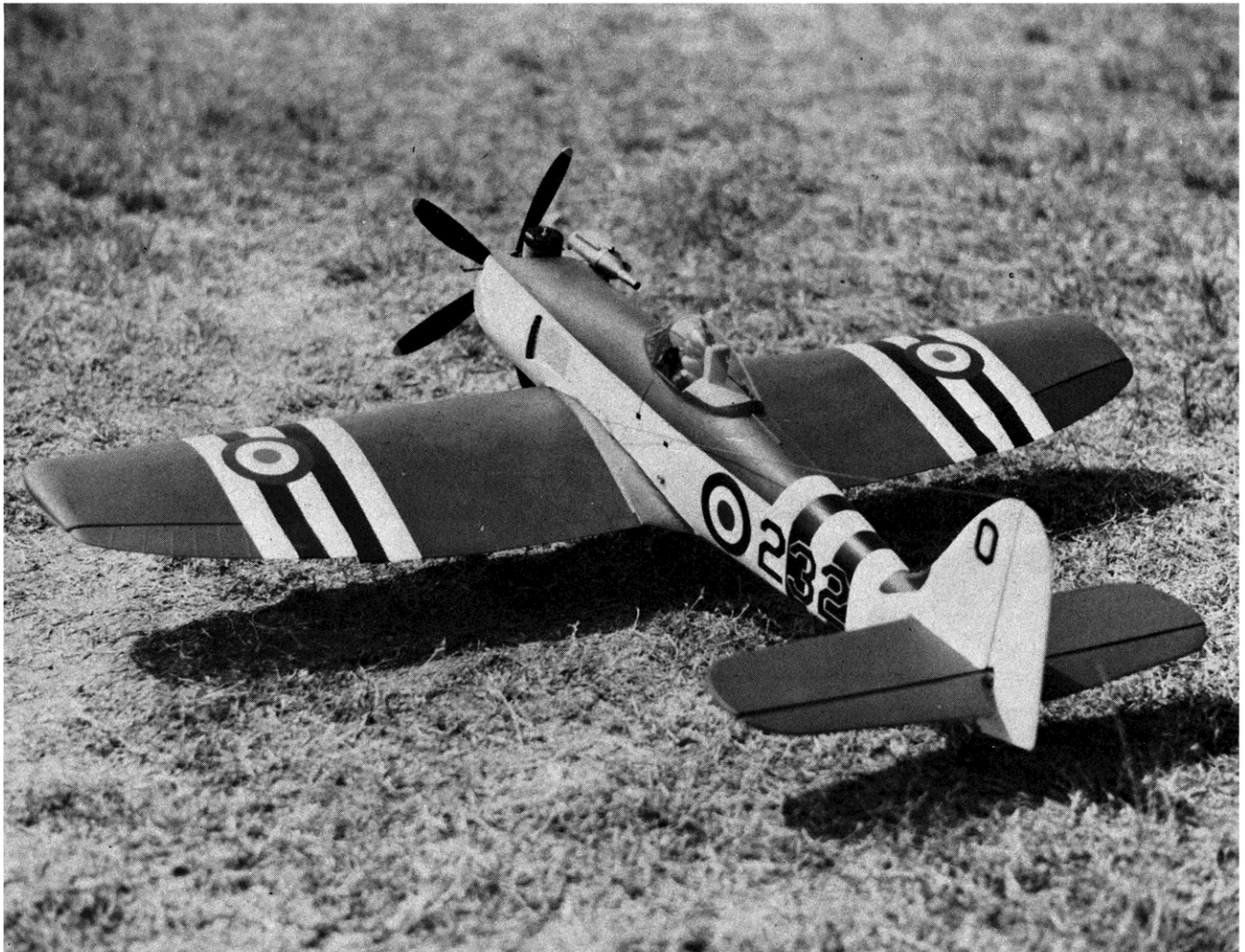
A closer look at the cockpit area. Although the model is strictly stand off scale as seen here, the basic design has good proportions for a more detailed approach and even AMA Scale competition. That muffler has got to go!

An overhead view of Don Williams' completed model reveals the exquisite lines of this bird of prey. The Hawker design represented the epitomy of British single engine, prop driven fighter design and was in the same league as the Bearcat and late model Mustangs.

HAWKER SEA FURY

The grace and beauty of the Hawker Sea Fury is only equaled by the P-51 Mustang, F8F Bearcat and a select few other aircraft. These aircraft have a certain aura about them even today. The Sea Fury has the distinction of being the last unsophisticated, but fastest propeller-driven fighter to serve with Britain's armed forces. If I may quote a paragraph from a book on the Sea Fury:—"The Fury was remarkable in many ways. It was born in 1942 in the depths of one war, yet was being sold long after the next! It never fought in the war for which it was designed, but did so in the theater for which it was intended, by an unexpected Service against a completely unforeseen enemy. It served with the Royal Navy and with the air forces of Pakistan, Iraq, Cuba, Canada, Australia, Holland, Burma and Egypt, and in Germany and Morocco—but never with the air force for which it was originally conceived: the R.A.F." That's wild, man.

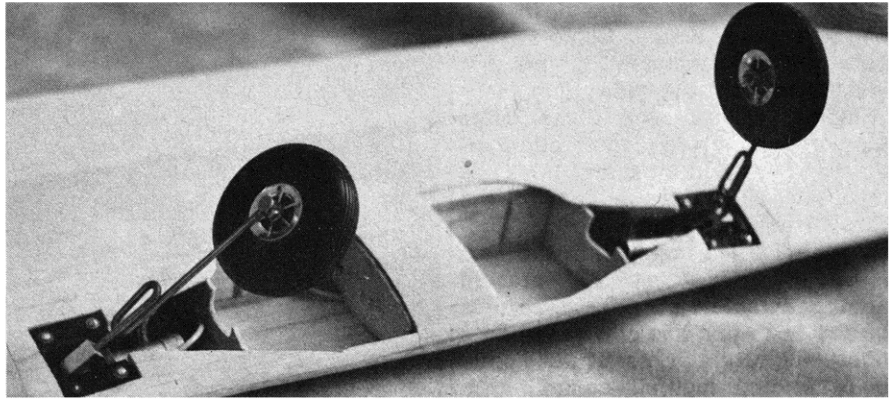
Lt. Peter Carmichael flying a Sea Fury in Korean waters on August 9, 1952, was the first British naval pilot credited with the destruction of a Communist MiG-15 jet fighter. This was the Sea Fury in brief, although



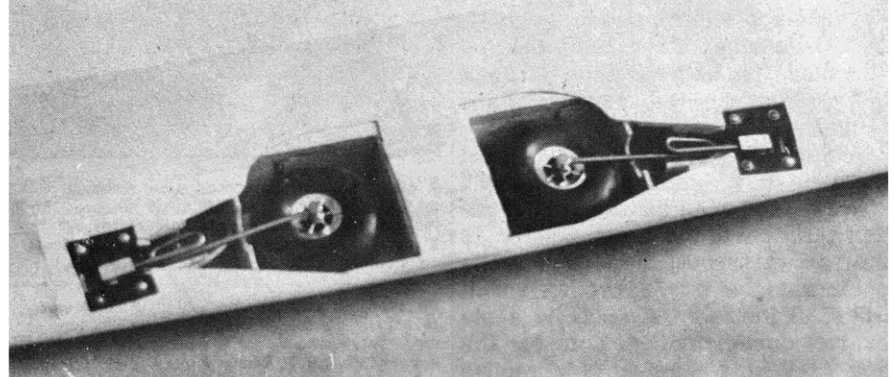
much more can and will be said in the next issue. But let's get to building.

CONSTRUCTION

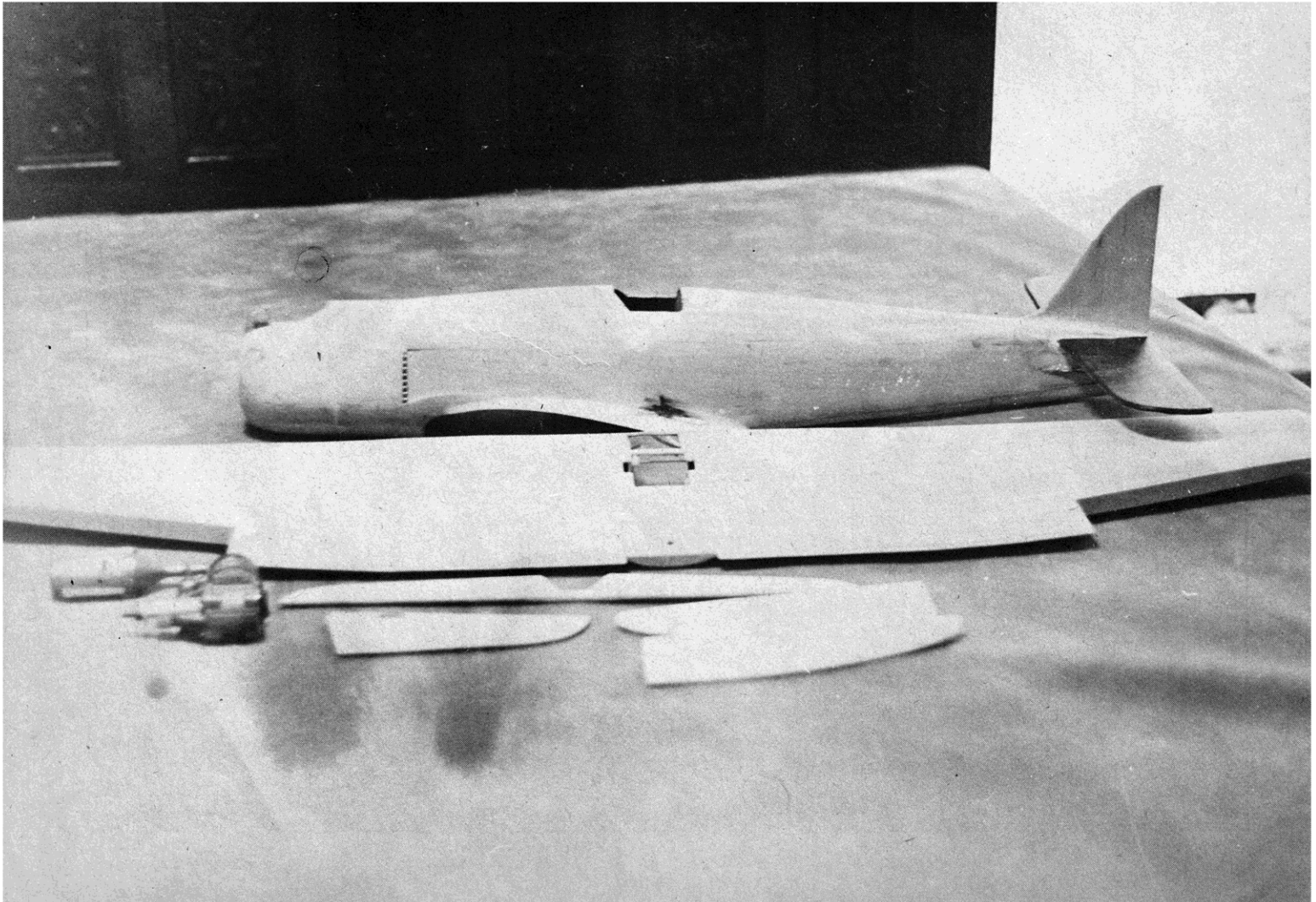
I will not pretend that this aircraft would be the one to build for a novice—it is not—either in building or flying. It is a finely tuned machine and although it doesn't require a great deal of skill to build, skill is required on the flight line. But there again, any pilot with a fair amount of multi flying under his belt should experience no problems with it. Therefore with the more experienced flyer in mind I will not go into a glue part A to part B type thing but rather try to help you along with possible trouble spots. First of all the aircraft is built very light (choose your wood wisely) but strong and with as few parts as possible. Mine weighed 6-1/4 lbs. wet/with St. G.60 and Rhomair retracts. Also included is a muffler. No weight was required for ballast. As a matter of fact I had to place the battery pack in the fuselage behind the wing in order to get the correct balance. I am not particularly happy with that sort of set up as—or I should say IF the aircraft comes in contact with terra firma the hard way the battery pack will, in all probability, go all the way to the firewall clearing out everything in its path along the way.



These two photos show the landing gear retract sequence and the installation of the Rhom units.



Construction is quite straightforward for the experienced balsa wood builder—the only type who should tackle this project. Here are shown the various component parts prior to assembly.



The first thing that should be done is to cut out all the parts so what you have is a normal kit with all the parts numbered as shown on the plans. This will save a lot of time in building.

Glue the fuselage sides together at F-4 and the tail, wetting the sides and holding with masking tape. Be sure to check the alignment. When dry, add the remaining bulkheads from F-4 aft, again holding with masking tape. Now here comes one of those trouble spots. It's only a trouble spot because it needs a little understanding. I'm sure you have noticed the notches cut in the sides of F-1 and F-2. This is the exhaust passage, but it's put together so as not to lose any strength in this area and not adding a lot of little pieces which all add up to weight. OK, here we go. Wet the outside of the fuselage sides liberally and glue, in place, F-1. The fuselage sides will only come about 1/8" above the notch. Use epoxy and hold with masking tape. When dry add the remaining bulkheads in the same manner. When dry, layout a line at the top and bottom of the notches to a point 2-3/8" behind F-2. When this is done cut along this line or lines all the way through. Spread epoxy into the notches and pull in tight, the part of the sides you cut loose, with masking tape. I use a lot of tape. It sure beats all those pins. This now becomes the bottom of the exhaust passage and the doubler has been preserved for strength with no added pieces. Draw a line marking where the external part of the exhaust stacks end and cut eighteen pieces of 3/16" brass tubing about 1/2" long. Lay in a 1/8" balsa filler piece top and bottom in the exhaust passage and F-1A. Notch out the filler pieces to accept the 1/8" sheet covering. Epoxy nine pieces of brass tubing in place with the ends along the line you drew. Five-minute epoxy works fine here. Now glue in the 1/8" sheet covering leaving about 3/16" of the brass tubing exposed and you're all done. Reading over this I sorta feel something is lost in translation but it really is not difficult and takes very little time.

If you are going to use Ny-rod type pushrods as I did, now is the time to install them while the top and bottom of the fuselage is open.

The bottom, aft of the wing is 1/2" balsa sheet while the top is strip planked. It may be suggested at this point that you cut your own 1/8 x 3/8 strips so they will be consistent in tension. Start one on each side and work toward the top. A little care here will result in less filling and sanding. I am suggesting, here, that you side-mount the engine to preserve the profile of the aircraft. I did not do this on mine, but instead mounted it upright,

and have been sorry ever since.

You can make a very simple cowling that is removable and be a lot better off in the looks department. This is the way I do it. I usually use 1" balsa blocks with the cowl cut loose after the fuselage is sanded. Install the 3/4" balsa chin block with epoxy, coating the inside that covers the bottom of the fuel tank compartment thoroughly. This is part of the fuel proofing that is very hard to reach and you just can not see if the area is covered completely if you do not do it now. Next, using 1/8" plywood, place one edge, grain horizontal, across the chin block and flush against the firewall. Draw the outline of the fuselage, front on the backside. This is done after the fuselage is fully sheeted. Cut out along the outline. Now lay out the inside leaving a 1/4" border except for three tabs that are about 1/2" high. Two at the bottom and one at the top. Cut this out and you have a cowl ring. Drill a 1/16" hole in each tab and, using small sheetmetal screws, screw the cowl ring to the firewall. DO NOT GLUE TO THE FIREWALL. Epoxy glue to the chin block on the front side only. Glue the 1" balsa cowl sides and top in place, installing 1/2" balsa triangle in the corners on the inside. These set back 1/4" from the front. This leaves room for the nose ring. Measure the dia. across the front on the inside and from top to bottom. Lay this out on a piece of 1/4" balsa and mark the center. Take the size of the front cowl opening from the plans and, using a compass draw a circle using your center mark. After you have cut this out you should have four square corners with a radius on one side. Glue these in each corner at the front of the cowl and when dry, carve and sand with the rest of the fuselage. Draw a line across the bottom of the chin block at the firewall. Using a razor saw cut through the chin block. Take the screws out and the cowling will come off and is a perfect match for the fuselage. You must now layout the side of the cowl to accept the engine head. Cut this out and you're done except for a hole for the exhaust and needle valve. I usually use the same screws to mount the cowl after the aircraft is finished. After the aircraft is covered remount the cowl and paint with the rest of the aircraft.

I usually put an instrument panel and a pilot, at least, in the cockpit. Something is missing without it. I like to use I-M products full length pilots and cut them down to what ever depth the cockpit is. They really look nice and add that touch of realism. Since this is a sport scale aircraft you can use a simple instrument panel that really looks good but is simple to make. Use bulkhead 3a as a template,

cut out two pieces of plastic, one white and one black. Layout the appropriate places on the black piece and drill with several sizes of brass tubing. When this is done glue to the white piece and draw in the instruments with a flair pen. A few knobs, buttons and switches in the right places and you're done. Simple enough.

The canopy is molded right on top of your wife's electric range, if she has one. Very easy and a lot better than the old oven trick. Carve the male mold from balsa block and sand. The last sanding should be with 600 grit paper. Now, just wipe clean with your hand and its finished. No need to go to an elaborate finish with fiberglass, etc. I have been using this method for several years and it works beautifully. For the female portion of the mold cut a hole in a piece of 1/4" plywood the same shape as the bottom of the male only a 1/4" over size all around. You're now ready to test your skill at molding a canopy. Cut a piece of Sig heat forming plastic, .030 or .040. I used .030 on mine, about two inches larger than the hole in the female all around. I just use thumb tacks to hold the plastic to the male, but you need them about 1" apart. Block up the male mold so you have about 6" clearance for working room. Hold the female mold over the largest burner with the plastic face down. When the plastic droops and begins to swim or look wet flop it over the male mold and press down firmly but evenly. Let it cool for a few seconds and pop out the male mold. If you got it the first time you're better than most. Put it back over the heat and try again.

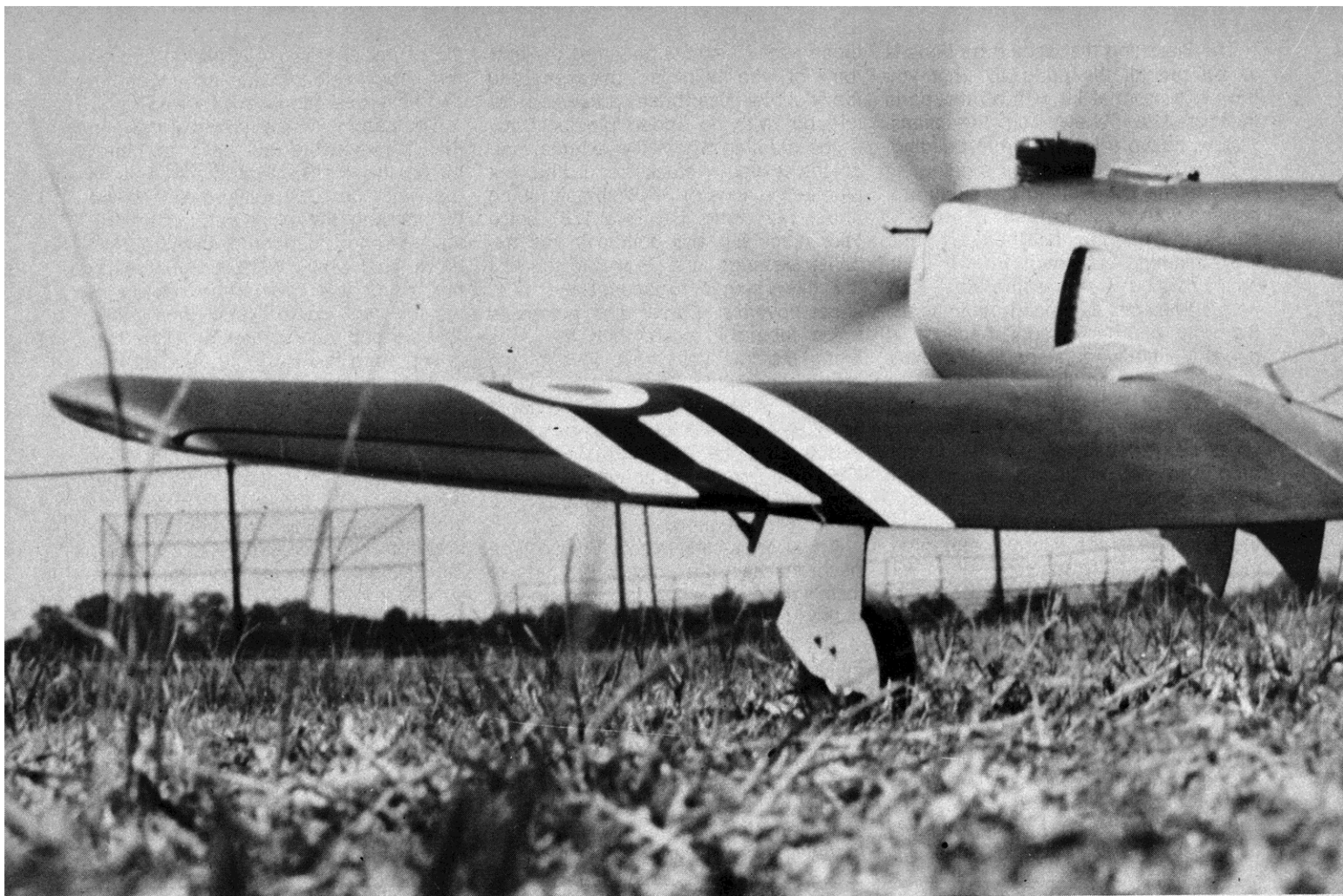
The stab and rudder are cut from 1/4" balsa and are self explanatory.

WING

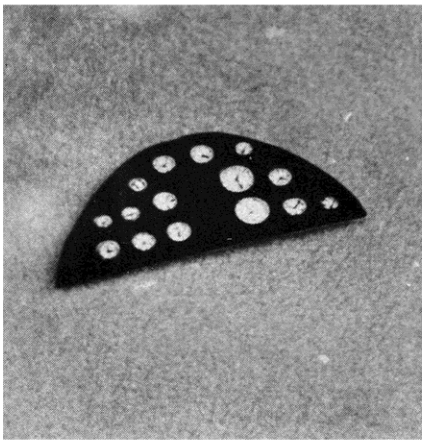
The wing is semi-elliptical but is straight forward, in construction, and should pose no problems. However, when retractable landing gear are installed some caution should be taken as with any wing, ie; add vertical grain webbing to the spars in the area etc., and generally beef up the area. The ailerons should be built in with the wing construction and cut loose after the wing is sheeted. This will assure perfect alignment.

RETRACTABLE LANDING GEAR

I installed Rhomair retracts in my Sea Fury and have found they work the best of any I've seen. They are

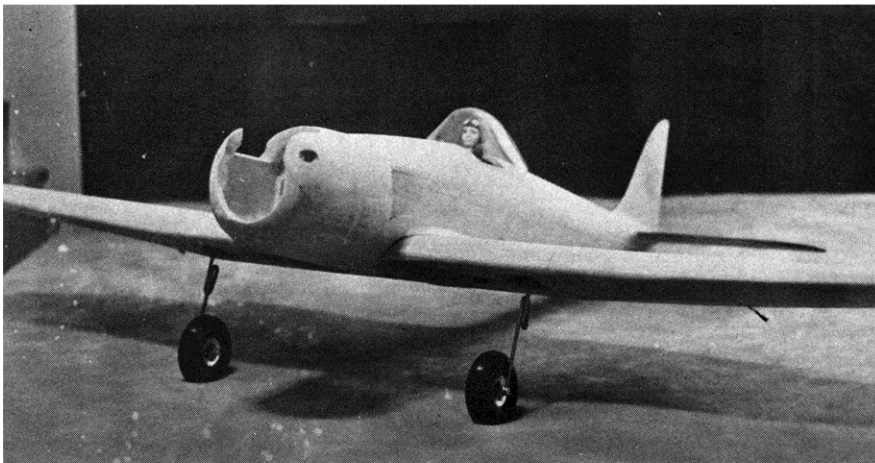


Three-quarter rear view with engine turning over is quite impressive—almost like the unlimited races at Reno.



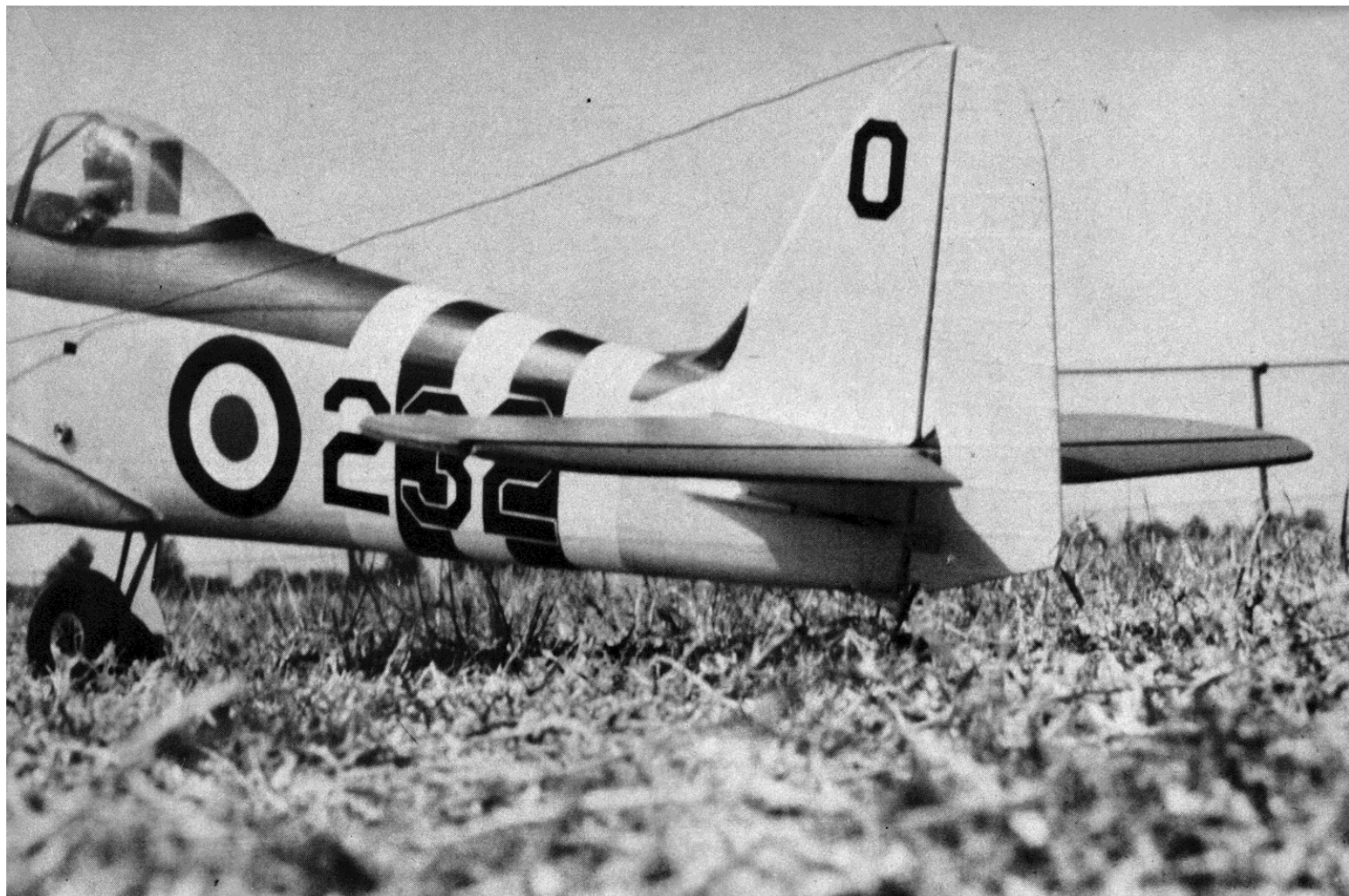
The instrument panel is strictly stand-off scale but serves the purpose very well. Such easy details add immeasurably to the impression (even at a subconscious level) that you are looking at an airplane, not some weird looking thing called a "pattern ship."

Assembled and sanded, the Sea Fury is ready for the finishing touches. That's a big chunk out of the cowl. Whether to invert the motor and enclose the cowl except for a head hole in the bottom is strictly a matter of personal preference. Ease of engine access is a definite plus for Don's method of installation.



lightweight and have a very positive up and down action.

Mount the retract servo fairly solid and adjust the pushrod, as per the drawing that comes with the gear, to the actuator. The actuator is of very close tolerance and any movement of the servo will leave the piston and "O" rings out of adjustment and cause "blow-by". This resulting in the gear not working properly and the loss of all the freon. I had two lines blow off, one on the actuator and one on the tank, while filling with freon. This was solved by ruffing the brass connections a little and slipping the lines back on. The struts themselves come straight and the length of the strut and the axle bending is left up to you. This is good but you really should have a wire bender for this. It states in the instructions that when bending the axle a radius should be maintained or breakage could occur. Believe me, it will. I didn't have a wire bender at the time so, as usual, I used my trusty vice and guess what! Yep —SNAP. Remember the old addage "if all else fails follow the instructions". I ordered new struts from Rhomair but I was having a "FIT" and couldn't wait. I wanted to see those wheels tuck away into the wing. So, while down at the local hobby shop a few days later I spied a pair of Carl Goldberg



adjustable axles and bought them. When I arrived home I went right into the shop and cut the Rhomair struts off at the axle bend and slipped on the C.G. axles (as per instructions) mounted the wheels, filled the freon tank and away went the wheels. Man! That sure looked great. Now I had to try them out in flight. I did and they work beautifully. I still have the C.G. axles on the gear. Why knock a good thing? The Rhomair struts came about a week later but are still in the box.

I would like to have put the freon tank in the wing, but there just wasn't room. However, it fits very nicely in the top of the fuselage. Mine lies in the fuselage above the cockpit floor and behind the instrument panel. A good place for it as it's out of the way and it leaves plenty of room for everything else.

FINISH

My Sea Fury was done in Australian Naval colors of a light green and blue. I'm pretty sure that anyone who builds this aircraft would, by now, have his own pet method of finishing but let me tell you what I did (just for kicks), as I was quite surprised at the way it turned out. Keep in mind lightness for this aircraft and the finishing method is one way of keeping

off a few ounces. The method I used was contrived out of necessity, ie; the smell of dope, etc., makes my wife ill. What I did was this: I covered the aircraft with Coverrite. It is ironed on and has no smell. I used white where the craft was to be painted green and blue where it was to be painted blue. Outside, I painted on one, that's right one, coat of clear dope. I let this dry for a couple of days and sanded lightly. This is the only base for color paint the aircraft received. The price of dope being what it is I have gone to other paints, that are much cheaper, with great success. I use Standard Brands urethane enamel in the spray cans. I have found that it holds up well and is fuel proof. It also only takes one thin coat to cover. They also have a satin or a flat varnish that you can spray over your color if you want that type of finish. It is also fuel proof. As I said, I was quite surprised at the way it turned out with no more base for color than it had.

Before the color was applied I put on the rivets. This was done with slightly watered down white glue and hypo. Layout the rivet lines, fill the hypo, and go to work. . . . The rivets should be spaced as evenly as possible. Practice on something else for a few minutes until you get the hang

of it. It really is very easy. I put the rivets on mine in a couple of hours. The glue dries clear and rapidly and you will hardly be able to see them until the aircraft is painted. Although they do not show up in the photos they look quite nice on the aircraft and gather a lot of comments.

FLYING

Be sure to check the balance. The CG should be exactly where shown on the plans. As I said earlier, I had to place the battery pack aft of the wing to get the proper CG. Of course I have a big .60, muffler, retracts, fuel tank, and receiver all ahead of the CG, to say nothing of the prop and spinner.

I believe that if you model a fighter it should fly like one—fast, therefore the St. .60 Bluehead although the aircraft would fly with a .40 c.i.d. engine.

The aircraft has a fairly wide tract landing gear and ground handling is good. As with any taildragger though you must hold up elevator while taxiing so as to have positive steering and lest you break one of those expensive props being sold these days.

If you have made all the preliminary checks and filled the freon tank, fire it up and taxi out to the flight line. Make one final check of the controls and leave the elevator in the neutral position. Ease the throttle open slowly but steadily. As soon as the tail comes off the ground you can firewall it. Let the craft build up a little more speed and ease back on the stick for a shallow climb out. Climb out steadily until you reach at least one hundred feet of altitude then start a shallow 180-degree turn gaining all the time. Altitude is the best friend you have at this point. When you have reached a sufficient point above terra-firma, relax and feel out the aircraft.

I found mine not to have any bad habits. Stalls are straight forward and gentle. Rolls are as though they are on a string and at a nice rate. It also tracks well through a series of loops. It will snap roll, spin, four point roll

or just about anything else you are capable of. Control response is rapid and only takes a light touch on the sticks. The aircraft is not squirrely. As a matter of fact it's quite smooth.

On my first flight, I was so excited, I forgot to retract the gear. On the next flight I did and to me it seemed the aircraft gained forty mph. I know that it didn't but it surely moves along.

I usually extend the landing gear on the down wind leg to landing. I have a reason for this and it is—that should anything go wrong and the landing gear doesn't come down I have time to look for the softest spot I can find to put the plane down in. I have seen a lot of pilots extend the gear on final but if they don't come down and the engine should quit you are committed to landing right where you are and straight ahead—it could be on asphalt, etc. . . .

Another view, this time from overhead rear, of the model with the scale five blader attached and turning over. Note how, when viewed from directly overhead, the airplane almost appears to be a different machine—much darker in color—obviously because none of the egg shell green can be seen from this angle. And that was the idea. Looking down on the sea blue color while the airplane was flying over the ocean made for fairly effective camouflage—until they added the black and white stripes and roundells.



The Sea Fury has quite a fast glide but can be slowed down with no problem. Slow the craft down as much as possible on the downwind and crosswind legs and when on final pitch the nose up slightly. The aircraft will not stall but, rather, settle in very nicely. Roll-out is fairly short and straight ahead if you stay off the rudder until the tail is on the ground.

On takeoff I usually retract the landing gear right after lift-off, although this is not a good practice. But then I've become used to the aircraft and have a very reliable engine. The engine is so powerful I sometimes do a three hundred foot emmelman turn right on takeoff.

The Sea Fury has met and exceeded all my expectations. It is of intermediate size, not too large—not too small, is powerful, flies and handles well, and is beautiful to the eye. One last thing that it is, and that is different. What day of the week can you say, "Every time I go to the flying field all I see is Sea Furys?" It's nice to be different.

Build yourself a Sea Fury and get out of the rut. You'll be glad you did. It is a fine aircraft in the proper hands. This is to say it is not for the novice but in the hands of a pilot with a fair amount of multi time it is a breeze and a joy to fly. I know that those of you who will build the Sea Fury will enjoy it as much as I do. Good luck and happy landings everytime. □

And here is what happens when, to obtain the desired scale effect for photographic purposes, the five bladed prop is attached to engine which is in turned fired up. No damage.

