

PHOTOS BY THE AUTHOR

# GADFLY - 1979 Grand Peanut

By SHERMAN GILLESPIE . . . The "GRAND PEANUT" (Overall winner) and best in the Golden Age category of the last (1979) Model Builder Parcel Post Proxy Peanut annual contest series.

• The Gadfly is one of those obscure, light aircraft that has always appealed to the sport flier, both the pilot of full scale airplanes and the model builder. It would make a fascinating project for the homebuilder if the plans were available today!

Built in England in 1929 by A.P. Glenny and Lt. Col. G.L.P. Henderson, and designed by Capt. K.N. Pearson, it had a wingspan of 25'-10", was 7'-10" in length, and had an empty weight of 455 lbs. with a disposable load of 295 lbs. Fitted with a 40 hp A.B.C. Scorpion engine, it was quite a performer with a listed top speed of 91 mph, a cruising speed of 72, and a landing speed of 45. An advertisement

for the little machine in the August 15, 1929 issue of *Flight* magazine stated that it held "the World's Height Record for Single Seater Light Aeroplanes, 4th category (under 200 kilos) at 3021 metres."

The decision to build the model for the 1979 Model Builder Proxy Peanut Contest was based on several years of very successful flying of an 18-inch semi-scale version and the clear knowledge that it was not a commonly seen aircraft. The decision turned out to be a happy one, for the Gadfly earned top static and flight points in the Golden Age category and was named "Grand Peanut."

In the capable hands of proxy fliers Ken Hannan and Jim Lueken, the Gadfly

turned in an average flight time of 42.5 seconds. Only seven Peanuts out of the 68 to qualify in all categories posted higher times.

## CONSTRUCTION

Construction is rather conventional, as the saying goes, and certainly poses no problems for the experienced builder. For modelers who have not built ships for indoor flying, the old advice "think light" works very well. The finished model weighed 7.5 grams, which is probably a good weight to shoot for. Study the plans and the photos, read through the article, gather the necessary materials, and enjoy some pleasant building!



Close-up of the Scorpion engine detailing on Sherman's Gadfly.



The Gadfly disassembles for shoe-box transportation. Wing is friction fit into fuselage.



Gad! It does fly!

## FUSELAGE

The fuselage sides are built in standard fashion over the plans. If building one side on top of the other for accuracy, use plastic wrap or wax paper between the first dry side and the second to avoid separation difficulties. Square structure is vital with the Gadfly if the wing mounting is to be true. Patience here will help to avoid alignment problems later.

When setting the finished fuselage sides up over the top view, block them up square with the building board and fit the cross pieces carefully. This will be very important through the cockpit section.

All formers are cut from 1/32 sheet balsa and are not notched. The 1/32 basswood stringers are butt-glued against formers number Two and Five, and rest on top of the others. A small spot of glue will hold them in place. Balsa stringers may be used if desired, but basswood can be sanded very thin and still be quite strong.

The cowling between the nose block and the cockpit is shaped from soft balsa and hollowed as indicated. It is perhaps best to do the finish sanding after the nose-block engine section is fitted to assure a smooth contour.

Before gluing on the bond paper cockpit cowling during the covering of



Designer Sherman Gillespie launches the Gadfly for a little back yard exercising.

the fuselage, an instrument panel should be cemented in place, if one is desired. Instruments possibly included tachometer, oil pressure, oil temperature, fuel, airspeed, altimeter, and of course, magneto switches. Also, a bond paper cockpit "floor" can be fitted. When glued under the top fuselage longerons and painted grey (Floquil #RR132), the floor has a nice finished look and allows the easy positioning of a "pilot"!

## LANDING GEAR

Before making the landing gear, the builder should decide whether the model is to fly in competition under AMA or club rules requiring R.O.G. launching. Scale length landing gear should be about 3/4 inch shorter than shown; a shorter landing gear would require a much smaller propeller.

The landing gear called for on the plans is formed from .020 wire. The main gear is sandwiched between 1/32 sheet balsa and glued in position. The front brace is bent to match the main legs with the ends bent up at the necessary angle for about 1/8 inch to be spot glued, wrapped with silk thread, and glued again.

The top part of the brace element will

be held in place by the .015 wire hook, which is formed in a right angle bend and pushed into the nose block. This allows the engine section to be removed for winding and also lets the gear bend back in a hard landing. The axle is cut from .020 wire and laid across the vees of the landing gear legs. When glued in place with Testor's model cement, the gear endures quite well.

Wheels are made from cross-grained laminations of 1/20 sheet balsa. Cut the tail skid from 1/20 sheet and glue to a 1/32 sheet cross piece set between the lower longerons.

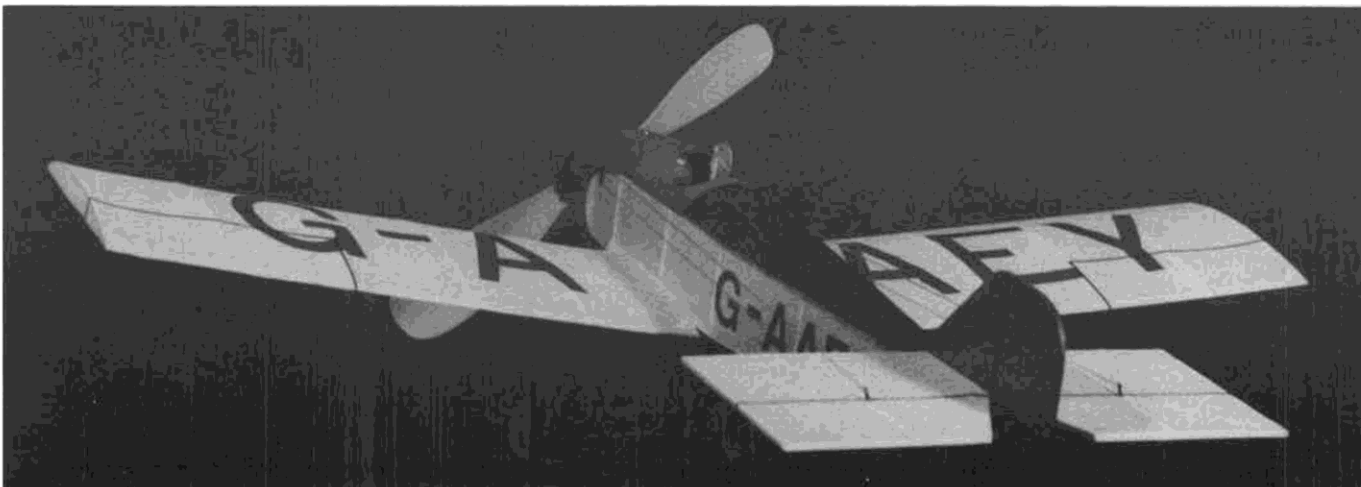
## TAIL SURFACES

The stabilizer is made from light 1/20 square balsa. Although the full-scale Gadfly had a thick section, the flat stab on the model does not detract and is probably less of an adjustment problem than a true scale airfoil section would be.

The curved rudder outline is made from 1/32 square basswood soaked in water and bent around a form made from balsa or cardboard.

## WING

The wing, being of square plan form, is simple to make. Build right and left panels and when dry, prop them up over



Sherman flew an 18 inch not-so-scale version of the Gadfly for several years before building the Peanut model, so he already knew it would fly well.

the plan with the tips raised to 3/4 inch to give the indicated dihedral. Add the center section spars and the gussets to complete the wing structure. Double gluing of joints here is advisable. The wing on the real aircraft was removable, being mounted with four bolts. Using a friction fit on the model simulates this rather nicely. Also, it allows easy incidence adjustment during testing, as well as giving pop-off protection in a "bad landing"!

#### COLOR SCHEME

Thanks to Bill Hannan and his overseas contacts, it is now pretty well established that G-AAEY was silver with probably red fuselage trim and a red rudder. All lettering was black. The original model, built before the above information was known, was finished in white and blue with matching blue letters which gave a very sharp finished look.

#### COVERING

One problem with a lightweight indoor model is how to get an acceptably tight covering job without warping the delicate surfaces. The model, as shown in the accompanying photos, was covered with light Japanese tissue using the clear dope and thinner method. This requires the clear doping of all structure to which tissue is to be adhered. Some builders may elect the water-thinned white glue technique . . . either method is a matter of choice and experience.

The tissue to be used on the wing can be doped to a small wooden frame, shrunk with a light coat of rubbing alcohol or water mist and then doped with Sig Lite Coat or clear nitrate dope thinned about 50%. When completely dry, the tissue is cut from the frame, pinned down flat on a wax paper-covered building board and the cut out tissue registration letters are fixed on the covering by brushing through with thinner. Although available photos do not show it, the Gadfly may have had the G-AAEY letters on the bottom surface of the wing as well as on the top.

Cover the wing on the bottom first, pulling the tissue as tight as possible. The underside of the center section is covered with red tissue to match the bottom of the fuselage. Brush along the panel outlines to stick the tissue. To do the top surface, place the wing down, one panel flat, and pin the prepared tissue over it with the pins close to the leading and trailing edges. Pull the tissue tight, position the identification letters, and adjust the pins to eliminate wrinkles. Use thinner along the end ribs and leading and trailing edges to fix the tissue. The top surface of the center section is left uncovered.

The stabilizer and rudder can be covered with pre-doped tissue in the same manner. Lay the surfaces flat, pin the tissue, pull across, tight and smooth, and brush thinner through.

By using the pre-doped method the side panels for the fuselage can be prepared in the same way. The identification letters can be made from Pickett

transfer letters. The letters shown are 1/2 inch - 48 pt. Helvetica Medium and match the lettering on the full scale ship quite well. The lettering can also be cut from tissue if desired and fixed as on the wing panels. The lettered panels are then positioned on the fuselage side and doped on with thinner.

The turtle deck was covered and alcohol shrunk very easily with one piece of colored tissue. Add the pre-painted cockpit cowling last.

#### ENGINE

The dummy engine is a most important element in the finished look of the model and also serves the necessary function of putting a little weight in the nose. Cut the engine block from light balsa and drill it for a small Peck-Polymer thrust button. Use Williams Brothers' 3/8 inch universal cylinders and add 1/32 sheet balsa discs as cylinder heads. Valve gear for each cylinder is simulated with balsa dowel sanded from 1/16 strip and cut to proper length.

Glue a piece of .015 wire across the valve covers to represent the rocker arms. The carburetor and intake pipes are shaped from balsa as are the slightly curved exhaust stacks. Cut the magneto from balsa and glue on top of the block. Paint the completed engine with Engine Black Floquil paint and then install the grey thread ignition wires. Glue the finished engine to the nose block after the nose is painted. Remember that the entire engine-nose block unit is removable for motor winding!

#### FINAL ASSEMBLY AND DETAILING

It is easier to add the black tissue rudder and elevator separations strips before gluing the surfaces in place. The stabilizer is set at zero degrees incidence. The ailerons are also represented by black tissue strips on top and bottom wing surfaces. The rudder can be spot glued for testing and if the flight pattern is as desired, fixed permanently later.

Other needed details are the grey silk elevator cables and the card stock elevator and aileron horns. The aileron horns are located on the under side of the wing at the aileron mid-point as indicated on the plans. Paint all control fittings black. Add the small plastic windscreen to finish off the cockpit area.

Paint the wheels with grey Floquil and add paper discs painted with red Floquil #RR20. Brass, 1/8 diameter washers are added last as bearings. Paint the tail skid the same matching red. The landing gear legs are painted red also. Grey silk thread is used for the landing gear wires. The nose cowling and the cockpit cowling are painted red to match the tissue used.

To keep the model as light as possible, a simple silhouette pilot was added to meet the contest requirements. The Paul Plecan scale pilot series available from Peck-Polymers are very effective when colored. A 7/16 size was used and is shown in the photos.

#### DOCUMENTATION

For serious Peanut competition, documentation will be important. A small

three-view drawing and description appeared in "Aero Digest," January, 1930. Two good pictures can be found in *Jane's All The World's Aircraft, 1929*. Another usable photo is in *Experimental Light Aircraft and Midget Racers* by Underwood and Caler, 1958, Aero Publishers.

The 1929 *Jane's* also has excellent front and back photos of the ABC Scorpion engine.

#### FLYING

After establishing the stabilizer incidence at zero degrees and setting the dihedral as shown in the plans, the Gadfly performed quite consistently. No ballast was needed at all. For some sweet reason (luck probably) all that was necessary was about 1/16 wing incidence to trim out. The model was adjusted to fly in right circles with a "faint" bit of right thrust and a "tweak" of right rudder. This produced such a truly realistic take off and right turn pattern that the ship was boxed up and sent off to **Model Builders** without any further testing.

Prop and rubber combinations, of course, are always the final determinant of performance. The prop used was a 6-inch Paulownia cut down to 5-1/4 and sanded to a very thin section. Power was two strands of .078 Pirelli 15 inches long and was a bit on the powerful side.

With only 600 turns, ROG flights averaging 23 seconds were possible and it was obvious that depending on ceiling height much higher times were possible. The hand launched, official 42.5 second average for the contest is a good indicator of the little ship's potential.

Subsequent testing with two strands of stripped .076 Sig rubber 15 inches long, using 1400 turns has turned in many ROG flights over 40 seconds with the best so far a beautiful 48 seconds. Not too shabby under a 22 foot ceiling!

Trimming for a left circle with the torque is the most often recommended pattern for low-ceiling flying and might give flights of over a minute.

All in all, the Gadfly can be a most rewarding Peanut project, whether built for local fun or the next 24 hour international bash at West Baden! ●