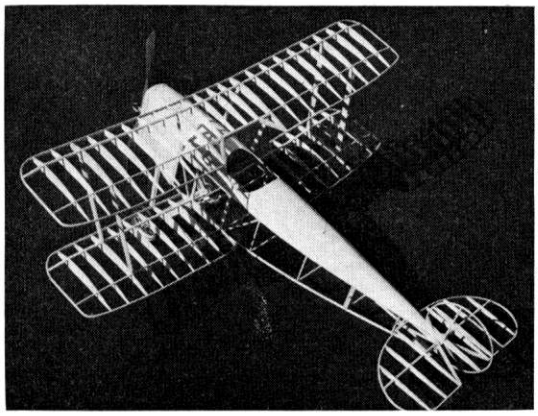
Peanuts anybody?

If small rubber powered free flight scale models are your bag, then try this 'Jungle Fresh' design by WALT MOONEY



AVRO 534C RACING BABY

THIS RACER, built by Avro in 1921, was ill fated: it never did actually race, but crashed into the water following a power failure. Several other versions of the *Baby* were built, but this particular one was selected for a 'Peanut' as it had the shortest wing span of any. Its proportions are just about ideal for a rubber-powered model, with one exception – its nose is rather short, so it is *really* important to keep the tail light.

The model has all the standard components of an early '20s biplane. It utilises standard building techniques throughout, with the possible exception of surface outlines, if you are so inclined. Scale rib spacing is employed, but the leading edge riblets of the full-scale aircraft were omitted. Wheels manufactured by Fulton Hungerford were used, and these are truly beautiful. However, the model shown required quite a bit of nose ballast, so hardwood or plastic wheels are recommended.

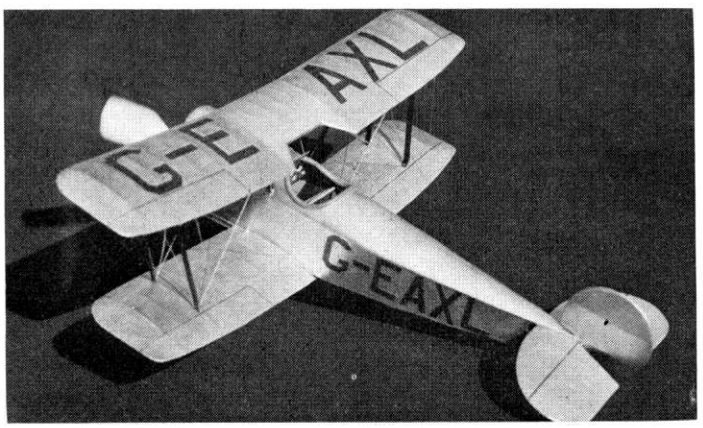
The surface outlines can all be made in the fashion shown on the wing plan. Cut them out of sheet balsa to the shape shown, which will require four to five pieces for the rudder, and as many as eight or ten for the horizontal tail. The technique is familiar to anyone who has ever built a model.

OR . . . the surface outlines can all be laminated out of thin strips of model railroad basswood. This results in outlines which look much nearer true scale. Actually, the model illustrated even has the wing outline made of basswood laminations. If basswood is not available, thin balsa strips can be used for laminations, but basswood is easier to work with as it can be bent around curves formed by pins without wetting. Balsa will require soaking in water and bending around a card or balsa former to prevent cracking. This might even be almost impossible at the trailing edge of the wing tips. If you are limited to balsa, making the wing outlines as drawn is recommended. The basswood used for the laminations is ·020 × $\frac{1}{16}$in. and three laminations are used to form the outlines. To bond the laminations, use white glue (PVA) thinned with approximately 50 per cent water, or one of the new instant cyno acrylate bonding agents. One of the latter was used on the original and proved a real pleasure for laminations, as they set faster than you can pull the pins out of the workboard! However, do read the instructions and hazard warnings first.

Full Size Plans overleaf!!

The wing spars are notched into the top surface of the wing ribs. Scale spars would not contact the wing covering; but in the case of models this size, the turbulating effect of the spars is beneficial for flight, and the top location of the spars keeps the wings from bending upward when the covering tissue is shrunk.

The tail surfaces can be built with a flat airfoil section directly over the plan, or after they are removed from



If you want a good flight performance – keep it light! This is particularly true of the tail surfaces, as the nose is very short which can cause centre of gravity problems. Finish (silver) was applied from a spray-can – just one coat, applied very sparingly.

the plan, soft balsa sticks can be cemented on top of the rib pieces and then sanded to the airfoil section shown.

The fuselage is a standard box structure with top formers and decking. Construct the two side frames first, directly over the plans. The longerons and uprights are shown hatched. Sheet balsa is used at the front end where the real airplane was sheet metal. After the sides are dry, remove from plan and separate, if they were assembled simultaneously. Cement together at the aft end, and add the cross pieces working from back to front. The formers are then cemented on the upper cross pieces in the proper position – note that the differing thickness as indicated.

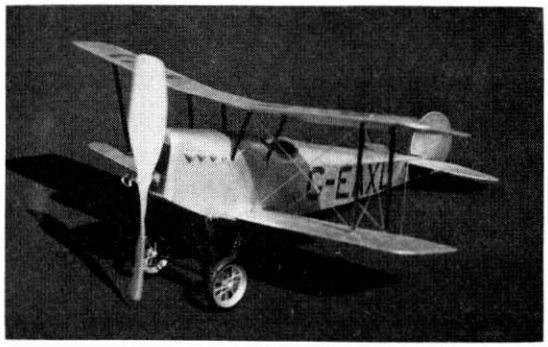
Cover the top of the fuselage with one layer of thin sheet balsa from the front of the cockpit to the tail post – use two layers forward of the cockpit for strength. When dry, sand smooth, cut out the hole for the cockpit and add the landing gear wire. Fill the bottom of the fuselage with $\frac{1}{16}$in. sheet back to the aft landing gear leg position. Add a triangular gusset at the aft end of the fuselage to support the tail skid.

All parts of the model are covered with lightweight tissue. To attach the tissue, I like to use white glue thinned 50 per cent with water. When the adhesive is dry, expose all the covering to a 'fog' of water for tightening the tissue. I use an old deodorant bottle to provide the light spray of water.

When the tissue has shrunk and is dry, give all the components one coat of thinned clear dope, and then the fuselage a second coat.

The final finish paint on my model was applied prior to final assembly. I used black tissue for covering, then after the application of clear dope, carefully cut the registration letters out of masking tape and pressed them in place. Brush around these tape letters with clear dope to seal the edges. With a spray can of silver lacquer, apply a very light coat to all the components. This should be as thin as possible while still giving a 'solid' silver colour. For minimum weight, light should still penetrate and be visible from below the model. When this single coat is dry, remove the tape letters and the paint job is complete.

Biplanes are a little more difficult to assemble accurately than monoplanes, especially in the area of the top wing. To aid locating the top wing correctly, make a jig board from $\frac{1}{16}$in. thick sheet balsa which should be as long as the top wing



Just look at those wheels! Expensive perhaps, but these Fulton Hungerford wheels do 'make' the model – not available in UK, unfortunately. Remember to add the wing bracing, as this really completes the job.

centre section span and as wide as the distance between the front of the front spar and the rear of the aft spar. Make a notch in each corner of the jib board to locate the top ends of the four centre section struts. Press the top ends of these struts into the notches and cement the bottoms of the struts into slots cut in the top fuselage sheeting at the proper places. The jig can now be carefully adjusted to simulate the wing centre section. When this assembly is dry, remove the jig, leaving the centre section struts rigidly secured in the proper position. Note the small holes in the ends of the wing struts – these are to facilitate the installation of the rigging.

The lower wings are simply cemented to the sides of the fuselage and the lower wing struts are cemented in place. There are two braces for the tailplane on each side of the fuselage; these go from the lower longeron to the tail leading edge and spar at the second rib out from the fuselage.

The landing gear struts are now fitted and cemented in place, Note that the wooden struts are located just inside the landing gear wire in the front view. The wire which is the structural support for the wheels should not be cemented to the struts, but left free to flex and absorb landing shocks. This is not absolutely scale-like, but it is hardly noticeable and really will save the model better than a rigid undercarriage assembly.

Details are what gives these old biplanes character. The exhaust stacks are made from $\frac{1}{8}$in. diameter aluminium tube, while the rim around the cockpit is made from a piece of brown plastic tube – I used insulation from electrical wiring, slit down one edge and glued in place.

The last detail is the wire bracing. I prefer monofilament nylon fishing line for this, but any thin thread will do. Just thread the 'wires' through the holes in the struts and pull them taut. Tape them to the wing outboard of the struts temporarily and put a small drop of cement on each 'wire' where it goes through the strut. When dry, cut flush with the outside of the struts and remove the excess and tapes. Five-pound breaking strain or weaker line is recommended; stronger stuff is too stiff.

My model was very tail heavy, and required ballast to get the balance point in the position shown. Do everything possible to keep the aft end of the model as light as possible.

Although all the wood sizes shown are common sizes, the model is stronger and heavier than a Peanut really has to be. The $\frac{1}{16}$in. dimensions could all be replaced with $\frac{1}{20}$in. dimensions, the $\frac{1}{32}$in. with $\frac{1}{40}$in., etc. A source of special Peanut scale wood is Mike Taibi, 4339 Conquista Avenue, Lakewood, California, USA 90713. He is cutting 2×18in. sheet in $\frac{1}{20}$in., $\frac{1}{32}$in., $\frac{1}{40}$in. and $\frac{1}{64}$in. thicknesses, and sticks $\frac{1}{20}$in. square and $\frac{1}{20}\times\frac{1}{16}$in., and $\frac{1}{20}\times\frac{3}{20}$in. in extra fine balsa especially for the Peanut scale builder. So if you want to build an especially fine Racing Baby, drop Mike a line to get his price list.

Because of all the ballast, my model required a loop of 5mm Pirelli to fly; best time to date being 24 seconds. A lighter model should do lots better!