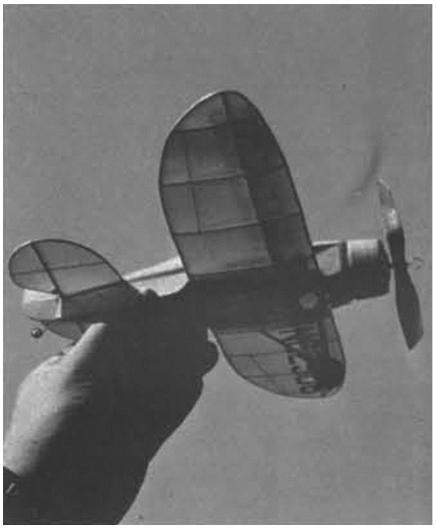
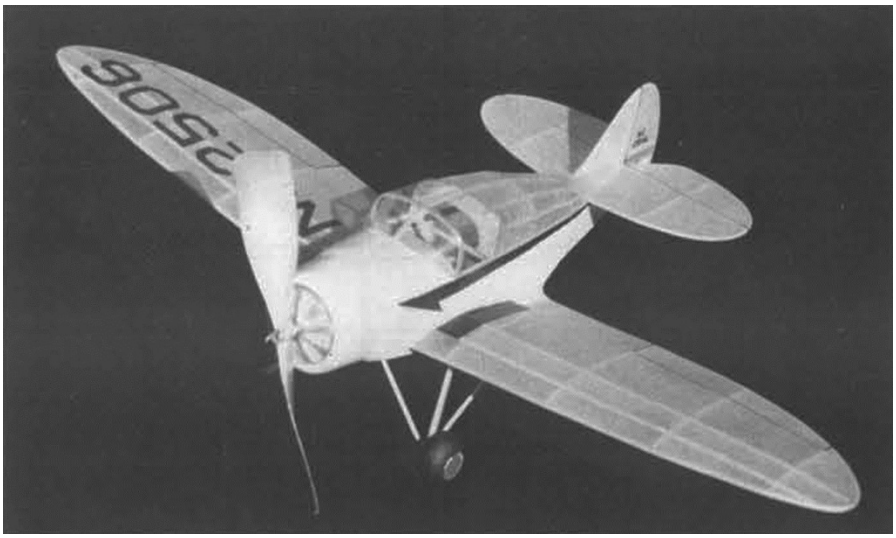


About the most wine ares you could get out of a 13 inch wingspan.



The Culver Dart's short nose moment was expected to be a problem in flying, but it wasn't. Turbulators were purposely added to the wing. Spars weren't notched into ribs.

PEANUT CULVER DART GW

By WALT MOONEY ... The little Dart seems to offer further proof that turbulators are worth the effort. There are detailed instructions on making those beautiful, laminated curved outlines. Better read on ...

• The Culver Dart G.W. is a modern looking little lightplane that was designed just before WW I!. Probably because of the war, it was never produced in any great numbers. Nevertheless, its cantilever elliptical wing and its generally pleasing shape make it an intriguing model. It has a rather low aspect ratio, so that as a Peanut Scale model, it has quite a bit of wing area. The tail moment is rather short, so I expected the ship to be a little difficult to trim. The model in the photos was a pleasant surprise and flew easily, with the balance point at the C.G. indicated on the plans and about five degress of downthrust.

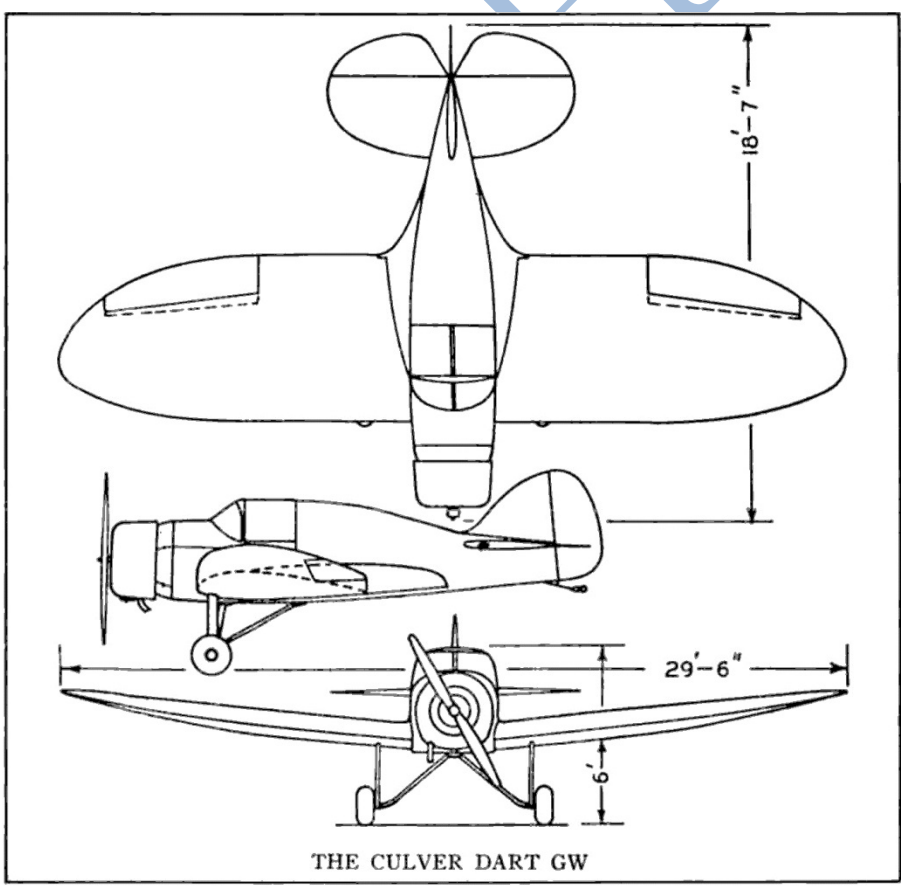
The outlines of the surfaces will probably be the greatest challenge to the average model builder, so we'll take the effort to give a good description of the method of making laminated outlines, while glossing over most of the other, more common balsa stick model structure.

With a model such as this, it is probably best to start by making the outlines.

The airplane in the photos had outlines laminated from model railroad basswood. This material is heavier than balsa, but it is also stronger, so by using smaller cross section material, there need not be much of a weight penalty. Use 1/64 by 1/16 basswood strips for the outline. If these are unavailable in your area, use 1/32 by 3/32 strips of balsa for the wing outline and 1/32 by 1/16 balsa for the tail outline.

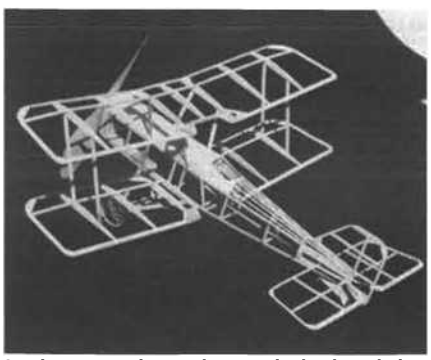
There are probably some other glues that could be used, but the one I use for making laminated outlines is the com mon water-soluble white glue (Elmer's or equivalent . . . any ten cent store has it), thinned with an equal volume of water.

I either use a small water-color brush to apply it, or a "continuous dip" method, to be



THE CULVER DART GW

Just 'cause it's a peanut is no reason to do without instruments! Note generous stab.



Coming attraction. Why overlook the obvious? Next month, the SE5.

RCM

described later.

Forms are required for bending the outlines. This is an absolute necessity if you are working with balsa, and pretty nice to have if you are using bass wood. For this size model, cut the forms from 1/8 sheet balsa. They should match the inside contour of the outline desired. Make sure the edges of the forms are square. It's difficult wrapping laminations around a beveled outline!

Now, the glue that sticks the laminations together must not stick the laminations to the form! Therefore, there must be some type of parting agent between the form and the laminations. I like a good wax for this, and prefer the wax in Crayola crayons. They're easy to find, easy to apply, and the color lets you know when the edge of the form is completely protected. So . . . color the edges of the forms "Parting Pink," or whatever.

Next, you need something to hold the laminations to the forms while they are drying. The best thing I have found is 1/4 inch wide masking tape. Tear off about forty lengths of tape and stick them to the edge of your work bench where they will be easy to retrieve when you need them. Nothing can be more difficult than removing a piece of masking tape from the roll when you are holding a form, three laminations, and a glue brush!

A source of water to wet the laminations is nice, especially if you must use balsa. Saliva will work, if that's all you have, but only for Peanut Scales. Try it on a Jumbo scale and you'll know what it's like to be lost in the Sahara with an empty canteen!

So much for the preparations. Now for the actual lamination process, which consists of several steps: wetting the sticks, applying the glue, stacking the sticks, and wrapping the stacked sticks, (now called liminations), around the form, locking them to the form, and letting them dry. It's easier to do than to describe so stick with me.

If you are using balsa, wet the sticks and shake off the excess water. Now apply a thin, even layer of glue to one side of one stick, lay a second stick on top of the first and apply a layer of glue to it, add a third stick and glue, etc., until you have the desired number of laminations. Wet the surface of the last stick.

Getting a thin even layer of glue on a long thin stick is not necessarily easy. That's the reason for thinning the glue and it is also the reason for the, "continuous dip" method mentioned before, which is done as follows:

Get a very shallow container for the glue. A top from a mayonaise jar or something similar is about right. Fill this with your thinned glue, almost to the top. Now select a stick and start to slide it across the top of the lid so that it just contacts the glue. As it is slid across the top it will pick up glue from the surface, and the excess will be wiped off by the far edge of the cap. Presto! A nice, thin, even coat of glue. It may take a little practice at first, but it sure beats dipping a brush and brushing the glue onto the sticks.

Now you have a stack of glue sticks that are acting like a wet noodle. Using a damp rag, wipe off any excess glue, making sure that the laminations are perfectly stacked. Starting at the center- line of the wing, or at one end in the case of the other surfaces, attach the laminations to the form with a piece of tape, then, applying a slight amount of tension, wrap the laminations around the form, taping them down as you go along. It is important to keep tension on the laminations as they are wrapped around the form. If they should bend while out of contact with the form, they will break and make a kink and/or weak spot in the outline. The laminations must be continuous around the tips of the surfaces. Where the form is concave instead of convex, as at the leading edge of the vertical tail, use particular care and several pieces of tape, to hold the laminations to the form.

Now let the laminations dry. Overnight is good, or in a 120 degree oven while you build the fuselage sides, the engine cowl, and cut out the formers and ribs.

When the outlines are dry, carefully remove them from the forms and use them to build the flying surfaces.

Note the two stringers on the top surface of the wing. They are added without notching the ribs to provide aerodynamic turbulation on the top wing skin. Don't try to do without them.

The fuselage stringers are only notched into Former 7, and lay on top of Formers 8 and 9. The landing gear wire is cemented to the solid nose rib. It is not attached to any of the other landing gear members in order to allow it to flex, and therefore not damage the other members in a hard landing.

The wing is built over the plans. Cut the ribs from sheet balsa. Make the top half of the wings first, with just the rib tops and the outline, then remove this assembly from the plans, and cut in half at the centerline. Add the main spar to each half and then add the lower half of the ribs. Add the solid sub-rib and then add the two stringers on top of the ribs.

Sand all structure well before covering. Cover the model with lightweight tissue, water shrink, and then give it one coat of thinned dope. Cut the fuselage tissue to allow the subspar to be installed and cement it in place. Poke a hole in the fuselage covering for the wing leading and trailing edges and the main spar, and install the wings. The root ribs will contact the fuselage structure only forward of the spar. The gap between the root ribs and the fuselage is covered by the bond paper fillets, just as on the real plane, (of course they 're not made of bond paper on the real plane, dum dum!) Make the fillets by trial and error, using the plan view and the side view as guides.

A small Williams Brothers thrust bearing is shown in the plans, while the model in the photo used a large old fashioned one . .. take your choice.