

PAPER MACHE PARTS

Adapted from an article by Fred Mayfield in the 1937 Zaic Yearbook and lifted from the Mid-Hudson Modelmasters' Wing Tips, Jesse Aronstein, Editor.

(Inspired by my need to make a replacement cowl for a Kraft electric Chipmunk, one that is both tougher and lighter than the original cowl. Paper-Mache may be the answer, especially for an electric where fuel proofing is not a problem. Needs some updating to today's materials, but the basic method is there)

Usually paper-mache is made by soaking paper in water until it becomes pulpy and then making a mixture from this pulp and a small amount of plaster of Paris. This mixture is plastic enough to be worked with the hands, or molded from patterns, into any desired shape. When the water evaporates and the plaster cures, the result is a light and fairly strong form. For model work the procedure used is slightly different, in that the paper is not reduced to a pulp, but instead it is used in sheet form.

The first step in preparing the parts of a paper-mache model is to make a basic form or a pattern of the part to be constructed, typically using wood (balsa or pine). Various features, such as headrests, fillets, or canopies can be built up with clay. The form is then smooth sanded and then well sealed with varnish or, for balsa, several coats of shellac. For tubular items, such as fuselages, the form can be rigged up so that it can be rotated around its centerline (see sketch below). The paper-mache construction procedure is then as follows:

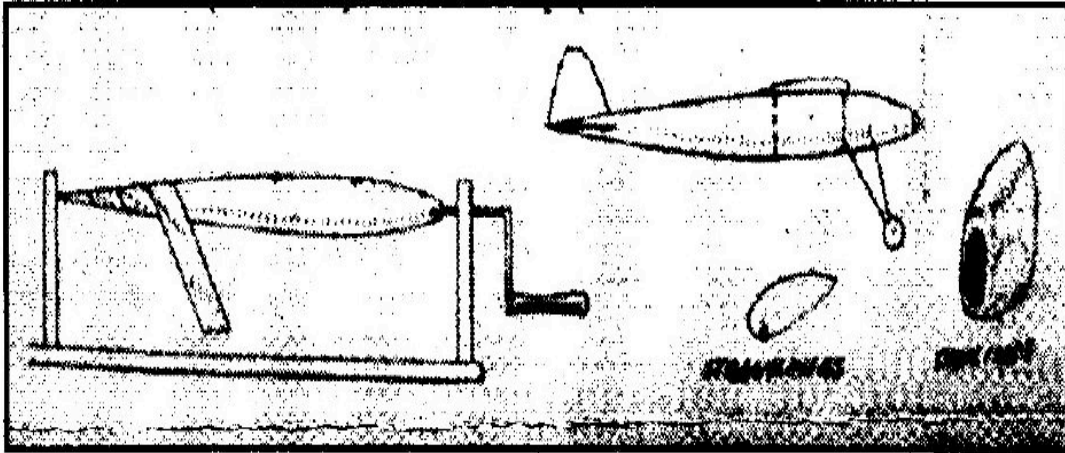
Cut a sheet of bamboo paper (or covering tissue or silkspan) into strips about 2" x 8" (or narrower for sharply curved items). Grease the form well with vaseline, cold cream, or some other greasy substance, applied liberally so that the paper will not stick to the form. Next, mix a bowl of water-based wallpaper paste to a creamy consistency. Now drag one of the paper strips through the paste. Wipe off the excess. Apply this coated paper strip to the form. Repeat this process with other strips until the form is completely covered with one coat of paper. Be sure to have a slight overlap at the junction of the strips.

Another layer of paper is applied in the same manner, except that the strips are oriented in an opposite direction. We then need still another layer to obtain a safe margin of strength. For normal work, three layers will suffice. Use more layers if greater strength is desired. Let the completed job dry for about 24 hours to allow the paste to set and dry.

To remove the part from the form, some cuts may have to be made. Afterward, fit bulkheads for internal supports, if necessary, first making a trial fit with cardboard and then using laminated 1/16" sheet balsa. Reinforce mounting and stress points with glued-in pieces of balsa. Seams should then be glued and sealed with 1/2" strips of paper.

The use of paper-mache in model work is practically unlimited. I have found that excellent cowlings may be made for gas models with this method. Mold a clay form right onto the nose.

When this is dry, remove it from the plane and apply paper, using the above process. Instead of using three coats of bamboo paper, however, use from three to five layers of newspaper and one or two coats of bamboo paper. The final finish is the standard one of sanding well and doping.



Paper Mache Parts (1937 Zaic Yearbook)