



Photo No. 1. Sharp cross-lighting emphasizes the "Sag" in the leading edge plywood between ribs prior to removal of fabric.



Photo No. 2. At the left, old and cracked solid filler material still in place. At the right, the filler removed and the wood surface sanded and ready for new filler.

## HOW-TO-DO-IT

# LEADING EDGE REJUVENATION FOR OLD SAILPLANES

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Photos by PETER M. BOWERS

An unfortunate characteristic of wooden sailplanes, especially European designs, is the tendency of the plywood around the wing leading edge D-tube to sag a bit between the ribs. This doesn't happen to as great an extent on such American WW-II surplus types as the L-K and TG-3 because the plywood skins are heavier. The sag between the ribs, noticeable in Photo No. 1, which was taken with careful cross-lighting, does not indicate structural deterioration or even decreased torsional strength of the D-tube. Even brand-new ships show evidence of it. It is caused by the tendency of the glue to pull the skin down at the sides of the rib due to glue shrinkage.

What to do about it? The easiest

thing is to fill in the low points and build the whole leading edge up to a smooth continuous surface again. In the past, this has been done with various commercial putties and home-brew mixes, but their principal disadvantage has been that they become brittle when dry and crack under the flexing of the wing. The new epoxies, however, remain flexible, and after a year and a half of testing on Pete Bowners' old Weihe, seem to be the perfect answer to the problem.

The first step in the rejuvenation was to remove the old cracked putty. Approximately nine pounds of it were sanded off of the 60-foot Weihe wing. Photo No. 2 shows cleaned areas and the old cracked filler in

adjacent sections. Be very careful in the sanding operation not to sand away any plywood.

The new filler is made up of TRECO 520 Grade 2 Epoxy Resin "AB" and "CD" mixed to proper consistency by adding microballoons, which are very tiny plastic balls, actually hardened bubbles. One pound of microballoons just fills a one-gallon paint can. Each of the two mixes has a different specific gravity, so a set of scales is required for mixing by weight. All of the necessary ingredients, including separate "AB" and "CD" mixtures already made up, are available from Technical Research Co., 13535 Monster Road, Seattle, Wash. The Weihe wing, larger than the average sailplane wing and an example of an extreme case of sag, required five pounds of each mix and nearly one and one-half pounds of microballoons for the full treatment on both sides.

The original putty was removed and the wood cleaned with a wire brush and sandpaper to insure a clean bonding surface for the epoxy

Photo No. 3. Al Wilson applying Epoxy/Microballoons mix with spatula. Area at lower left of photo has already been filled and smoothed.



Photo No. 4. Smoothing the mix with a straightedge. Note how the filler is scraped completely off the high points at the ribs.

