

hensive and advanced guides for the engineering departments of aircraft factories undertaking to design and manufacture training and support aircraft of wood. Some of the information in these thick volumes is of interest and use to the average amateur aircraft builder, but much of it is on the theoretical and mathematical side to the extent that only a person with some formal engineering education can make good use of it.

Mr. Kuenzi informed me that the Laboratory's stock of these publications is now exhausted and it is beyond the Laboratory's scope to reprint them. No wide need now exists for them and there would have to be such in order to justify reprinting. However, a significant number of communications addressed to the Federal Aviation Administration by amateur aircraft designers and builders, emphasizing a need for them in the interests of safety, might produce results. In the meantime, copies should be available to serious students in many large engineering college libraries.

Despite this disappointment, there is much the Laboratory is willing and able to do to assist serious amateur aircraft builders. All the information developed by the Laboratory over the years is available to the public. Each year the Laboratory answers thousands of letters seeking general or specialized information, and problems are discussed with those who come to the Laboratory in person seeking help or information. General visitors are conducted through the Laboratory in groups at 2 P.M. each working day; most of these visitors, from 8,000 to 10,000 each year, come during the summer months.

Any EAA member journeying to Rockford, Ill. for the annual EAA International Fly-In could easily enough get up to Madison some 60 miles to the north to get in on one of these tours. In fact, officials of the Forest Products Laboratory inform this writer that if a group of EAA members wished to make arrangements with them, a special group tour of the Laboratory during or immediately following the Rockford fly-in could be arranged.

In an average year about 3,600 consulting visitors representing all 50 states come to the Laboratory for assistance and about 400 more come from other countries. Normally, these people are trained persons representing some enterprise or agency and they come in person after engaging in correspondence with appropriate specialists at the Laboratory. When such a person with a specific and serious interest visits the Laboratory, every effort is made to give him the assistance he needs. Where the problem presented is of such scope and difficulty as to warrant a cooperative research project, the work will be undertaken if it is consistent with the Laboratory's public objectives. An advance agreement is made as to methods to be followed and the payment of costs.

The Laboratory's guiding purpose in such studies is to secure facts that will promote the best use of wood. A pamphlet explaining this cooperative service more fully can be obtained on request to the Laboratory.

The Laboratory at this time has three publications lists which are of particular interest to EAA members and which can serve as a useful springboard into making good use of the Laboratory and its services. They are, "Publications of Interest to Architects, Builders, Engineers and Retail Lumbermen", "Publications on Glue, Glued Products and Veneer", and "Publications on Sandwich Construction", each of which is free. Requests for publications, lists and information should be addressed to the Director, Forest Products Laboratory, Madison, Wisconsin 53705. ▲

So You Are Going To Buy A Homebuilt?

By Herbert Cunningham, EAA 17157

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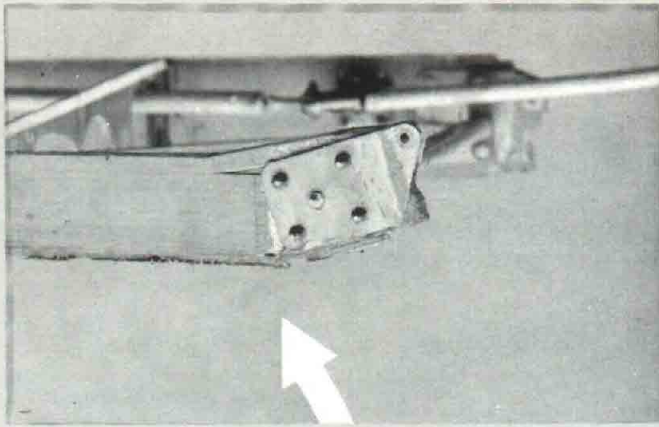
LOTS OF homebuilt aircraft change hands. There are many reasons for this: The builder may need money to build something else; he may have found that the plane he built is not what he really wanted, or does not fly the way he thought it would; he may be in need of some extra money to tide the family over some financial crisis; or, he may be worried about some part of the airplane that only he knows about. There are lots of reasons. Some are quite valid, and there are many well-built, well-maintained aircraft for sale. On the other hand—

Last winter, there was a Smith "Miniplane" for sale in southern Ontario. It was well built from all outward appearances, and looked pretty good sitting at the airport. It had not been flown very much, about 50 hours since new three years ago, and was advertised for sale in several magazines and newspapers. The aircraft was eventually sold, and the builder volunteered to fly it to the airport where the new owner wanted to tie it down. However, due to a spell of bad weather, the new owner disassembled the aircraft and moved it by trailer instead.

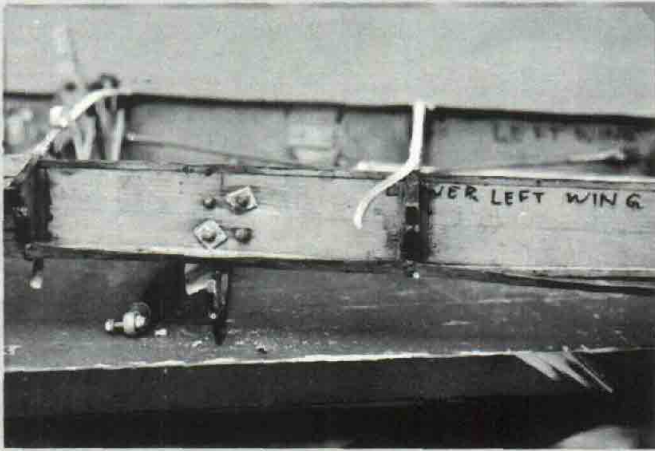
While disassembling the "Miniplane", the new owner began to notice things. First, the underside of both wing tips were badly scraped, indicating at least one ground loop. The underside of the aileron hinge brackets were badly worn, again indicating that the wings had been dragged on the concrete. There were also a few suspicious wrinkles in the fabric where there should not be wrinkles.

A quick check indicated that there were several broken ribs in both lower wing panels, and it became obvious that the fabric would have to come off before repairs could be completed. Picture No. 1 illustrates some of the damage found. That's right, the left rear spar was broken completely through just outside the root fittings. Apparently the load from a ground loop had concentrated at this spot and the spar had failed. Just how long the "Miniplane" had been flying since being ground looped could not be determined, since the builder had been letting several friends fly it and was unaware of the damage.

Other problems existed in the wing as well. Poor quality plywood had been used for the wing walk, and the laminations had completely separated. Inadequate drain holes in several locations permitted wood rot to begin where water had accumulated in the space be-



tween the rear spar and the curved plywood that matches the aileron leading edge contour. In some cases, due to a lack of washers, the nuts on bolts were over-tightened so that the outer face of the nuts were flush with the surface of the spar. Rough pieces of aluminum sheet were used for washers, and these were badly corroded due to water being trapped in the undrained space. Evidence of the wood rot in this area can be seen in picture No. 2.

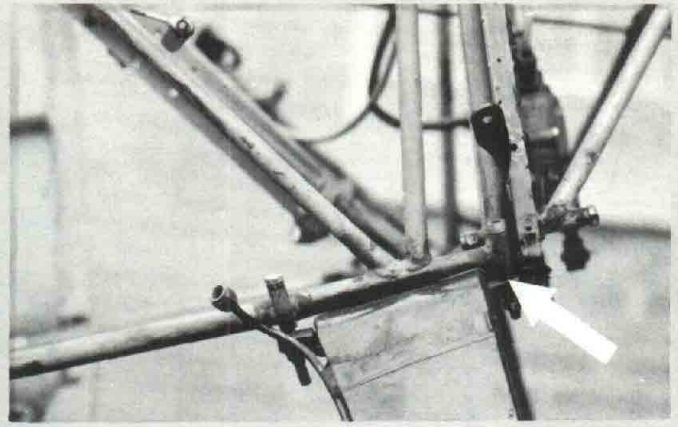


At this point, the new owner began to wonder about the rest of the aircraft and finally stripped all the fabric and had a good look at the fuselage. Picture No. 3 shows the landing gear attachment system which held the spring steel gear to the fuselage. In spite of the double wall bottom longerons ($\frac{5}{8}$ in. chromoly tube inside $\frac{3}{4}$ in. chromoly tube), the tubing was badly crushed, and the gear was quite loose on the fuselage. As soon as the two bolts which held the gear up tight to the bottom longeron loosened slightly, the gear could rock a bit and soon began to crush the tubing.

Worse still, water had somehow entered the bottom longeron, frozen, and burst the tubing, leaving a crack in the bottom about 2 in. long and $\frac{1}{4}$ in. wide. Also, one of the fittings which held the rudder pedal system in place had broken off the longeron due to a poor weld, and the other one was soon going to let go. "Miniplanes" without rudder control are hard to handle.

You may argue that the above is an extreme example. However, the frightening aspect of all this is that this aircraft was still flying and generally looked rather attractive until inspected carefully. The owner obviously was unaware of the conditions since he volunteered to fly it to its new destination, and was quite shocked when shown its true condition. It is interesting, in a morbid sort of way, to speculate how long it could have flown without an accident, especially if any type of aerobatic flight had been attempted.

The purpose of this article is not to frighten you out of buying a homebuilt. There are some good ones for



sale, and some represent excellent value for the price asked. However, to help you avoid problems like the ones we have just discussed, we offer the following for your consideration:

1. Find the nearest EAA Designee in your area and take him with you to inspect the aircraft you are considering. If the owner does not want to permit a careful inspection, you are probably better off forgetting about that particular airplane. If you cannot find a Designee, obtain the services of a licensed aircraft mechanic. A few dollars spent on this could save you hundreds of dollars in the long run, or your life!
2. Look for evidence of damage, such as signs of a ground loop, recent repairs, wrinkles in the fabric, etc. If you know that the aircraft had been involved in any type of accident, check carefully to make sure that all of the damage has been found and corrected.
3. Ask around. Chapter members know quite a bit about any given homebuilt in their area, and will usually venture an opinion as to the quality of the airplane. If the airplane is a long way from where you live, locate the president of the nearest EAA Chapter and ask his opinion.
4. Check if the airworthiness certificate or flight permit for the aircraft is valid. If it is not, it may be simply that the owner has let it lapse or forgot to renew it. On the other hand, it might be because the FAA or Department of Transport has grounded the aircraft because they do not consider it safe to fly. The presence of a flight permit or airworthiness certificate with the aircraft does not necessarily mean that the aircraft can be legally flown. For example, in Canada, if a homebuilt is grounded by the DOT, the flight permit is not physically removed, and you would have no way of knowing that it had been grounded unless the present owner told you. A call to the DOT or FAA local office could be worthwhile in a case such as this.
5. If possible, check the title to the aircraft. While there are not too many liens on homebuilts, there just might be one on the ship you purchase and, unless the seller is a financially responsible person, you could find that you still owe money to someone else even though you have paid the person who sold you the aircraft. In the sales agreement, there should be a clause stating that "the aircraft is free of all liens and encumbrances," although this statement is only as reliable as the person from whom you purchased the aircraft.

We hope that the above will not discourage you too much. As we said, there are many fine homebuilts for sale. However, a little time spent investigating can prevent a good deal of grief later on. ☺