



Bi-Baby



PHOTOGRAPHY: JACK SHEEKS

A sport R/C biplane that's easy and fun to fly for .29 to .40 engines/**Jack Sheeks**

In 1957 the E.A.A. came up with a nationwide contest for the home airplane builder. The object was to develop an easy-to-build, easy-to-fly airplane that the average person could build without being a skilled mechanic. The contest was put off for one reason or another until each of the requirements was fulfilled by the contestants. The plane had to have folding wings, be able to be towed to the airport by the family car and be stored in the garage at home. All these requirements were finally met and won by ex-modeler Pete Bowers and his Fly Baby in the 1962 fly-in at Rockford, Illinois. Later this same airplane was converted to a biplane. With a few connection modifications the Fly Baby could be changed from one configuration to the other.

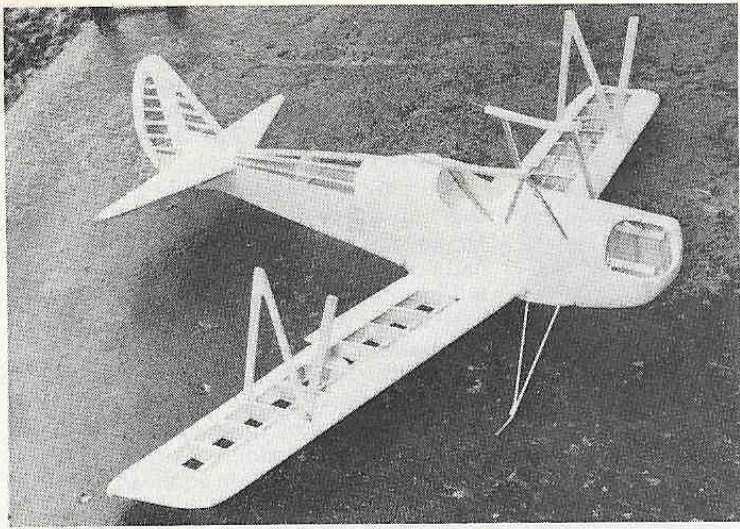
The reason the extra set of wings was made for this highly successful homebuilt was because as the body set alone without wings attached all who saw it expected it to be a biplane when put together. The fuselage has the looks of an old-time WW-I two-winger.

It wasn't much of a problem to design the Fly Baby into a biplane, except perhaps the chord of the wing and the proper gap. It required putting the center-section ahead of the pilot to allow him entrance and exit from the cockpit, sweeping the outer panels rearward, bringing the center of lift in line with the existing C.G. Since this area would be ahead with a straight lower wing, the bottom wing panels had to be swept also. The resulting configuration captured something of the looks of a Tiger Moth and a Buckner Jungmeister, along with several other aircraft seen in the 1st war flicks. The performance however is everything a beginner could desire. The craft is docile on the controls, it has a low landing speed and takeoffs are as docile as a Piper Cub. All in all this craft built by a modeler makes for a very excellent radio controlled airplane and it is highly recommended to anyone who finds appeal in the homebuilt line of aircraft.

Our model of this design came into being through the urgings of a good friend Andre Bruens of Ede Holland. He had been urging us to draw up and build a biplane that would be easy to build and fly, yet able to do all the varied maneuvers that modern modelers demand. I had put off the project for one reason or another, but recently I was stricken with a coronary heart attack. After a stay in the hospital the doctor said "go home and tinker with your models and nothing else for awhile." This gave me the time to

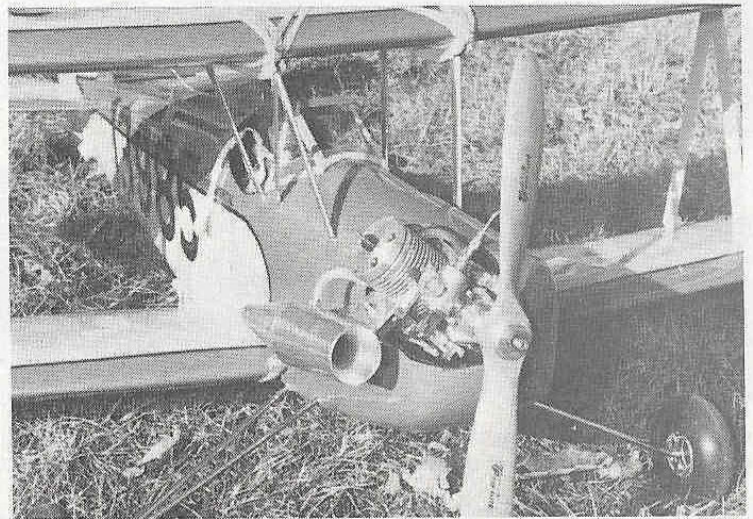
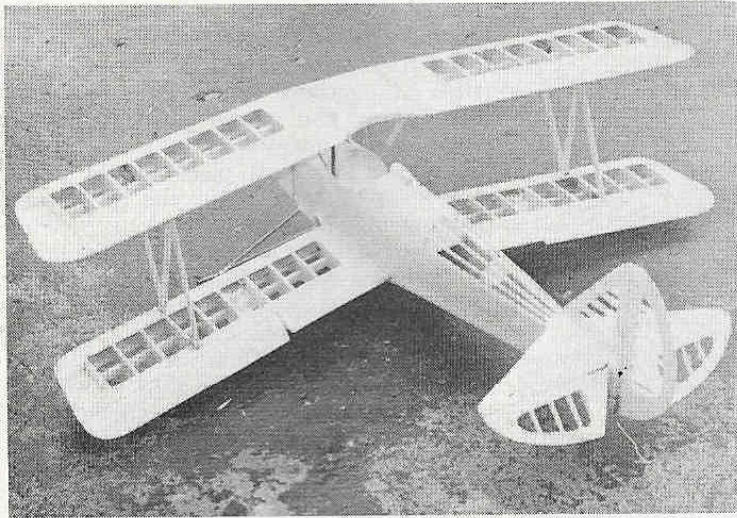
catch up on some of those projects that all modelers want to do, but never seem to find the time for. The looks of the Fly-Baby were still rooted in my mind and in fact FM published a Stunt version of it a few years ago. It flew well too, so with a radio version in mind, out came the three-views and we were off and running. For a starter a color slide of the 3-views projected onto the wall. After determining that they were in good proportion we measured the wings and slid the drawing board into place for a 2" to the foot outline. This produces a 44" span wing, a perfect size for a .40 powered biplane. It was the intention to stick to scale on the design until it was heard that it had already been done. Stand-Off Scale then, which allows for a more aerobatic airfoil. We also changed the wing hook-up to rubber bands for the novice builders who like the easier route. It was also decided to try a pre-made Pilot landing gear which offers great ground handling qualities. Other than for these modifications mentioned, the ship is still very close to scale.

Construction got underway soon after a deal was made with a friend who was busy rebuilding his '46 Aeronca Chief. I needed his stack of balsa and he needed loot for the Chief. About two days later it dawned on Jerry as to just what kind of crazy mistake he made in the heat of the moment and now he comes over every couple of days or so just to visit his wood. Anyway, construction pro-



Sturdy "N" struts steady the upper wing, a wire reinforced cabane assembly makes for a very rugged biplane. It makes a durable and capable sport flyer. **Below:** Ailerons are located on the lower wing. Adequate control surfaces.

The upper wing is lashed on with rubber, not exotic, but really practical. Note the canted engine mount, it hangs the muffler way out in the breeze. **Beneath:** Engine turns a Top Flite 11-4 screw, gear is sold in hobby shops.



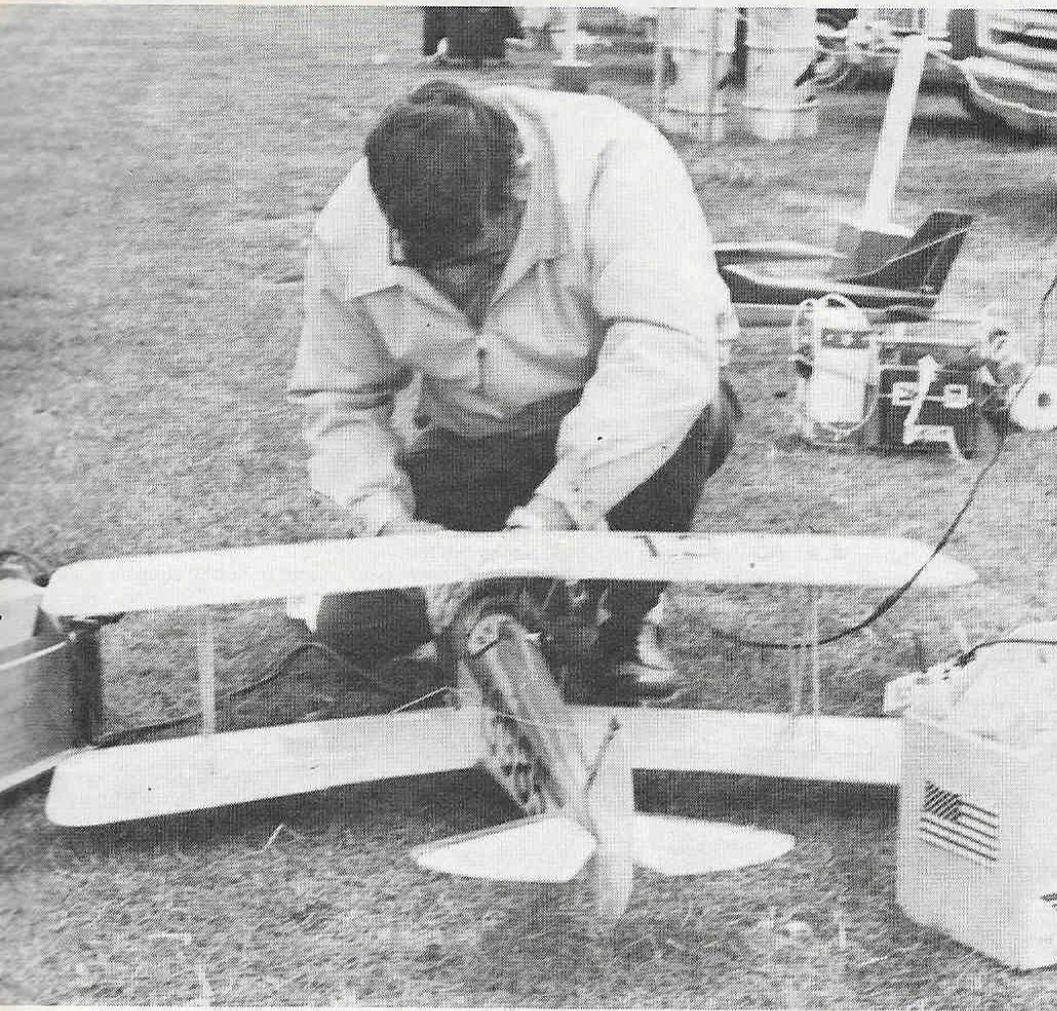
gressed very rapidly as I had all day, every day to work on it. Once the frame was complete we decided to go the Solar Film route to keep it light. At that time we only had a .35 engine to use. A visit from Paul Fewell, a Stunt flyer from Ohio ended in another swap and a powerful HP .40 for the project. With all else together we slid the World Engines Expert system into the body and it was time to call flying buddy Bob Godfrey. He was about set with his new Pattern ship, the Challenge, and suggested we test both together. If one ends up dorked, the day would not be over. Kind of morbid maybe, but it made sense.

Bob and I met at the prescribed time at the Indy R/C east side field, yours truly being a paid up member in good standing etc. The other enthusiasts on hand were only too willing to offer us the air, gentlemen to the core. Was it courtesy or just plain fear for their own aircraft with our untried birds in the blue? I could not believe my eyes, Bob had it all, he came prepared with a good plug, charged starting battery and the proper prop. What kind of way is that to fly? I'm lucky enough to remember to bring the model, let alone all that trivial stuff. Well, his flew great, which left me facing the music all alone. Stark fear time, you know how it is. I can test out your ship with nerves of iron, but mine? I tremble at the thought, but don't tell the doc.

Ground handling with that wide gear is



Anchored by the ankles Bi-Baby remains a captive for the last minute rev-up. Good reliable engine performance is what you want before a take-off.



Somebody missed the umbilical cord. Jack's out here with the ticks having a good time, unless engine is loose. Have all tuned up at the workbench. **Beneath:** The finished ship is distinctive, colorful!



superb. It taxis and tracks true on takeoff. It only weighs 4½ lbs. ready to fly, so it lifts off in a very short run. It flies and tracks great inverted and loops stay in the groove when done consecutively. This little ship even seems to knife-edge nicely.

After my nervous test flight Bob took the Baby up and really put it through its paces. He got carried away and forgot that it only had a small tank in it. Or was it that I forgot to tell him? Well, that's what dead-stick landings are for. Another tank full of suds and it was back in the air, much to Bob's relief.

The little Bipe really impressed us all as it does fly very well in a variety of attitudes and it proved to be quite easy to handle. It truly could be considered a trainer. If you find appeal in this design go ahead and build it, we think you'll like it.

The Construction

Start by making a deal somewhere for some good straight balsa and stack it nicely so it won't warp up until it is used. (Jack, we don't want it to warp up after it's used either, dummy - Editor.) Cut the wing rib template from 1/16" plywood and begin cutting the ribs. Since there is only one rib used throughout the model this can be accomplished in many ways, so use the easiest method for you. Next, place the ribs on the spar over the plan. Glue the pre-formed leading edge into place and plank the wing as these parts dry. As you can see the lower wing differs slightly from the top but it is built in the same way. After the bottom wing has dried the ailerons are cut into place and the controls added. There are no hard spots in the construction of this ship, so we will skip along and dwell lightly on the main points.

While the wings are drying you can cut the rudder, stab and elevators from 3/8" balsa, ribbing them with 1/16" balsa. Set these aside and start on the fuselage. It is slab sided, so there is only one area where it may be difficult for some modelers. That's the securing of the cabane struts to the fuselage. Actually it is quite simple, as the cabane struts are held to the sides of the fuselage on the inside with scrap 1/4" balsa and 5-minute epoxy. The bend in the wire is what holds it in place.

The upper parts of the cabane are wired together with thin copper wire, adjusted and then soldered in place in the fuselage. The outer shape is formed by wrapping shim stock around the cabane and held with solder or contact cement. The rest of the formers and planking may then be glued into the fuselage giving it its final shape.

Motor mounts were canted in order to provide more room for the muffler. The landing gear is mounted before the bottom planking is installed. Place the stab, elevator and rudder fin before the rear strips are installed on the turtle deck. These parts adhere to the rudder fin and stab. The tail-wheel is installed at the same time as the rudder, and the "N" struts are cut from 1/8" ply. They are held in place by metal screws to the 1/8" plywood hold-downs in the wing.

The aircraft is set up 0-0 degrees, so there is little to worry about. Just strive for a straight ship and it will fly beautifully. I can't think of anything else that might cause you trouble as there isn't even any dihedral in the wings. We will close for now wishing you well with your Bi-Baby and hope you like yours as well as we do ours. Fly it safely.