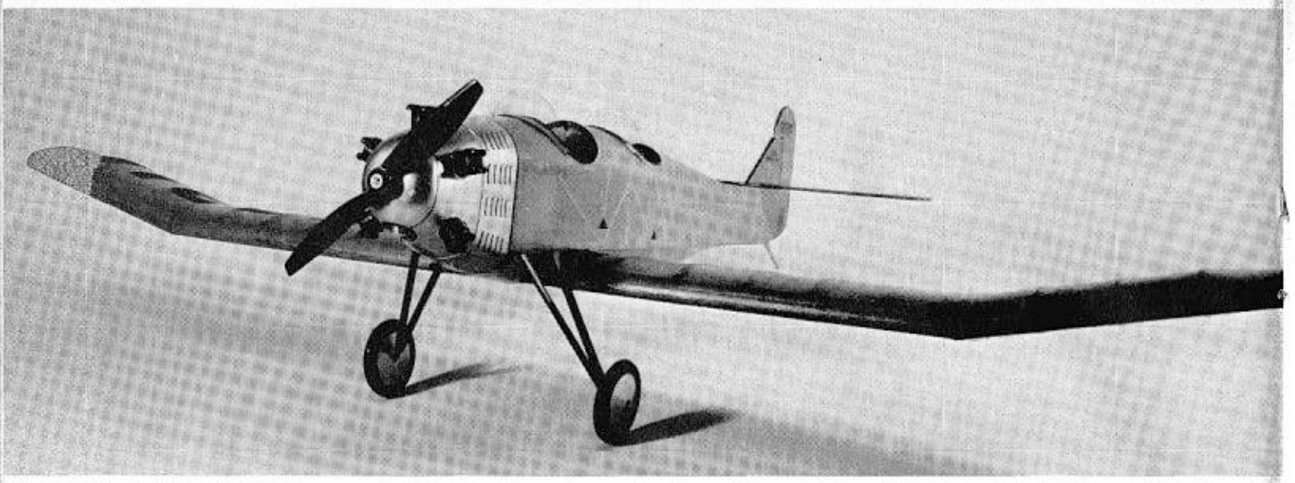
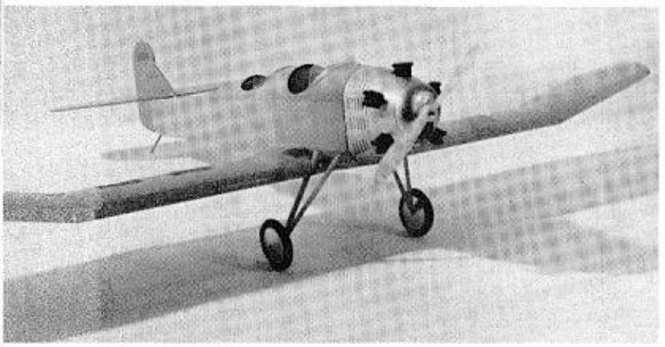




Photos by the Author

Barling NB-3

by Hurst G. Bowers

.020 Free-Flight, rubber knots and snarls or Pulse Radio. A wonderful antique type Flying Scale from long, long ago.

The names Barling and Nicholas-Beazley ring a familar note to the antique airplane buff, and rightly so, for their contributions to aviation during the "golden era" were many. Walter Barling, the designer of the *NB-3*, may well be considered the progenitor of heavy bombardment aircraft for his creation in the early 1920's of the Barling Bomber. This was followed in 1925 by the Lawson Air-Liner, another colossus which suffered the fate of being built ahead of its time. It is ironical, but understandable, that Barling should turn to the designing of small, light, and inexpensive aircraft. This transition occurred in 1927 when he joined the Nicholas-Beazley Airplane Company of Marshall, Missouri. The company, founded in 1921 by Russell Nicholas and Howard Beazley, handled the sale of surplus World War II airplanes and aviation supplies and equipment. Toward the late 1920's as these stocks became scarce they turned to aircraft manufacturing and the *NB-3* prototype appeared in late 1928. Serious marketing began in 1929.

The *NB-3* was a three-place open cockpit ship powered with the five cylinder LeBlond engine of 65 horsepower. The wingspan was 32'9", and length was 21' 11". It weighed 744 pounds empty, grossed 1373 pounds, had a maximum speed of 100, cruised at 85, and bore a factory price tag of $3600. It was a unique aircraft for the period in that it had a fully cantilever low wing and the entire structure was metal, with fabric covering. The airplane began as a thoroughbred in that it won first place in the efficiency race for light airplanes at the 1929 National Air Races. During the year it also set an altitude record of 20,862 feet, for ships of its class, and later upped this record to 25,100 feet. Additionally, it was flown non-stop from Brownsville, Texas to Winnipeg, 1650 miles, in 16 hours. The cost was reported to be only $25, or about 1.5¢ cents per mile.

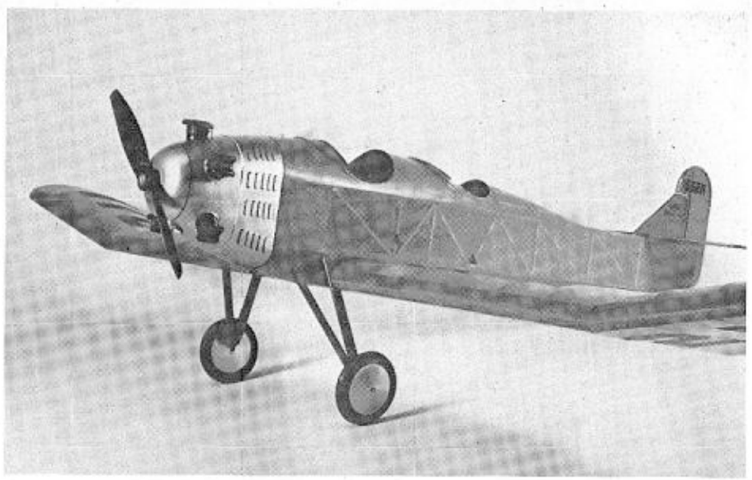
In thumbing through the *Aircraft Yearbook of 1929* I found three view drawings of the *NB-3* and was immediately attracted to its clean lines and by the gentle polyhedral angle in the wing. It struck me as being a natural for a scale model, so I started my research to obtain sufficient data. Sources were company advertisements in *Aero Digest* magazines of the 1920-1930 period, and *U.S. Civil Aircraft, Vol. 2*, by Joseph P. Juptner. The plans are reasonably accurate and will easily qualify the model for Stand-Off scale competition.

On aircraft of this type I enjoy working in one inch scale because of the options available. Through reasonable care during construction and in the selection of materials the model will be light enough to fly on rubber power and can be flown Free Flight quite easily on an .010 or .020 engine. The .020 Pee Wee also provides ample power for light Radio Control flight, and this is the option which I selected. My model, complete with Ace "Baby" pulse radio equipment (Baby-Twin would be better), and ready for flight weighs 8.5 ounces for a wing loading of 7.45 ounces per square foot. This is extremely light and permits still another option which I haven't tried, but should greatly improve performance. The new Cannon "Tiny-Twin" radio will be a natural, giving the model both rudder and elevator control. The weight penalty will be negligible and the .020 engine can easily handle it. At this point select your power and control system and let's get started with the construction. Building this model is simple, as can be concluded from a study of the plans, so I will not go into a "glue-joint by glue-joint" description. Instead, I will only address areas where difficulties may be encountered.

Building Notes

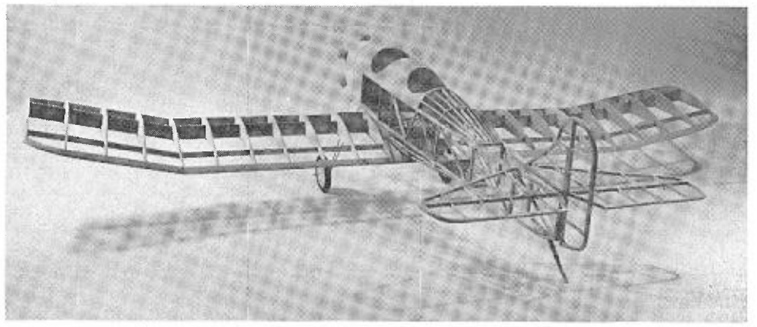
The fuselage is constructed by pinning down the two sides directly on the plans, however, notice that the sharp bend on the bottom rear is negotiated by cutting the curved pieces from hard 1/8" sheet balsa and splicing to the bottom longerons. When the sides are joined and the formers are in place you may have difficulty applying the 1/32" sheet on the top sections. This can be a tricky operation even for an expert, however, by using the right technique a beautiful job will result. Select the proper grade of balsa and test its bending qualities. Then soak in hot water with a small amount of laundry Clorox added. Cover only one half at a time and when thoroughly dry, sand well with 600 paper and cut the cockpit openings. If this operation is too tedious, then forget it before you start and plank the areas containing compound curves with 1/16" by 3/16" soft balsa. When dry sand well and proceed to cut the cockpit openings. If the rubber version is selected the cowling, which is made from soft balsa blocks hollowed to approximately 3/16" wall thickness, may be glued in place. However, if you use an engine, then the cowl must be removable. This is done in a simple manner by using 1/2" sheet metal screws mating with small hardwood blocks on each side of the firewall as shown on the plans. Study the radio system you plan to use so as to incorporate the proper mounts, and if appropriate, install the torque rod. Although it may appear somewhat complicated, the wing saddle proved to be quite simple and trouble free. The key here is to insure an accurate and snug mating with the wing.

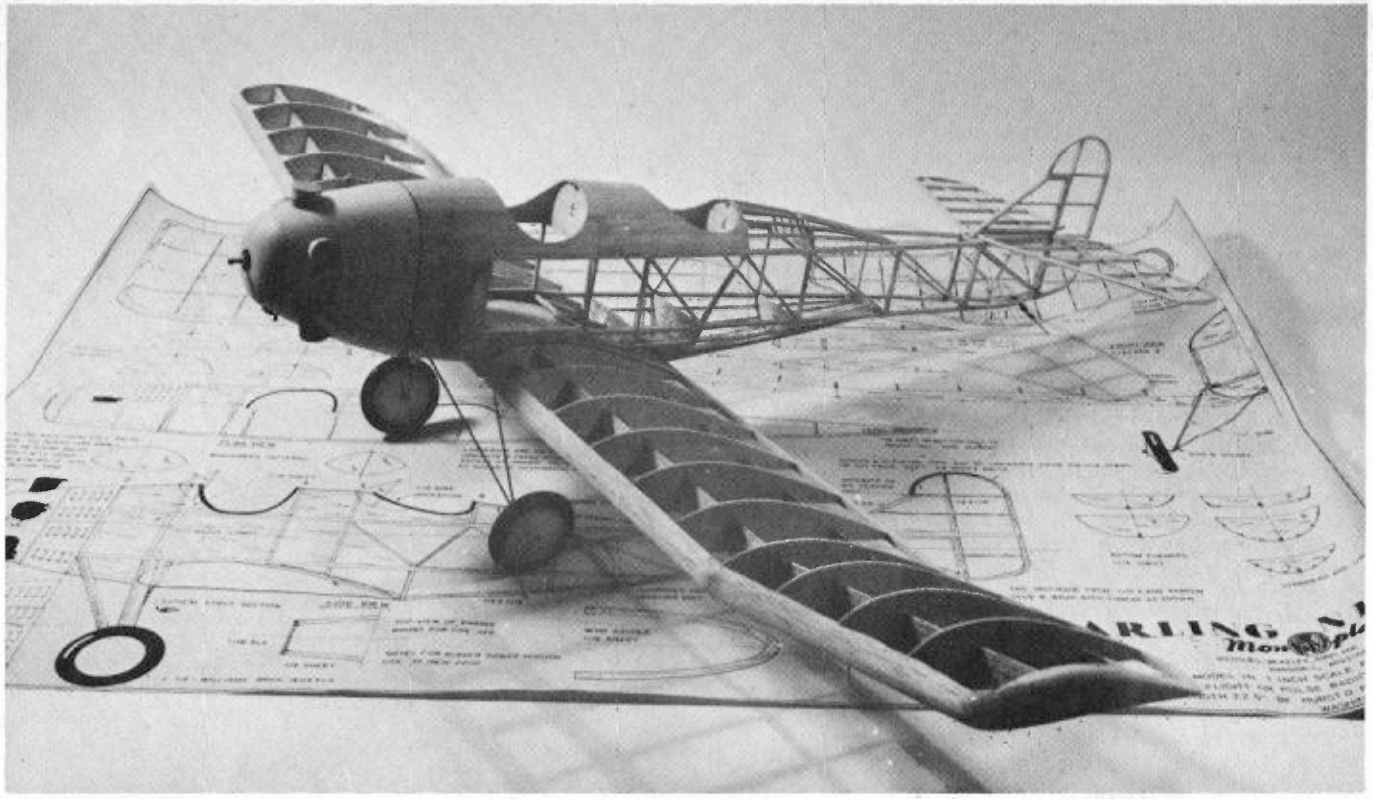
No trouble will be encountered with the tail and I strongly recommend the lamination method for rendering the tips, how-



The choice is yours. For rubber, or Cox .020 power, for Stand-Off or a pulse Radio. It's a fun thing to build, for old times sake. It adds the contrast to your modern Radio ships. **Below:** Tip dihedralled, well tailed. It's a capable performer and an interesting kind of relic.

The new Cannon Tiny Twin R/C system is a natural for ships of this size. Just enough structure to make it durable, all easy to build. And the cost will be tolerated by your ailing wallet. The "Barling NB-3" will soon become a favorite in your private little Air Force. It's a fine flier.

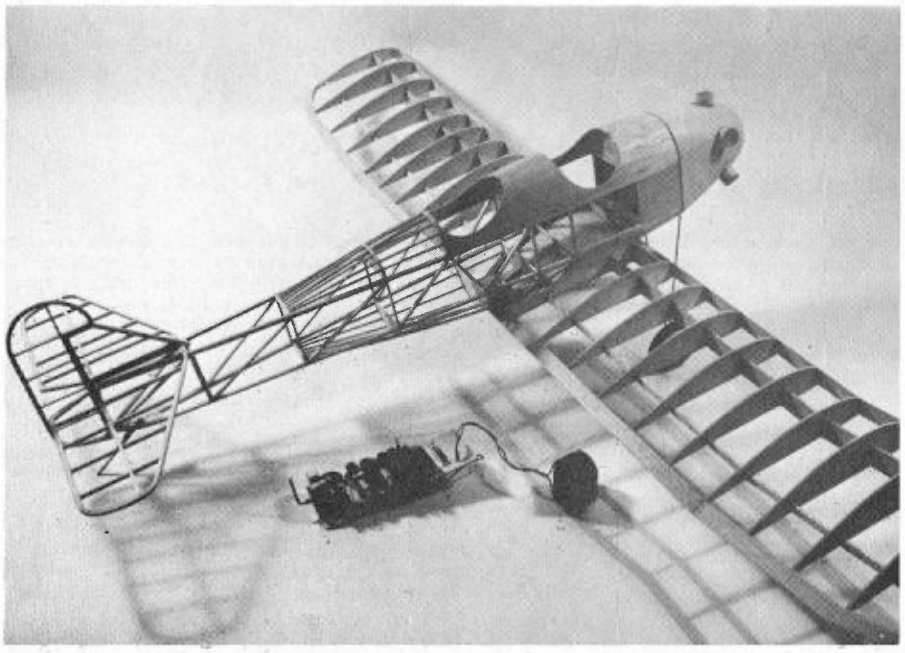




A plan is an idea, a dream of flight. Once an engineer looked toward the future and sketched a better design. A refinement here, and improvements there, and an aircraft became reality. Is not the model a little of the same? We start with a dream, and a plan. Soon our structure takes wing.

ever, curves cut from 1/8" sheet balsa will be entirely satisfactory. For single channel Radio Control, separate the rudder from the fin as shown on the plans, and hinge with small pieces of mylar. Should you use two channels, do the same with the stabilizer and elevator.

The wing construction is beautiful with its very thick airfoil, and don't let the 1/32" ribs frighten you. They are quite strong and light, however, if you desire use 1/16" instead. Of utmost importance is the three degree washout at the wingtips, beginning at the dihedral break. Build this in by blocking up the trailing edge 1/4" inch at the tips with adequate support between there and the break to prevent sagging and to insure a long accurate sweep of the trailing edge. When the dihedral is put into the wing and it is blocked while drying, be sure that the blocks used under the tips have the three degree washout angle incorporated.



A little pulse radio rig will really turn the "Barling" on. Kind of a miniature as R/C's go, but it's big in fun and scares the tar out of the moths about the lampost. All things are relative.

I covered my model with red Jap tissue, using black tissue numerals, and finished it with four coats of Sig Lite-Coat, low shrink dope to prevent warping. Only the nose and landing gear struts were color doped to save weight. Assemble the model and check carefully to insure proper alignment. The balance point should be approximately 40% behind the wing leading edge.

Adjusting and Flying

Trimming the *NB-3* proved to be somewhat delicate in that it required a slight decalage change. This was accomplished by raising the trailing edge of the stabilizer/elevator approximately 1/8" until a smooth glide was established. I have noted where this may be accomplished on the plans should you find it necessary. Thrust adjustments may be required, however, I did not find this the case with my model. The slightly increased decalage was entirely sufficient to trim out the model for single channel control. Should you elect to use the new Cannon "Tiny-Twin" for two channel, your job will be even easier and much more finite control will be available.

The *NB-3* is just the ticket for small field and local flying. Why drive many miles to the big R/C field and stand in line for your frequency clearance, dodge "utter chaos" jobs roaring around the sky, and return more tired and frustrated than before you left? After all; this is a hobby for fun and relaxation so why not use the small fields available in your own neighborhood on long, calm summer evenings after work rather than establishing a safari. The *NB-3* makes this possible and can well introduce you to a completely new and fascinating, as well as a practical and economical approach to the sport.