COMPARISON TESTING THE BRIEGLEB BG-12B

by WILLIAM G. BRIEGLEB

In 1954 the original design perameters were set up for a low-cost sailplane to be known as the BG-12 (Briegleb Glider, model 12). These included such ideas as low cost, ease of construction, simplicity and ruggedness, with better than a 30-to-1 glide ratio. The production kits were first constructed and sold by the Seair Company, Costa Mesa, California. Some 42 kits (known as the "A" model, BG-12A) were started and partially delivered by Seair. In 1960 Jack Wolfe asked me to take over production of the balance of the kits. Production woodworking machinery, jigs, and templates were moved to our shops at El Mirage Field. It was at once evident that we were not in a position to manufacture the well-machined castings and other intricate parts so well produced by Seair. A new design concept was necessary, using tube and sheet for the control systems. At this time consideration was given to lightening the sailplane. A hollow spar was designed and by deepening the center section from 15% thickness to 18%, a total weight saving of about 100 lbs. was achieved. From its inception the BG-12's used a ⅛"-thick Douglas Fir plywood skin to better control surface irregularities.

In the fall of 1960 we were asked to consider a two-piece wing, including European-type dive-brake spoilers and the possibility of substituting a low-drag airfoil for the presently-used 4400R series. I agreed to the new dive-brake and two-piece wing and this ship was constructed by Gordon Wheeler and was known as the BG-12C. At the same time a model which we called the "B"x was constructed using all the latest design improvements, i.e., hollow spar, lighter, simpler control system and lighter, multi-laminated main wing fittings. The "B"x was much easier to assemble due to the lighter wing and seemed to perform as well as the "A" models. Preliminary flight tests showed an L/D of better than 34 to 1 and a minimum sink speed of about 2.25 ft./sec.

The "C" model was completed and test flown just before the '61 Nationals. With the paint still wet, this ship left with just time enough for the crew and pilot to drive night and day to the contest. Both pilot and ship were new to each other and on the last day of the contest, the pilot misjudged and the sailplane was severely damaged when a wing dug in and the ship cartwheeled. We were more than ever convinced that a slow landing speed was much more desirable with flaps, as on the "B"x, than the spoiler/dive-brakes which made the stall speed some 10 mph faster (30%). One good point was learned from the two-piece wing; it was quicker to assemble and involved fewer parts. It was then decided to standardize on a two-piece wing using flaps but with the design possibilities of installing a "spoiler" brake in the flap area in place of the flap for OSTIV/FAI Standard Class competition.

The prototype production BG-12B was completed in the summer of 1963 and has been undergoing comparison tests with other sailplanes for some time. Flown against a KA-6B and the latest Model "CR" as well as a standard Zugvogel, it has appeared to equal and better these machines in speeds below 50 mph and exceeded them above that speed. At extremely low speeds, 40 mph or less, the KA-6 and Zugvogel drop away rapidly, apparently due to the breaking down of the laminar flow. Runs with two Prue Standards have shown the "12" to be superior at speeds under 60 mph and equal up to 100 mph.

In January a new Polish Zefir 2 was brought to El Mirage and we thought we had met our match. This machine has a glide angle of 35 to 1 at 58-59 mph. Ross Briegleb was the first pilot to have a chance to run against the Zefir and he said that there appeared to be a slight difference between the Zefir favoring the "12" at speeds below 60 mph but, because of the shortness of the test runs, no assumptions could be made. On February 2nd I had a chance to fly the "B" with the Zefir, flown by its owner, Jerry Austin, over extended periods, in one of the El Mirage waves. We started our first run at 40 mph. Gradually the "B" overtook the

Gus Briegleb, designer of the BG-12, making a pass in the "B" demonstrator that was used in the comparison flight tests described in the accompanying article.

Photo by George Uveges

BG-12B SPECIFICATIONS

Span	50' (Std. Class, 49.2')
Wing area	141 sq. ft. (Std. Class, 140.5 sq. ft.)
Aspect Ratio	17.7 (Std. Class, 17.2)
Airfoil	NACA 4418R to 4406R
Length	21' - 11"
Stall—With flaps	less than 35 mph
Stall—Without flaps	less than 40 mph
X-C cruise speed (where sink is 6 ft./sec.)	85 mph
Gross weight	750 lbs. (may be loaded to 800 lb. for higher cruise speed)
Empty weight	500 to 525 lbs.
Ultimate flight load factor	10G (minimum)
Design flap speed (terminal	130 mph
Maximum speed (red line)	136 mph
Glide angle	34 to 1
Minimum sink speed	less than 2.3 ft./sec.