BULLDOG

By WILLIAM LANGENBERG . . . An all-out competition HLG, a bit larger than most, for experienced builders and strong arms. It's the 23rd (and best) in a series of HLG's designed by the author.

In recent years the popular model magazines have featured a substantial number of so-called "beginner's" projects. Before proceeding further with this article, I feel it should be made clear that BULLDOG does not fit into this category. On the contrary, BULLDOG is a hand-launched glider designed for the experienced modeler with a better-than-average throwing arm.

This model is the twenty-third in a series of original hand-launched gliders which I have built over the past decade. It was christened BULLDOG because its abilities to stay together on the most powerful launch and to soar on the slightest thermal reflected the tenacious qualities of its namesake. BULLDOG's predecessors ran the gamut in respect to size, proportions, weight, and force arrangements. Through the experience gained from these models, the basic design on these pages gradually evolved.

BULLDOG is somewhat larger than the average outdoor hand-launched glider, yet it is not so bulky that the modeler with a good throwing arm cannot achieve impressive height on the launch. In addition, the relatively large size and low wing loading enable this model to float on upcurrents to which its smaller competitors do not normally respond. And probably most important, the large size tends to keep the model in sight longer after it catches a thermal.

The fuselage profile of BULLDOG provides a relatively large, low frontal area. This tends to lower the center of gravity and makes the rudder area less critical. A polyhedral, undercambered wing with fairly shallow polyhedral angles is used in conjunction with this fuselage design. Such a combination provides excellent lateral and longitudinal stability. BULLDOG is a stable flier in both calm and windy conditions, with neither the lateral rocking nor susceptibility to spins prevalent in many hand-launched gliders.

So much for the history and design theory behind this model. I believe it is sufficient to say that when properly built and flown, BULLDOG will present a threat at any contest.

CONSTRUCTION
These instructions will be brief, since the reader is assumed to be familiar with hand-launched gliders. In general, try to use the designated grades of balsa in order to keep down the weight. Bear in mind that the performance of the glider will be in direct proportion to the care used in its construction.

RUDDER AND STABILIZER
Select some 5-6 lb. semi-quarter grained 1/16 sheet balsa for the tail surfaces. Cut them to their required outlines. The rudder is sanded to a streamline shape. Sand the stabilizer into the airfoil section shown on the

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