

a training glider for **HIGH SCHOOLS**

by Wesley B. Hammond

NOTE: *The ideas expressed by the author may or may not be considered reasonable to men more experienced with glider design and flying, but are those seen through the eyes of a high school teacher.*

In general appearance this theoretical glider should be single place with an enclosed fuselage. The fuselage is to be of a square or triangular cross section. It would have a straight, square tip, strut braced, high position wing and square tipped tail surfaces. A single wheel in combination with a skid is advisable.

In regard to performance the following should be true. Because of its specific purpose, it need not possess a high gliding ratio but stability must be excellent. The stall characteristics, as far as the author is concerned, are extremely important. The stalling speed should be as low as consistent with good design. No excessive "falling off" tendency in a partial stall should be evident. If possible, the controls should feel "soft" long before a full stall has been reached.

The designer should keep in mind the fact that this ship would be operated, repaired or built by teen-age boys who may be somewhat lacking in skill. Ease of repair and ruggedness would be prime requisites of construction. The landing load factor should be of necessity higher than would ordinarily be thought necessary. Young boys do not always have the proper respect for equipment.

The fuselage should be constructed of steel tubing with gusseted, brazed joints if possible. Wood construction might be necessary because of the present priority situation, but steel tubing should be used if possible. A removable bonnet is not necessary or desirable. Some means of easily adjusting the seat fore and aft should be provided in order to easily vary the

distance from the seat to the controls. This adjustment might also take care of the proper location of the C. G. in view of the fact that this glider would be flown by students with a wide range in weight. A wheel and skid type of gear should be incorporated. The wheel would protect the fuselage structure in hard landings. The skid would protect the bottom of the fuselage in case of nose or tail high landings. The brake and release control should be combined for several reasons. First, it would help to prevent over-running the tow rope at the end of a ground tow and secondly would avoid confusion between these controls. The latter situation is, of course, extremely important.

The wings should be all wood except the drag bracing which should be wire in order to stand the high loads imposed by the tip skids over a period of ground training. A solid spar is advisable to prevent construction difficulties. Square tips and a rectangular plan form are necessities for easy, simple construction. Large wing-tip skids should be incorporated to protect the ailerons against the possibility of the student using full travel at the instant the wing tip strikes the ground.

The use of a full swiveling or castered tailwheel would offer a distinct advantage in that the ship could then be turned around, at the end of the field, by a single person. When a ship is equipped with a skid at the rear of the fuselage or with a skid behind the wheel it is inadvisable to turn it with a wing tip but there should be no objection to this practice when a full swiveling tail wheel is used.

The tail surfaces should be of wood construction and located so as to prevent any contact with the ground.

High schools are badly in need of such a glider and the manufacturer who could offer a glider of this type to them would be doing the cause of gliding a service. However, it would be advantageous to the schools if he could supply it in following forms:

1. Blueprints and necessary materials.
2. Blueprints, completely assembled fuselage, and necessary materials to complete.
2. Completely assembled ready to fly.

The blueprints supplied to the schools should be easily read and contain a number of detail drawings and isometric views. Students in high school are easily confused by crowded or over-lapping drawings.

It is needless to say that this glider must be eligible for an N. C. license.

