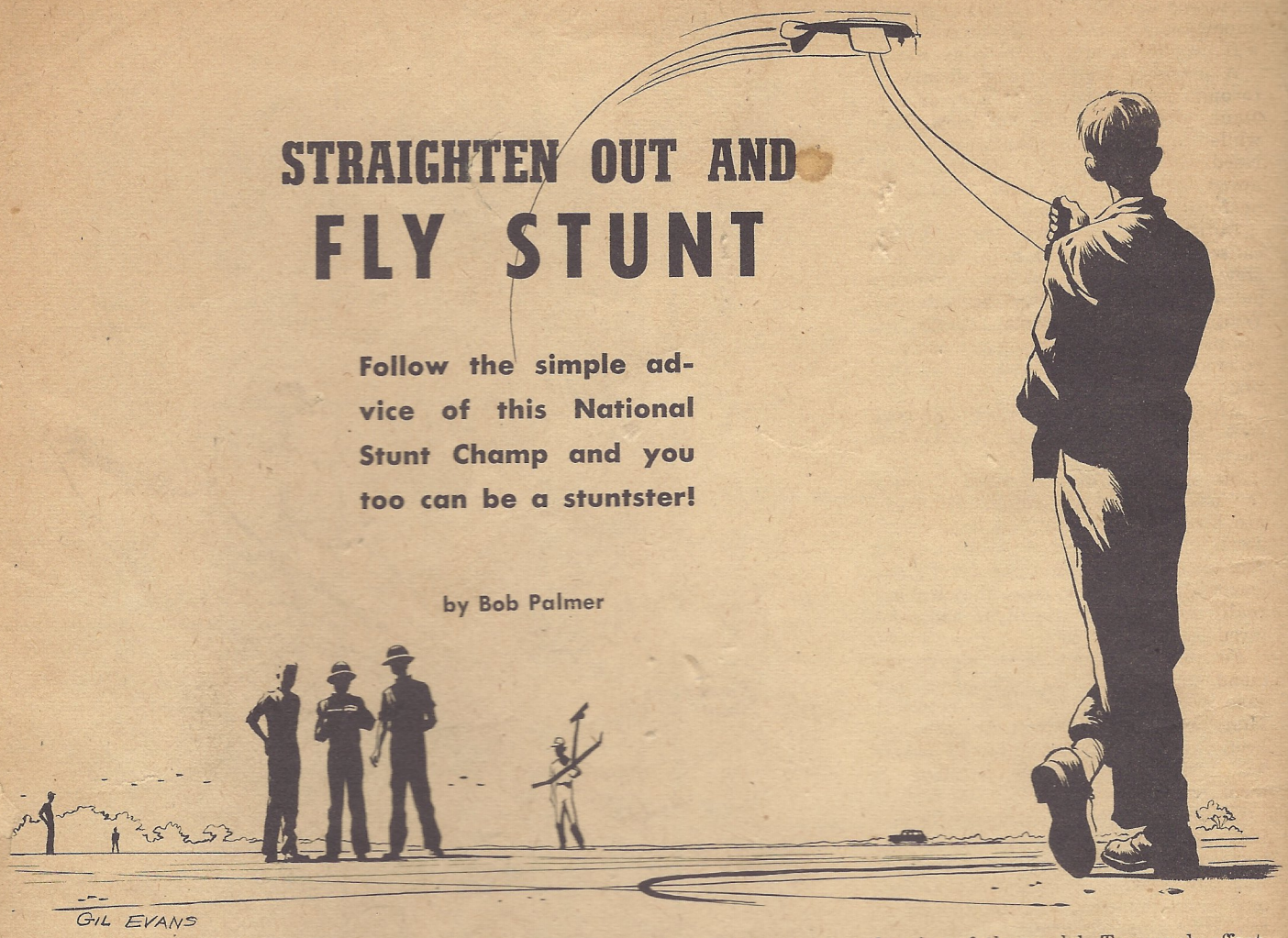
STRAIGHTEN OUT AND FLY STUNT

Follow the simple advice of this National Stunt Champ and you too can be a stuntster!

by Bob Palmer



● The purpose of this article is to discuss the problems of stunt flying. Flying in a circle is not difficult. However, intricate stunt patterns require an understanding of basic ideas to be properly executed.

First, we must understand that our model is a captive and is held under control by the lines. These lines are parasites which cause about 86% of the drag during flight. If we could eliminate the drag, we would eliminate the cause of much trouble. Some effort is being made in this direction by flyers using single-line control systems. No matter what system we use, some drag will still remain. It's the price we must pay to maintain control.

Let us consider the model. When a model is flying in a circle, the outboard wing develops more lift than the inboard wing. This occurs because the outboard wing is flying faster. To explain further, the inboard wing doesn't have to travel as far as the outboard wing during one circuit around the circle. This tends to make the model "wing in," or roll, toward the flyer.

In addition to this, the lines are bending in an arc—caused by the drag mentioned above. The arc supplies a force which threatens to roll the model further into the circle. All of these points add up to one total. Our first problem is to keep the model out on the end of the lines so that it isn't rolling or sliding into the center of the circle.

One method which has proven popular and satisfactory is to make the inboard wing larger. Usually 1" to 2" is enough. This tends to restore the balance of lift between the inboard and outboard wings. Done properly, the model will be in a stable condition.

Altogether there are five ways, or things, which can be done to make a model stay put out at the end of the lines. It should be mentioned that any one of these things can be overdone and that poor flying will result. This is also true if too many combinations of these five ways are applied to one model. We have seen some models which include all five methods to such an extreme that using none at all would be better.

The first method has been outlined before. That is, the lengthening of the inboard panel to restore equal lift. A good rule is 1" for a 40" model and 2" for a 54" model.

Number Two (we number the systems in this order for convenience only) is rudder offset. The rudder should be offset to provide a turn toward the outside of the circle. Never use more than ⅜" offset, regardless of the size of the model. Too much offset will cause the model to crab in flight and wobble when making sharp maneuvers.

Number Three. Weight installed in the outboard wingtip tends to overcome the difference between the two wing panels. It should be placed as far out as possible and should be located close to the leading edge. The weight needn't be more than ¾ ounce—a 6" length of ⅛" solder will do. We prefer to carve a hole into the wingtip and melt the solder into the tip with a soldering iron. After the solder has cooled, a liberal amount of cement is applied to secure the solder in place.

A fourth method is accomplished by offsetting the engine so that it pulls toward the outside of the circle. 1/32" offset, measured from the location of the rear mounting screw to the forward screw, is usually sufficient. Too much offset will cause the model to crab.

Number Five is derived through the proper rigging of the bellcrank and the leadout wires. On all symmetrical wings, the balance point should be ¼ of the chord back from the leading edge. The bellcrank bolt hole should be ½" back of this point.

The leadout wires should be rigged so that the center of these wires, at the