The BORYSKO TAILLESS

By CARL SCHMAEDIG

Here's an unusual and practical gas model airplane. Building and flying it should provide hours of enjoyment to any true aero modelist.

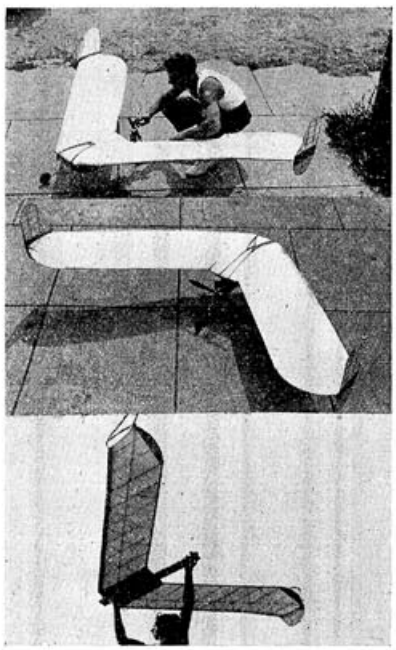
ONE of the most unusual gas model designs that has reached our eyes is this particular tailless design, which we believe to be one of the first successful models of this type. As a matter of fact, it has been more successful than the average gas job. The original model has flown so often that it is literally deteriorating with age rather than meeting the fate of inflicted damages.

The life story of this model is an interesting one when we consider how many people have had brain children in the form of tailless jobs, and how few of them actually attempted to start work on them, and then the comparative few that continued working until they had a model that really flew. A distinct contrast is Andrew Borysko's tailless. In his case it was just a matter of conception, construction, and then success. Unusual to say the least. Undoubtedly the procedure used in the construction and flying of this ship contributed in a large way to the final success of the model.

The model was first built and tested as a glider using a plank of wood for the fuselage; in this way it was possible to ascertain the proper location of the center of gravity. After a good bit of experimentation by gliding the model, its habits and peculiarities were studied and accounted for in the aerodynamic set up of the plane. Then a fuselage, or what could be called a fuselage, was attached, complete with the motor. The plane completed, a few test hops were made and lo, it flew. From that time on the plane flew in almost any kind of weather.

There were instances when it was necessary to heat the engine with matches in order to get it started, so cold was the weather. There were times when it was flown 15 times within one morning at a small beach in Canarsie. Can you imagine the wind and turbulent air that the tailless has flown through under such conditions? It is really remarkable what it has done by flying so well under opposing elements. One feature the model must possess to have done this is stability plus and a very flat glide, both of these features being inherent traits of the plane.

Upon studying the theory and design of this model, we find that it possesses many fine qualities. First, it is stable and has a very quick recovery from any irregular position that it may have obtained



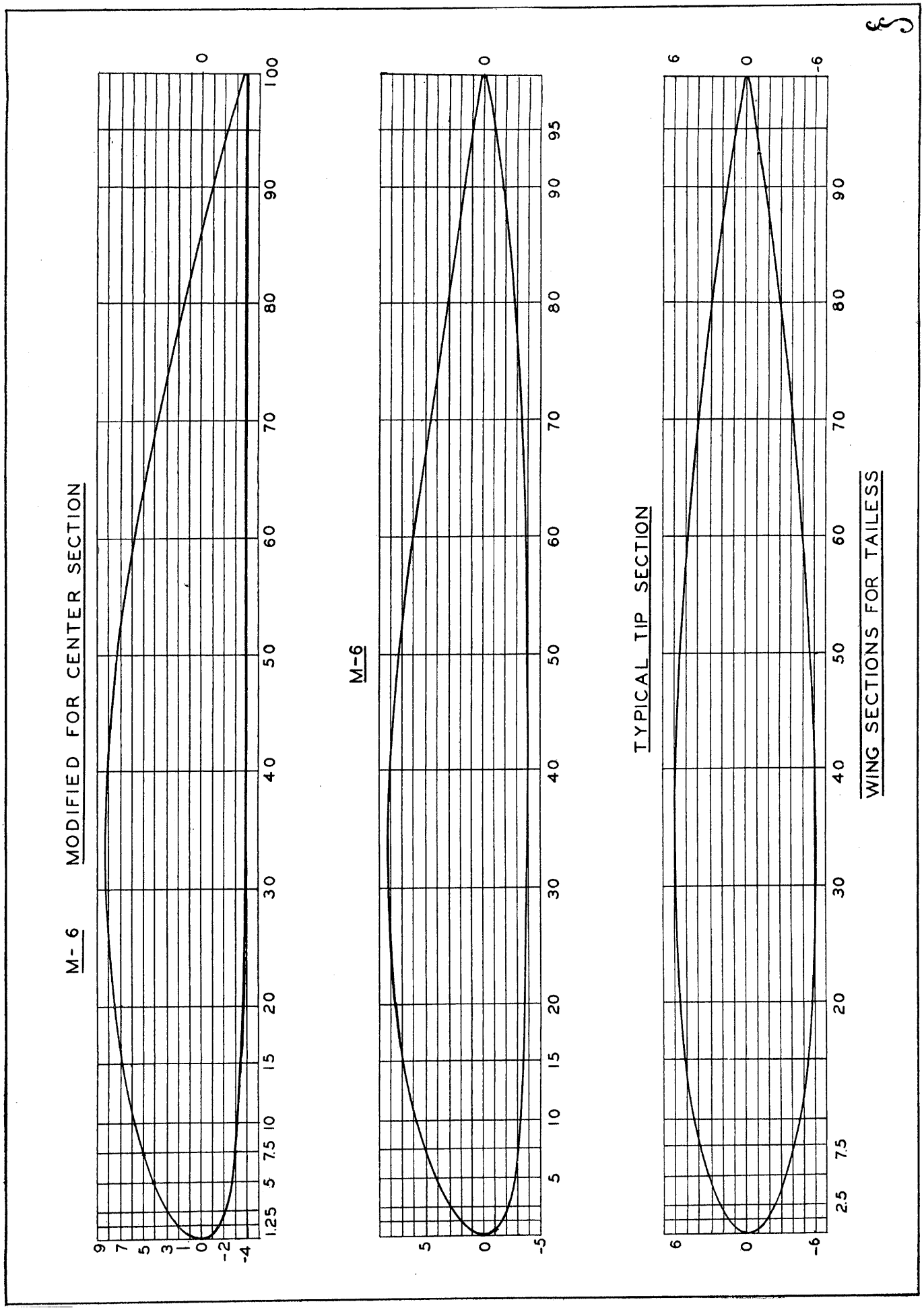
while in flight. Second, the glide is very flat and not very fast, and the ability to climb at a plenty steep angle is also shown. One gratifying feature is that its lateral stability is very good and chances of a spin are slight.

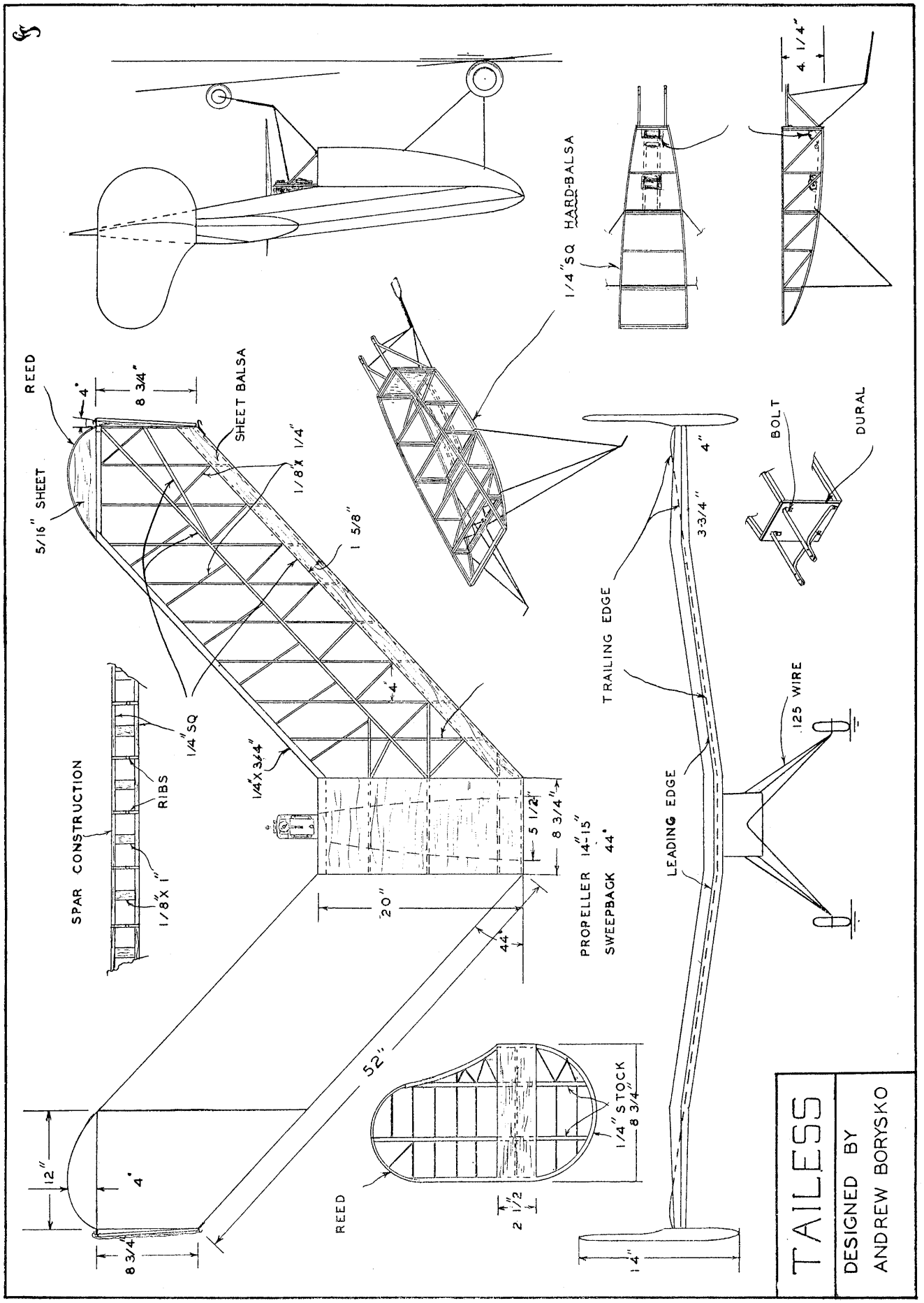
The aerodynamic qualities are not the only outstanding features, but just think, it is almost an impossibility to break a propeller or damage the engine in any way. When building the model you have only a wing to consider; the two rudders and the fuselage are practically negligible, therefore, less work.

The only people who up to the present time have had any amount of success with tailless designs are the German and Russian model builders. In their case, the tailless is a common design. The models they built were very heavy when compared to ours. No wonder when you consider that they built mostly of hardwood and metal covered with fabric. Their success with tailless models is beyond question, especially with gliders.

Doubtless you are wondering why I am trying to impress you with abilities of the tailless design. Well, it is simply this. I am afraid that upon looking upon the pictures and the drawings of the model you will allow yourself to become somewhat skeptical about the model, and whether or not it can fly. This is one thing that I do not want to happen, and let me assure you that I will take every precaution to see that it does not happen. As a matter of fact, I have even convinced myself to the extent that I am contemplating the construction of a model similar to this one myself. It's just a matter of time now. If a few more people would get down to solid work and do a little experimentation on such designs as this,

(Continued next month)


WING SECTIONS FOR TAILESS
M-6 MODIFIED FOR CENTER SECTION
M-6
TYPICAL TIP SECTION



General Arrangement, Borysko Tailless. Wing sections on opposite page.

Concluded from the January Issue.

IT would be wise if we proceeded to construct our model just as Andrew Borysko built his original model. First we will start with the wing. In making a wing of this type it is best to make a full sized layout of the whole shooting match. You should not find this a very hard job as all the dimensions are to be found on the drawings. As a word of warning, do not scale the drawings up, because as the drawing appears it is not to any definite scale unless specified on the drawing.

First start by drawing up the wing section and cutting the ribs out of 1/8-inch sheet balsa. Before attempting to construct the wing be sure that you are familiar with the way that the wing tapers at the tip. The trailing edge continues in a straight line while the leading edge droops at the tip, the section also varies between sections 6 and 9 where it is symmetrical in shape. First assemble the section between 1 and 6 on the plane, then remove and build on the tips. The spars are one piece all through the wing with the exception of where they meet the center section where it is necessary to break them. As in all gas model construction, be sure to be generous with the cement in all cases.

When the two halves are completed place them in the proper relative position to each other in regard to sweepback, dihedral, and distance. When you have them properly in line, build up the center section. First put in the bottom spars being sure to attach them securely to the wing halves. The bottom spars in place, attach the leading and trailing edges, make as strong a joint as possible. While the bottom is drying, the ribs can be glued in place and the top braces attached similarly to the bottom ones. At the trailing edge you will find it necessary to attach fillet blocks where you join the two different sections together.

When the glue dries, you should have the wing in one solid piece. If so, cover the leading edge of the wing and the whole center section with 1/16-inch sheet balsa. This will add to the strength considerably. This covering could be extended out to rib 2 adding still more strength to the center section joint. The next job is to add the 1/8 by 1/4-inch drag struts to the top and bottom surfaces of the wing and the extra 1/4 square braces at the tip, attach the wire rudder clips to the wing, bind these on securely with strong thread. This completes the wing structure with the exception of the elevator taps which is shaped out of 5/16 by 3-inch sheet and edged with 1/16 round reed.

Tip Rudders

Make a full sized drawing of the tip rudders and construct the rudders on the plan. It may be wise to make a few extra rudders as they are most likely to take the most punishment in a rough landing or flying into any object which might be in the way. The rudder is built of all 1/4 stock as shown on the plan. The curved parts are cut to size from sheet stock. The center of the rudders are covered with 1/16-inch sheet to withstand the pressure of the rubber.

The model may be covered with any standard covering material such as silk or bamboo paper. Test fly the model before you color it, because if any changes are necessary you will not necessarily spoil the appearance of the model by making them. Before you make the fuselage glide the model by attaching a stick to the center section for adjustment. The model should balance slightly behind the trailing edge of the center section as shown on the plan. In this way you will find the proper location of the center of gravity on your particular model and you will learn how to adjust the tip rudders.

Fuselage

The fuselage is constructed of hard 1/4-inch square balsa throughout. Work from a full sized layout. Construct the sides first on the drawing and then assemble to the top view, be sure not to omit the double braces. The motor mount is made of 1/4-inch birch plywood and 1/4-inch dural tubing or 1/2-inch dural angle. Two pieces of 1/4 by 1/2-inch balsa are provided to mount the coil condenser and the batteries on. The landing gear is made from .125 steel wire and bound with the fuselage. The tail skid is made of the same material and is attached to the motor mound and the plywood bulkhead. The fuselage may be covered with the same material as the wing.

Test Flying

Glide the model a number of times before applying power to be sure of the adjustment. Also be careful to see that the wing is not warped or out of line. If it is slightly out of line be careful to allow for this in your adjustment, also take the propeller torque into consideration and allow for it. Then when you have her floating through the air with the greatest of ease you will be able to show your friends a thing or two about what the tailless can do.

I would appreciate receiving photographs from anyone who builds this model.