BIPPI-BIPE

Here's Galloping Ghost fun for quiet evenings.

With the rapid development of the multi-proportional radio control systems in the last five years, the simpler and less expensive types of RC modeling have suffered from a lack of publicity and suitable model development.

The RC rudder-only, rudder/motor, and galloping ghost unit types, however, do have certain advantages that more modelers should be making use of–light weight, small size, low cost and easy installation. The GG package offers three controls: rudder, elevator and motor–with a total airborne weight only slightly more than many rudder-only units. By comparison, a proportional three-channel outfit is twice as heavy, twice as bulky, and more expensive. And, of course, it is much more sophisticated in control action. However, for many model applications, the R/O, R/M, and GG systems are just the thing.

The Bippi-Bipe is a small, compact biplane designed to utilize the advantages of the galloping ghost RC units now available. As a biplane, it also offers more of a challenge than the usual trainer-type GG model. The Bipe is a sturdy model with good flight stability, but capable of fast and exciting stunt flying as well.

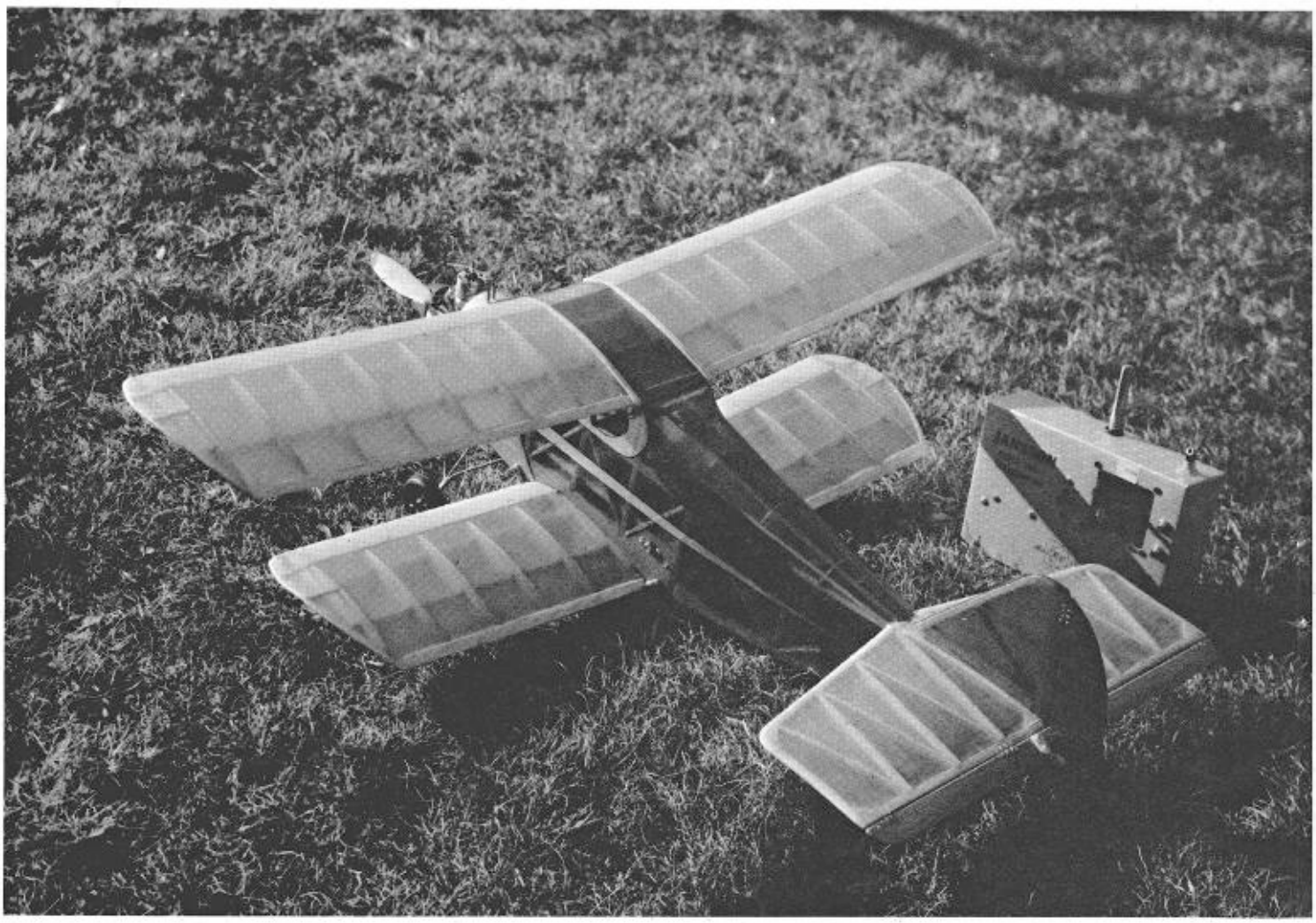
A notable feature of the design is the cabin fuselage which provides plenty of room for the RC installation and a sturdy mounting for both top and bottom wings. The constant chord wings are identical except for length and center section. The top span is 34", length is 29", weight about 22 1/2 oz., with a wing loading of about 10 oz.-sq. ft. The engine installed is the O.S. Max 10 RC which is lightweight, provides good top power, and throttles very well to a low idle.

Before covering it is wise to complete the equipment installation. Diagonal bracing makes the fuselage quite strong but light.

The radio gear used is the packaged galloping ghost unit manufactured by Ace Radio Control, Inc. The airborne equipment consists of Rand GG pulser and switcher, Commander DE superhet receiver, and 2.4 V NiCad battery–weighs a scant 5 1/2 oz. Originally, the Jansson GG No. 2 transmitter was used, but was replaced by the Dickerson Pulse Commander Tx when this much-improved unit became available. The Pulse Commander is not only electronically better, but is smaller and has better balance–so important for one-handing it while launching the plane. In all, the GG system is an enjoyable way to provide a lot of control.

Wonder why it was named the "Bippi-Bipe"? The "Bipe" should be self-explanatory–but the "Bippi"? Ever listen to a GG Tx signal on audio monitor and hear the bip-bip-bip? That's why. Any questions, Goldie?

The basic design for Bippi-Bipe had its beginning a number of years ago with an 049-powered free-flight Sperry Messenger (the obscure aircraft which became so popular that one magazine ran three different models of it). The Messenger was eventually converted



by TED SCHREYER

to rudder-only RC, but there were problems of poor wind penetration and, together with the added weight, a lack of lateral stability, and finally, an upper wing mount beyond repair resulted. The latter problem was solved by building on a cabin and turtledeck. By cutting off about 30 percent of the lower wing area and adding rounded, up-turned wing tips, the speed and stability problems were eliminated. It flew well, even when an 099 engine was tried for power-plus flights.

On high throttle Bippi is rather fast—so a beginner may "get behind the airplane." More skilled hands will love its stunting.

From this much-modified little rudder-only biplane that afforded us so many enjoyable flights, two offspring resulted. The first was a flying scale of the Waco YKC-S cabin biplane which had surprisingly similar design areas and moments. The second was the Bippi-Bipe, which was a slightly enlarged and streamlined version, intended for the three-control galloping ghost RC system and a 10 size engine.

Bippi-Bipe is not recommended for the beginner, however. For one thing, trimming out a bipe is not always the easiest thing, even for experienced modelers. Since the Bipe moves pretty fast in high throttle, a beginner would invariably find himself playing catch-up with the controls—this just isn't much fun.

Construction

The plan should be studied well before beginning to do any construction work. A few revisions were made of the prototype: additional rudder and elevator area for more positive action; rounder wing tips for better efficiency and looks; battery and GG unit moved forward for balance. Not shown on plan, but an excellent idea, is the addition of a six-in. length of 1/16" dowel inserted into the extreme trailing edge of the top wing at the center section to keep the rubber bands from digging into the balsa.

This model is quite easy to build since it has standard balsa construction without any difficult or uncommon procedures. The wood should be medium or medium-hard, unless otherwise noted; by building carefully, a strong, yet lightweight, model should result.

Build two sides on the plan from 1/4-sq. and 1/8 x 1/4 strips including the 1/4 sheet parts around the lower wing mount area. Join the sides at the rear, and add crosspieces to form the box-type fuselage. Then add formers, firewall, plywood landing gear mounts (with wire in place), the GG mounts, battery mount, stringers, etc. Leave off the cowl covering until fuel tank and radio gear are installed.

Make two engine mounts from aluminum (or use ready-made one) and mount engine. Make fuel tank and install it, then drop radio gear into place. A third hole was drilled on the inside of the GG motor control arm to give better action, and a nylon tube-in-tube connected it to the engine throttle. Epoxy the outer nylon tube to the firewall.

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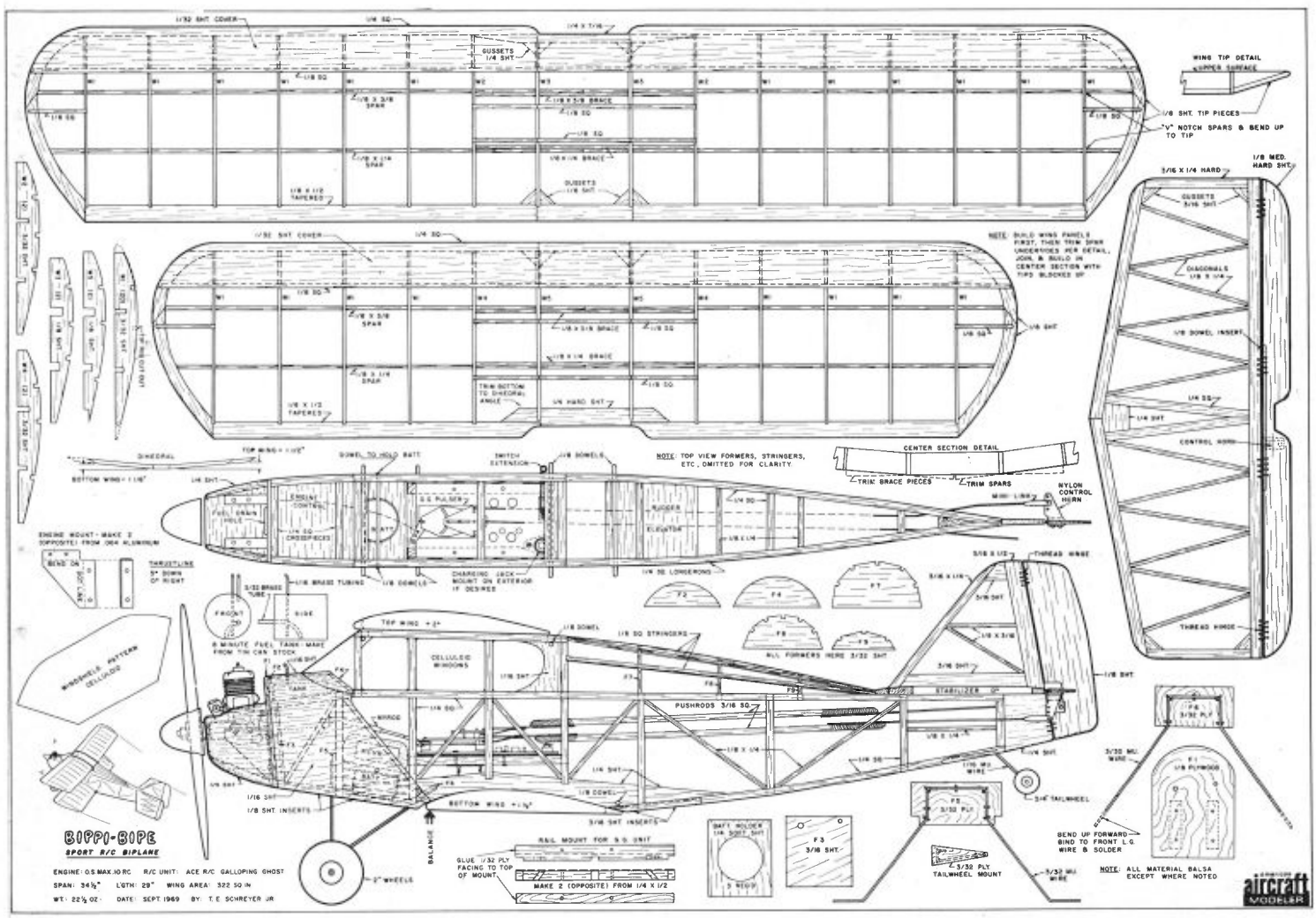

FULL SIZE PLANS AVAILABLE—SEE PAGE 70

Bippi-Bipe

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The NiCad battery slips down into the balsa holder on the cabin floor and is held in place by a 1/8 dowel, inserted through the cabin side planking. The finish dope holds the dowel, but it will push out easily to remove the battery. The charging jack was unscrewed from the GG unit and mounted through the side of the cabin. Use an extra piece of balsa to provide a support for the music wire extension of the on-off switch.

Leave the fuselage uncovered until the tail assembly has been glued on, the GG unit positioned, and the pushrods made. Follow the instructions for installing the GG system as provided by the manufacturer. Most important is to have free and easy movement of all moving parts. The antenna was run through holes in formers F7, F8, and F9, and then out along the leading edge of the fin.

Build the four wing panels on the plan with the spars extending to the centerline, omitting ribs W3 and W5 and the center section pieces. Then trim the spars to the dihedral angle on the center bottom, join, and with the tips blocked up to the correct height, build in the center section. Slope the 1/4-sq. leading edge on top and glue on the 1/32 sheet leading edge covering. When finally covered and finished, both wings should have about 1/8-in. washout (tip with less angle of attack than root) measured at the tip. Use the steam kettle method to obtain this.

Build stabilizer and fin on the plan using hard, strong balsa for the leading and trailing edges of these members. Rudder and elevator are cut from 1/8 sheet, sanded to shape, and given two coats of sanding sealer. After the stab and fin are covered and doped, sew on the elevator and rudder at the hinge locations. Glue the finished tail pieces to the fuselage.

Give all surfaces a going-over with fine sandpaper to round off square corners and smooth down the rough spots, then cover with your favorite material. The prototype used red silk for the fuselage and rudder, and yellow silk for the wings and stabilizer, with about five coats of clear dope as a finish. Exposed wood should be sealed and painted with colored dope to match the silk color. A trim color such as silver can be doped on to accent the fuselage.

Since the Bippi-Bipe originated from a rudder-only model, it should certainly be capable in that mode, or with a rudder/motor system. With these lighter and simpler systems, the overall weight could be reduced and a strong 049 would be ample power.

Flying

Balance the model as shown on the plan. Weight can be added to the nose or tail, different wheels used, or some shifting of the GG unit can be used to achieve balance. Check the wings for correct alignment and glue in shim strips if necessary. Adjust Mini-Links for "neutral" positioning of rudder and elevator.

Check range and also check all control action with the engine running. For test flying, limit the amount of engine power to about 75 percent of full throttle (move Rand control arm) since the Bipe will fly well on lower power, and high throttle is definitely not wanted at this time.

With the first flights, work on the trim so that the model will almost fly itself without any commands being given. Some additional nose or tail ballast may be added if needed, but the model should be very close to trim if the plan has been followed. A very slight turn is desirable to keep the model overhead, without having to continually signal rudder.

Watch the model carefully when making steep turns for any tendency to stay in a turn to a particular direction. If this occurs, check the wings for warps and steam out the unwelcome one. Trim carefully and remove all negative tendencies during the test flying—later flights with full throttle will be pure enjoyment. With the exception of inverted flight and outside loops, the performance of the Bipe depends primarily on the piloting ability of the person with the transmitter.