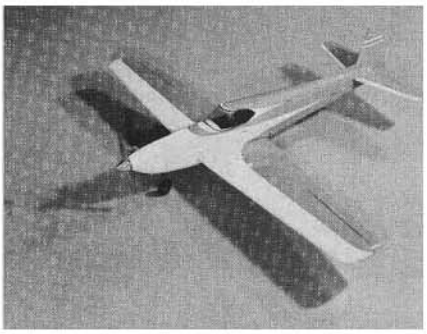
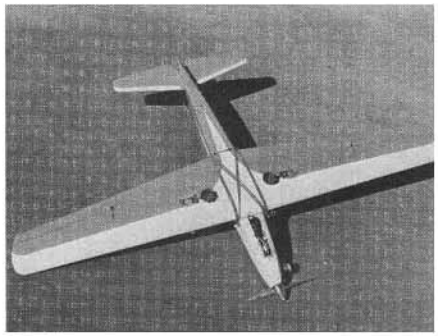
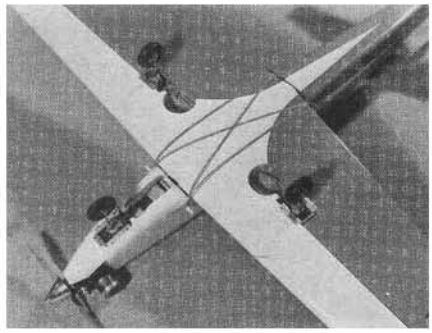
EL

GRINGO

One of the early El Gringo prototypes. Retractable gear shown in both positions. El Gringo has won more trophies in past few years that almost any R/C design.

BY TED WHITE

I would like to be able to say that I designed the "El Gringo" from scratch with no help, and that it was all mathematically and scientifically engineered. However, needless to say, this is not true. It is a combination of many airplanes that I have flown or have seen flown. There are three airplanes, in particular, that I considered to have both the lines, stability and manuverability I wanted. One of them was Jack Butler's "Moody". Another was Martin Moad's "El Toro" and the third was Eddie Morgan's take off on the "Moody". Having flown the "El Toro" and Eddie Morgan's "Moody", they were found to be very fast and extremely smooth in manuevers. However, wanting an airplane that I could call my own and incorporating some pet ideas of my own resulted in the design and construction of the "El Gringo".

Wanting stability in the wind, I figured that a high wing loading and rather long tail moment was needed. I also wanted my airplane to look as much like a real airplane as possible. I don't think that with proportional control, a full house stunt ship has to look like a model. Not wanting to add nose weight, the moment was made long by normal standards. 48" seemed a good length for the fuselage because this was the longest sheet balsa I could obtain! I decided that it didn't need the large horizontal and vertical stabilizers that most models employ due to the long tail moment. Another thing that was definitely needed was a symmetrical wing. I like a gentle airplane with a lot of neutral. The symmetrical wing gives me this.

The original "El Gringo" had a two wheel retractable landing gear. In order to prevent the tendency to nose over, the CG had to be at around 40%. This presented problems on the landing approach with the original vertical stabilizer, since it wouldn't hold a heading when slowed down. So, in order to live with this 40% CG, the vertical stabilizer had to be raised about 1½" to correct this tendency. After this modification, the airplane settled down and became what I had envisioned. The airplane has had nothing major done to it since then, except a tricycle gear has been substituted and the CG moved up to around 30%. It was found that the two wheel gear, whether retractable or not, was unsuitable because I could not get decent ground points at a contest.

The "El Gringo" has given me many hours of flying fun. It has had what I consider to be rather good success in Meets that I have attended around the country. It was first built several years ago and it has, – well, I'll have to list a few things it has won. It won Second at Phoenix, First at Denver, First at Wichita, Fifth at the NATS, First at Oklahoma City (regular meet), First at the Oklahoma City Invitational "Tournament of Champions", First in Las Vegas and First at the RCM Winter Nats as well as bringing home the Grand Champion Trophy in 1968.

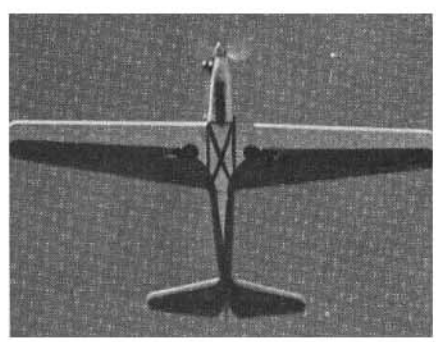
A lot of modelers around the country think that the "El Gringo" looks a lot like Martin Moad's "El Toro". The major differences between the two are the airfoil of the wing and the length of the fuselage. The outward appearance is somewhat similar although if you had them side by side, they wouldn't look too much alike.

I do think that anyone who decides to build the "El Gringo" will enjoy it. I don't think that a model builder with any experience will have much trouble with the construction of this airplane.

I guess I'll start the construction advice with the fuselage. The fuselage top block can easily be traced from the plans and cut out with a band or jig saw. You should first cut a wedge off the 3" x 4" plank at one end about 1" x 12" x 4". Glue this

Photo of designer Ted White taken several years ago with a few of trophies the El Gringo garnered in first contest season alone.





wedge on the block thick end forward just ahead of where the canopy is located. This is done because, right at the canopy, the block has to be a little over 3" thick. Then, trace the outline of the top block on the balsa plank. After you have cut this out of the plank, trace the fuselage curve on the block. Be sure to make your cut of this side curve a little bigger than you need. Then, just to be sure you get the fuselage straight, trace the top view curve on the bottom of your now roughly-cut plank. Now, put aside the plank and begin construction on the fuselage proper.

The lower fuselage construction is fairly conventional. Cut the sides out and glue the doublers in place. You'll note on the plans a ½" triangular brace at the bottom rear section! The main purpose for these braces is to allow the bottom of the fuselage to be rounded off. Glue those braces on and mark off where the formers go while the sides are pinned down to the work bench.

After cutting out the formers and gluing the braces in place, assemble the fuselage upside down on the plans. You'll notice on the plans that there is an additional doubler on the outside of the fuselage at the wing. This acts both as a fairing and, in my opinion, eliminates the principal weak spot on a fuselage. Something else, I usually do, and feel is almost a necessity for all airplanes, is to use epoxy glue on everything from the wing forward. Since I started doing this, I haven't had near the trouble with the engine mounts coming loose from vibration.

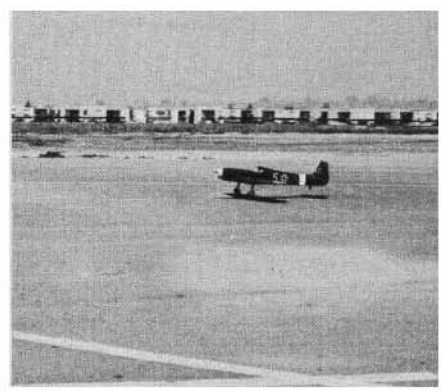
At this point, I would like to digress a moment and discuss an important factor in the construction of models, the mounting of the engine. From the experience of the modelers here in Albuquerque and also Las Vegas, Nevada, we have found that radial mounting of an engine (Tatone type or back plate) is far superior to beam mounting. Radial mounting is simpler, causes less vibration, is generally lighter, allows easier and more positive thrust angle adjustments and provides more nose space for the fuel tank and battery pack. If you decide to use Tatone, or other type combination nose gear and engine mount, you should use the rearward firewall position. If on the other hand, you decide to use a retractable gear, you may back plate mount your engine and use the forward firewall position.

After assembling the lower part, less bottom sheeting, rout out a small section of the top block at the firewall. This allows proper mating of the

two parts of the fuselage. Align the tracing on the bottom of the top block to the lower part of the fuselage and spot glue. Then plane and sand the top block to shape. Remove and hollow out to approximately ¼" thick. Then, glue it back on permanently. Install the bottom sheeting and bottom block at this time. Now, glue the 1/16" ply spinner back up (A) to the nose. Then, sand the fuselage to final shape before cutting out the engine compartment.

The construction I use on the stab is so simple you might even call it cheating. All it is, is a ½" plank, cut to shape and sanded to a symmetrical airfoil. Cut out marked sections with a jigsaw. This lightens it considerably. Ninety nine people out of a hundred will think that you have a built up stab and it doesn't appear to weigh any more than one. The elevators, fin, rudder, and dorsal fin are all solid balsa.

The wing, as you can see on the plans, is of fairly normal construction. I prefer dowel construction because of the strength. With this type of construction, the wing is very easy to build. Many people prefer to use foam wings. If you are one of these, you can use the center (1) and tip (13) airfoil shape on the plans. Don't cut out the ailerons until the wing is complete but uncovered. The ailerons shown on the plans are hinged at the top. I have found most people prefer this. Personally, I don't. Mine are hinged in the middle with a slight amount of differential throw. Don't ask me to explain, scientifically, why I think they work better there, I just do. The control



hook-up was left to the builders discretion. The main gear installation, also is not shown on the plans because no two people seem to install them alike, either. I used the Taurus type mount. Another thing that I do on which there are varying opinions, is to set the aiplane up on the ground with 0° or slightly positive angle of attack on the wing. The main reason for doing this, is that I have never seen a real propeller driven airplane set on the ground nose down like most models do. One of my pet peeves in contest work is the common usage of a short nose wheel which allows the model to either be slapped on to the runway way above stall speed or landed roughly without bouncing. Most contest judges seem to consider these burned on landings equal to or better than scale type flared landings. Real airplanes just don't land that way! A full scale airplane would most likely be

severly damaged by this type of landing. Landing a model properly, that is, like a real one, has always been a challenge to me. The "El Gringo" is not particularly light. I think that the lighter the airplane the more it is at the mercy of the wind.

As you can see in the plans, there is no removable cowl in the nose. The fuel tank goes in from the rear with the battery pack under it. The latter should be packed in foam, then foam wedged around the tank, which will hold it securely. The fuel lines are run through the firewall and to the engine. You can fish them through with either wire or string. There is plenty of room in the radio compartment over the wing for about any type of radio gear I know of. Of course, I have always flown the "El Gringo" with the Galaxy proportional, however, I know several other modelers who have flown the model with other equipment. The large Top Flite elevator horn works well and is plenty long. As you can see in the plans, there is approximately 1-½° down thrust and 1-½° right thrust.

I suggest that you use very little throw on the elevator and ailerons at first. I think you will find this model stable, forgiving, and easy to fly.

I hope you enjoy building and flying the "El Gringo". ●

From RCModeler July 1970