Building A RADIO CONTROLLED BALLOON

By GEORGE STEINER . . .Want to put a little lift into your flying? What could be better on a lazy autumn eve than this colorful lighter-than-air craft floating above the trees, at your command? Read on!

• I have always been fascinated by lighter than air devices. (L.T.A.). Being a model builder and flying radio controlled planes for a good many years I often thought of building a model hot air balloon. I always figured that to make it fly it would have to be filled with helium. I started gathering material back in the early 70s. Like most modeler's projects it got left on the top shelf of the closet. A World War Two parachute, large weather balloons, and an assortment of small wicker baskets gathered dust for years. In 1981 Luther Hux did an LTA article in Model Aviation. This really sparked me to drag my box out of the closet. In a few months I had made my first flight (indoors of course). What a true feeling of delight when all the calculations came together and it moved through the air like a dream. So very soft and quiet.

So far I have built four versions and by changing the shape little by little, it has become more realistic-looking each time. I have also made many other improvements on the controls. The balloon in this article was an attempt to reproduce the Raven design-type configuration. It is not easy and most frustrating to get numerous gores put together so you won't end up with a shape of an Egyptian pyramid. I have devised a method as shown in Figure #1 on how to lay out a full-size gore in order to get the cardboard pattern. As you can see it takes a lot of room in order to swing the twelve-foot arcs. You will note that the arc offset points of four inches were done in order to make the gore a little fuller at the equator. Otherwise you will end up with the round shape of a beach ball. This method gives you some latitude without destroying the lift characteristics in creating your own shape. Don't go too far, otherwise it will end up looking like a banana.

Figure #2 drawing is the skirt, and if you feel a little uneasy about making an open cone shape you can make it a few inches longer for the fudge factor. Figure #3 shows how the balloon shape was laid out so that it was bigger around and somewhat flat on top to give the scale effect. It was also used for making calculations for displacement and skirt size. Figure #5 is much needed to figure out the layout of the gores and it will give you an idea of what color schemes you can come up with. Try coloring the different gores with crayons on paper. It will give you a visual effect of what the finished balloon will look like. On the other hand it serves as a guide and numbering tally for the cut gores. You cannot imagine the confusion when you have multi-colored gores and start to sew them together with no identification marks. Use Figure #6 to calculate how much Ripstop nylon you will need. Ripstop nylon comes in various weights. That is, how much weight per yard area in ounces. For this project the lighter the better. You can even use 1.25 weight without getting into trouble.

Figures #8 and #9 of the gondola show control linkage from the servo. This must rotate the thrusters by 90 degrees, and in some cases you might have to extend the servo arm length in order to achieve the 90-degree throw.

As far as the radio system goes, as shown in Figure #10, this is a good place to use up an old R/C system that has gone by the wayside and can no longer be trusted in your hundred mile-an-hour pattern ship. I have been using old Kraft equipment that used KPS 12 and 14 servos. If you have a 7L or 7D receiver they are small enough and light enough without the case to operate the balloon R/C gear. Modifications come easy with older R/C systems. Just think of it this way, if the radio equipment fails how are you going to crash a free-floating, weightless balloon? I have found that my flying balloons are the lowest-maintained item I have in my R/C stable. Hours and hours of use and only the cost of helium and a battery charge.

Publications of ballooning and LTA interest: *Aerostation*, P.O. Box 7, Rosemead, CA 91770, $15.00 per year subscription; has information containing modern day airship construction and other LTA projects. Book on Hot Air Ballooning, TAB #2249. •