THE KITTY HAWK:

By A. KOCHMAN

At last, the younger and less experienced modeler gets an event for some exciting competition with simple rules, easy models

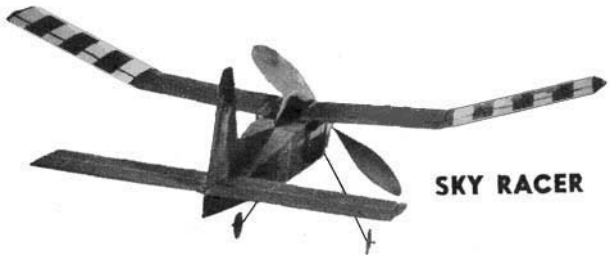
• Ever since the spectacular rejuvenation of free-flight gas by the baby engines, rubber enthusiasts have been hoping for some similarly successful development in the oldest branch of contest modeling. Though most big meets seem to appreciate the value of the rubber job, staunch friends of rubber must campaign steadily to see that these ships keep their deserved place in the scheme of aeromodeling.

After a national survey of prominent rubber modelers, this magazine is able to suggest a plan which can be a shot in the arm for rubber modeling, especially on the local club level.

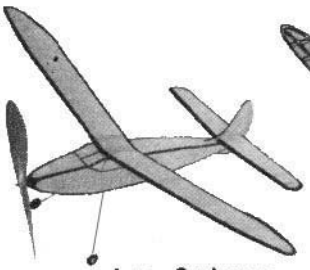
It is not proposed to alter classifications, combine events, or tamper with existing A.M.A. rules. This very survey showed that the contest-minded "R-man" would not consent to fewer events. Nor can he see tampering technically with the current crop of stick and cabin models. Many—but still a minority—favor dropping cross section and/or weight rules. Most would prefer to fly ships in the 150-200 square inch category and to banish the big boys. But when we asked what simple rules would make for an easy-to-build, economical rubber event that would interest the oldsters and also bring in the youngsters, the heavens literally rained suggestions.

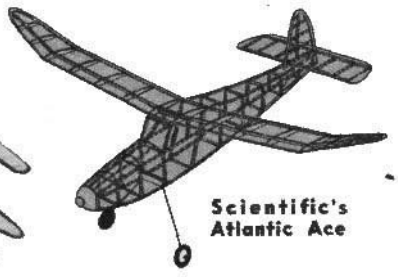
Moreover, these suggestions quickly fell into a pattern. Some of the ideas were beautiful in their simplicity. With the objectives of that point in mind and only after careful consideration of the proposals on a count-the-heads basis, was Air Trails willing to suggest the types of models, the tentative rules governing competition for them. Before running through this analysis, the staff wishes to point out that the Kitty Hawk Contest is suggested for fun, for small groups, for clubs and interclub special event meets, and for any meet where time and interest may make it worthwhile to give these ships a whirl. Perhaps the ideas involved will work their way into the hot-shot contest picture.

Size,. Recommended areas—for area was the only yardstick used—ran all the way from 50 square inches to 200 square inches, those (Continued *on page* 76)

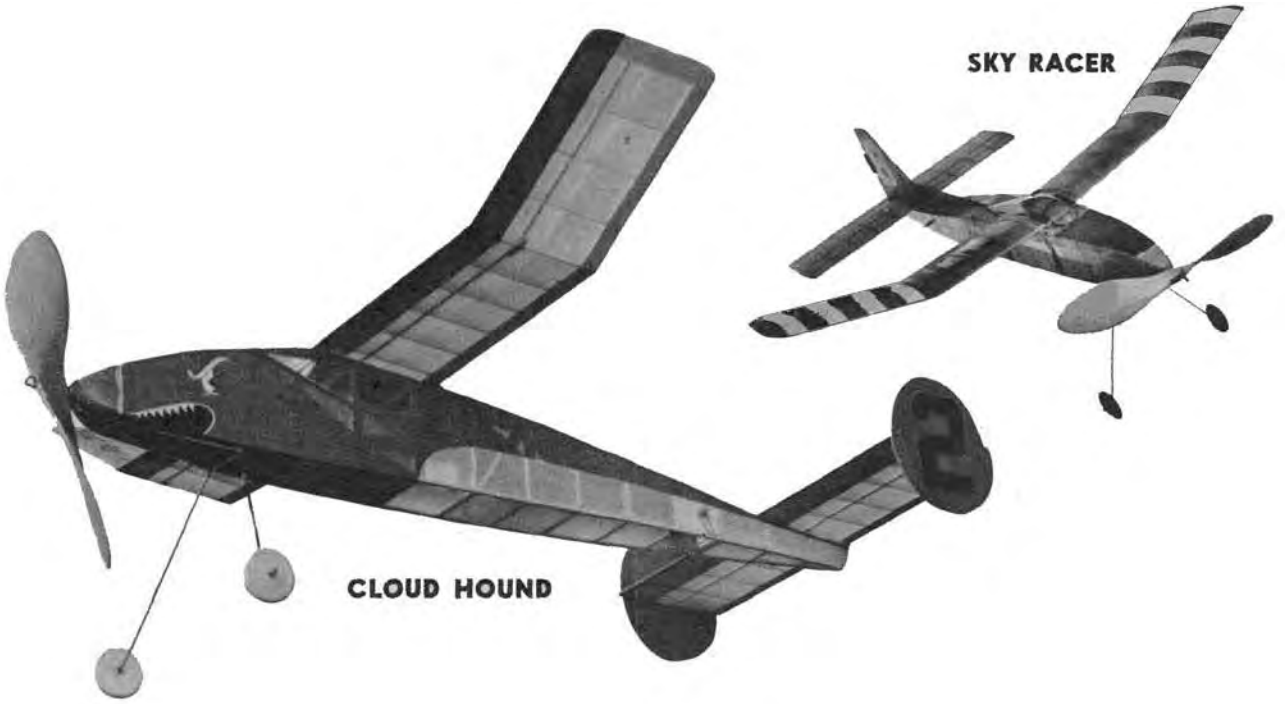


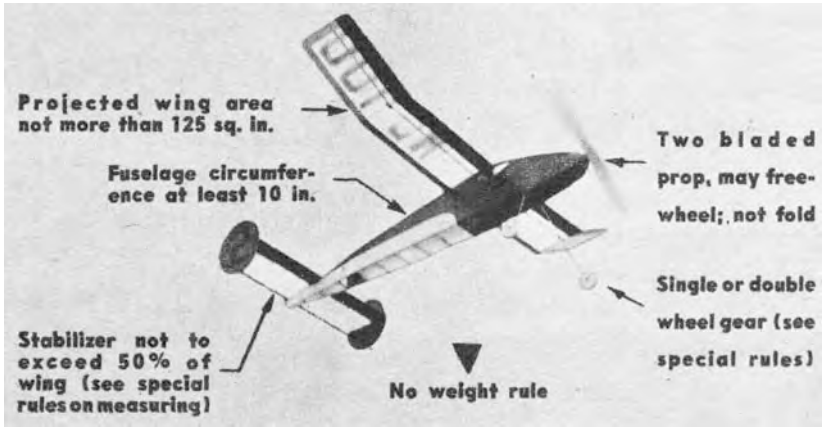
*** Here are some kit models that fit right into the Kitty Hawk event. In some instances you may have to chop off wing tips, or add a bit to the fuselage cross-section, but, generally, little changing is required. In subsequent issues, other kit models that qualify as KH entries will be listed, so watch for announcements.**

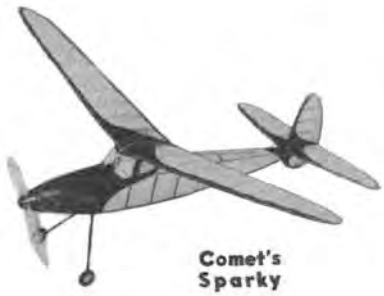




TO ENCOURAGE RUBBER MODEL FLYING BY THE NOVICE







Kitty Hawk

(Continued from page 36)

being the extremes. On the lower end, 100 square inches was the minimum to receive solid support, and, at the upper end, 150 square inches received a fair number of votes–with 125 square inches being advocated by the majority.

Analysis of all proposals produced the following rules for the Kitty Hawk event. The comment of clubs and experienced contest directors, especially those who have run novice events, will be welcomed in regards to these.

Kitty Hawk Event

1.The model shall have no more than 125 square inches of protected wing area computed by multiplying the straight-line tip-to-tip wing span by the maximum chord. No allowance shall be given for tapered or elliptical wings. (In other words, a wing with square tips and no taper achieves the maximum possible area under this rule.)

2.There shall be no weight requirement. Models may be as heavy or light as entrant wishes

3.Minimum fuselage cross section shall not be less tthan the length of a 10-inch string placed around the fuselage at its widest point.

4.The model must have a fixed landing gear of one or two wheels. If a one-wheeler, model must have built-in means (skids or double rudders) of maintaining its take-off position unassisted.

5.Propeller may be carved from a block or sanded from a blank. It may have a fixed prop shaft or it may free wheel. No gears or mechanical tensioning mechanism permitted. The prop may have one or two blades, but cannot "fold "

6.The area of the stabilizer must not be more than 50% of the wing area computed in the same manner as the wing area.

7.Method of launching: the model may be hand-launched or rise-off-the-ground. Five additional seconds are given to an R O.G. flight provided the model takes off by itself completely unassisted.

8.Number of flights: five official ATTEMPTS AT FLIGHT will be given each contestant, with each attempt counted regardless of duration, unofficial flights are not recognized, if a model fails to take off it still constitutes an OFFICIAL ATTEMPT.

9.Scoring of flights: highest time for each entrant constitutes his OFFICIAL FLIGHT. Flyer with longest OFFICIAL FLIGHT Wins.

10.Winders of any type may be used. Rubber motors may be braided and of any length.

The simplified measurement of area is an aid to the beginner, for emphasis is on wings having the maximum area for their span and chord, which means a rectangular surface with a squarest tip. Some readers will point out that the "piece-of-string" measurement of cross section does not give identical areas, depending on width and depths, or shapes. Various cross sections of practical dimensions were cheeked and all had seven square inches or better of actual cross section, variations being held within 1-1/4 square inches. For all practical purposes this is satisfactory enough and makes for rapid processing.

The propeller rule aims to simplify the beginner's job. Lack of tensioning will prevent a beginner being an expert, so to speak. Emphasis there is purely on successful flying, and simple adjustments are a notorious chore to the novice. Most experts said in the survey that the folder should be out for the new recruits.

In conclusion, two designs are offered for study. Both use 12 strands of 3/16" T-56, with only one inch of slack, yet each puts up .good performance.

Designed expressly for the Kitty Hawk rules competition, both these models are Ideal for either sport flying or for the "KH" event in club or small contests. Both are easy to build and fly. Both are drawn up according to the simplified set of rules given which dispense with wing loading and tensioning devices and should prove ideal for beginners

The following directions are for the twin-tailed Cloud Hound, but both models are basically similar in construction Special notes on the Sky Racer are included.

Fuselage: Both sides of the fuselage are assembled at the same time directly on the plan. Place the straight pins on either side of the 1/8" square longerons, and put wax paper beneath the work to prevent the cement adhering to the working surface. Cross pieces are trimmed the right length with a single-edge razor blade–or balsa knife–and are cemented in as usual.

Allow plenty of time for the cement to harden, then separate the sides by sliding your razor blade between. To join the two sides, note that they are parallel from in front of the wing position to a point well behind the wing; cut the necessary cross pieces to an identical length.

Also note the alignment bulkhead former which is made from 1/16" sheet balsa, reinforced along the top and bottom with 1/8" square; these pieces of 1/8″ square later serve as two of your cross pieces. Assemble this alignment former to the sides, then add a top and a bottom cross piece at the station immediately behind the wing When these are dry, add the intervening cross pieces Rest the fuselage flat on the bench and check it (looking from the front) for alignment.

Bring the sides together at the rear and add the cross pieces that fall behind the wing position, then draw the nose together with a weak rubber band and add the top and bottom 1/8" x 1/4″ cross pieces at the very nose. Finally, insert the remaining cross pieces.

Note how the nose sections are then filled in with 1/16" sheet balsa, Row the landing gear "sandwich" (see detail) is constructed, and the 1/16" sheet balsa filled in at the rear rubber dowel (sides only). Be sure your landing gear slants slightly forward when the unit is dropped Into place, and add necessary 1/8″ sheet gussets on the bottom of the fuselage at that point and from the sandwich forward as seen on the side view. Details of the wing rubber hold-down dowels are shown (see special notes on the Sky Racer)

Tail Surfaces The stabilizer is assembled flat on the bench; first fasten down the two edges and the bottom spar. The trailing edge is standard 1/2" wide stock which is 3/32" thick. Cut 9 ribs from 1/16" sheet balsa and two from 1/8" sheet. Pin the ribs together for sanding, trimming and notching, then cement them in place one at a time Do not force any fits as warps are apt to result Finally add the top spars of 3/32" square

The twin fins are cut to size from 1/16" sheet; butt-joint two pieces of sheet together (pin on bench while drying) to get the necessary width. To prevent warping, these sheet rudders are coated with plasticized dope—in this case, five drops of castor oil to one ounce of clear dope; later use this mixture for applying covering tissue to the rudders only.

Wing. The wing is made flat on the bench in one piece, then cut into four pieces (at the dihedral breaks) to build in the polyhedral. Begin by cutting 23 ribs from 1/16" sheet balsa Pin these ribs together, trim and notch as required Pin the bottom spar of 1/8" square to the bench, also the 3/16" square leading edge (round it when the wing is done) and the standard 1/2" wide trailing edge stock. Make sure trailing edge material is very hard or warps will result. Do not force-fit the ribs. Cement them in position, however, for the time being, leave out the three ribs that fall at the various dihedral breaks.

Add the 1/16" sheet wing tips as per detail. When these joints are dry, sever the spar and edges at the three dihedral breaks and then slant the ends of these members to meet at the proper angles. This can be done by supporting the panels at the tips for a check. It is best to leave the entire center of the wing—that is, all the wing with the exception of the one outer panel on each side—flat on the bench while dihedral is incorporated into the outer panels

When those joints have dried, lift each side of the wing the required elevation above the bench (place blocks or handy objects underneath for support) and attain the proper dihedral angle at the very center of the wing Note that reinforcements are glued to the leading edge and the main or bottom spar wherever these breaks occur. It will be necessary to widen the notch on the ribs at those points

Finally, when the dihedral is finished, cement in the three missing ribs and follow up with the two top wing spars which are 3/32" square.

Motor. The propeller is cut from a medium hard block measuring 1-1/4 x l-3/4"xl2", or you may obtain finished propeller blanks from your dealer as manufactured by Jasco, Testor, and others. The blades should be carved slightly convex or curved on top and concave underneath (see detail). The tips are not rounded until the propeller is completely carved and rough sanded. It is advisable to drill the shaft hole before carving; also to make it slightly oversize so that the prop will free-wheel easily.

For construction of the shaft and the nose block, consult the detail drawing. Note that the gram of the wood in the nose plug runs fore and aft and that the 1/4" thick plug fits closely within the nose opening. When you balance the propeller, locate the free wheel catch on the side of the lightest blade, and if that does not bring the prop into balance add a straight pin inside the tip of the light blade as necessary. The finished prop is given two coats of sanding sealer with a sanding after each, then several coats of clear dope for a nice shine Power consists of ten strands, or five loops (in one piece) of T-56 3/16" wide rubber. The rubber should be about 200 inches long, which will give about 1 inch of slack.

Covering. If possible use either Silkspan or Skysail wet-or-dry paper which is tougher, longer lasting than ordinary tissue. Incidentally, wet covering is quicker, easier and far neater than dry covering. Try it! If you do, coat the trailing edge with dope and let dry so that the moisture won't warp the wood. It is always a good deal to coat all wood surfaces to which paper will be applied, with clear dope and allow to dry. This helps the paper stick on. Use one piece of paper each for the sides of the fuselage, top and bottom of the fuselage, top and bottom of the stab.

It is best to cover the top and bottom of the wing with four pieces of paper, one for each flat portion. Start at one end of the panel, then attach the other end, and continue on immediately to the trailing edge and finally the leading edge. Ignore the rib in between; Similarly, on the fuselage begin at the nose, attach the extreme rear, and then the outer edges. Ditto for the stab If you dry covered, water spray the material and when it has dried taut apply the clear dope. Use three coats of dope thinned half and half with thinner and, on the final coat, add three drops of castor oil to one ounce of dope to prevent further paper pull and warps. If warps occur, soften the adjacent tissue with thinner or steam and hold the wing twisted to its proper position until dry.

Flying. Hand glide the model, preferably over tall grass. Point the nose down slightly and launch with a smooth movement of the hand—don't throw it into a stall' The ship should glide straight and slightly fast; if the nose rises abruptly and the ship stalls, then it is tail heavy—unless you threw it too hard. If it dives enough to tumble over on its nose or to bounce extremely hard, then it is nose heavy. The glide should not be a swoop which ends in a perfect landing. That's nice to see but means the ship is tail heavy. To correct for tail heaviness, place thin sheet balsa (1/32" to 1/16") under the trailing edge. (If you leave this in later, be sure to cement in place.)

If the ship dived badly, place your thin wood under the leading edge of the wing

to give it more angle (incidence). Your ship should trim for glide if built as shown; if it proves stubborn, add a little weight (like solder) to nose as cure for tail heaviness, or in fuselage rear for nose heaviness. Now wind in about 50 turns on your motor and hand launch the model into the wind, if any. If it tends to stall, add down thrust (makes the prop pull downhill) by placing slivers of wood behind the top of the nose block. If it dives, you didn't trim the glide properly. As the model responds to these changes, add ten turns each night. Eventually it will get high enough for you to see the glide and to recheck it

To make the plane circle, bend the rudder tab slightly to the right Now the ship will glide in right-hand circles and, under power, will climb in great large circles in the same direction When your glide circle is satisfactory, you can tighten up the power circle by adding right thrust. This is done by placing slivers of wood behind the left side of the block so that the prop is pulling to the right.

The objective in trimming a rubber model is to make it glide properly first, then offset the thrust line down and to the right to make it fly the way you want under power.

You will observe that, as you tighten the turn, the model will threaten to dive slightly or to glide faster. When this happens "slow" up the glide by adding incidence to the wing or, if you have shims under the trailing edge, or nose weight, remove same.

Notes on the Sky Racer. The principal difference is the mounting of the wing; there is no cabin or windshield. Instead, the wing rests flat on the fuselage top and is held on by tying a strip of rubber around wing and fuselage. A 7" Berkeley celluloid canopy is cemented to the wing and slides with the wing as a unit. Cut out the sides of the canopy to fit over the wing. The ship should trim for best glide when the rear point of the canopy touches front of dorsal fin.

Bill of Materials—Cloud Hound

8 pcs. 1/8" square hard balsa, longerons, stab leading edge, wing spar. 4 pcs. 3/32" square hard balsa, stab spars, wing top spars 1 pc. 1/16" x 3" soft sheet balsa, rudders, ribs, fill 1 pc 3/16" square, soft balsa, wing leading edge. 2 pcs. standard 1/2" wide trailing edge stock, hard balsa. 1 pc 1-5/8" square x 1" nose block, hard balsa. 1 5" length 1/8" dowel, wing hold-downs, rear rubber holder. 1 pc. 1/16" music wire, 24" long. 18 feet 3/16" wide T-56 rubber. 1 1-1/4" x 1-3/4″ x 12" prop block, fairly soft to medium balsa, or nearest blank or machine-cut prop. 1 sheet rubber model Silkspan or Skysail. 2 tubes cement (one is close squeak). 4 ounces clear dope. 2 ounces thinner. 1 small sanding sealer. 1 small bottle castor oil.1scrap celluloid for windows

Scraps of tin or sheet brass for various bearings, scrap of 1/4″ sheet balsa for back of nose block, several small washers for prop shaft, decals and Trim Film as necessary. 6 inches scrap 1/8" x 1/4" for nose cross pieces—or cut from scrap 1/8" sheet. 1 pair thin hard-wood or plywood wheels (as Jasco) for rubber models.

Bill of Materials—Sky Racer

8 pcs. 1/8″ square hard balsa, longerons, leading edge stabilizer. 1 pc. 1/8" x 1/4" hard balsa, main wing spar. 3 pcs. 3/32" square hard balsa, stabilizer spars, top wing spar. 2 PCS 1/16" x 2" soft sheet balsa, ribs, fill, fin, rudder. 1 pc. 3/16" square soft balsa, wing leading edge.

2 pcs. 1/2" wide standard trailing edge stock, hard, 1 pc. 1-5/8" square by 1" hard balsa, nose block. 1 1-1/4″ x 1-3/4" x 12" prop block, or nearest blank, or machine cut propeller.

Other items per the Cloud Hound.