FREE-FLIGHT WITH WINNING WAYS: CELESTIAN

Remarkable go-go-go job has racked up many wins, set a National record, averages 4½ minutes on 20 second run in dead air; for .049 and .051 power.

BY ALBERT KRAMER

■ My first "Celestian," built in January 1962, was an attempt to get away from contest airplanes that climb like overpowered rocket ships and last only a few weekends. It was also built to take advantage of the new unlimited rules.

Celestian is sort of a powered glider. In its original form, it had an 80 inch wingspan with the same fuselage and stabilizer as the present and final version. With a wingspan so extensive, it had the best glide of any powered contest airplane but lacked speed in its climb.

After a few days of flying, the original was cut down to the present 60 inch wingspan with a total of 420 square inches of area. A bit more area was added to the rudder to help straighten out its climb. Within a month, Celestian was entered in two events at a contest at Taft, California and placed 4th in one event, 5th in the other. Two more Celestians were built with the only changes being methods of construction. These were completed, trimmed out, and flown every weekend for two months in preparation for a AAA contest which was to be held at Sepulveda Basin. Three events were entered at the AAA contest; Celestian placed in two of them, taking a first place in class ½A and a third place in ROW.

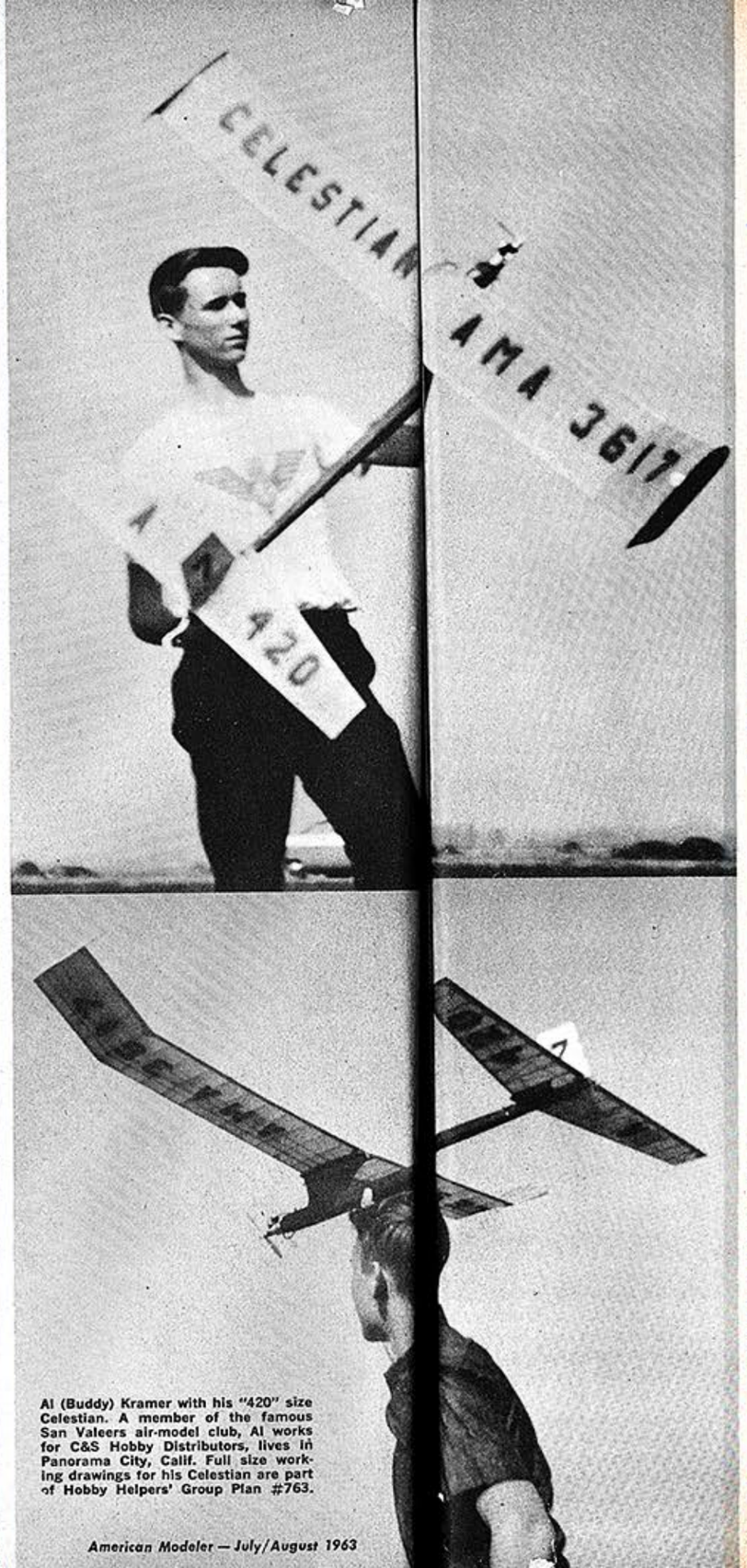
As an experiment, an .09 engine was tried. It proved to be too heavy and, consequently, the climb was not as fast and the plane did not glide well.

Since then, the plane has been entered at contests at Sepulveda Basin, Bakersfield, Taft, Tulare, Lake Elsinore, and Phoenix. Having entered over 29 events, Celestian has 17 trophies, three ribbons, merchandise awards, high time awards. Also, Celestian set a national record in class ½A of 24 minutes, 20 seconds.

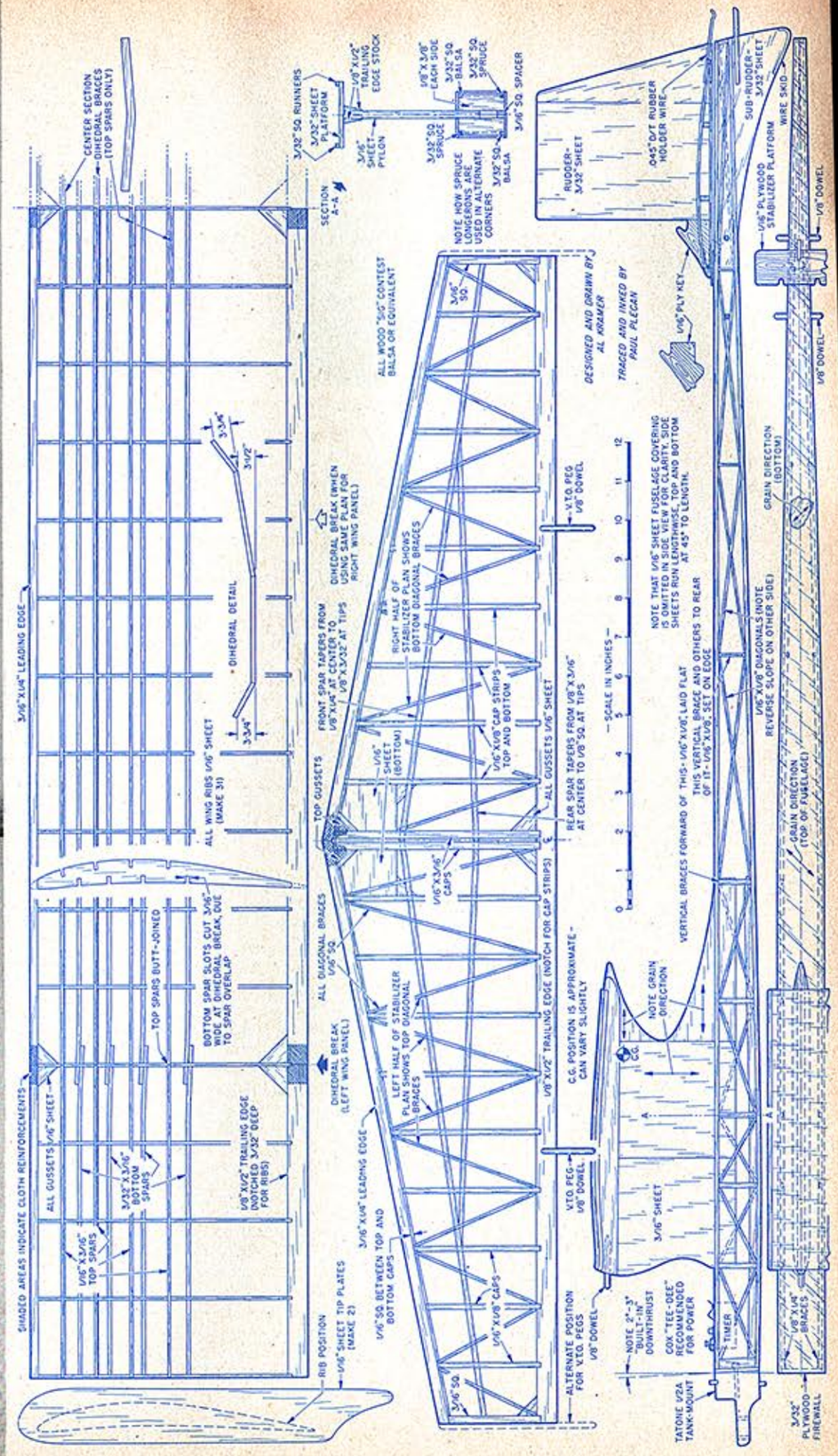
Even though Celestian has the best features of today's popular contest planes, it is still completely original. It is very easy to build, having a square wing with an undercambered airfoil. Power is supplied by a Cox T.D. .049 or .051 swinging a Top Flite 5¼-4 nylon prop. Cox racing fuel is used in all flights.

Construction of the Celestian is very simple. The plane should turn out very light for its size if careful attention is given to the wood used. Although it is very light and has high aspect ratios, it can safely stand a D-T under power. When finished, the plane should weigh between 8½ and 10 ounces, complete with engine, timer, and 9 coats of dope on all parts.

Begin construction with the fuselage. Cut out two identical sides (note that top edge is straight) and then glue 3/32" square runners to the four inside edges of the fuselage for the entire length. Two of these runners are spruce, placed in opposite corners of the fuselage. Place the sides on your building board, top to top. The 1/16" x ⅛" vertical braces are cemented in, flat side down, where the pylon fits and the 1/16 side down from where the pylon ends to the rear of the fuselage. Pieces of ⅛" x ⅜" are glued over the vertical braces on the sides between the pylon. Then the 1/16" by ⅛" diagonal braces are glued in opposite directions on each side. Two pieces of ⅛" x ¼" are glued to the inside front of the fuselage, bringing the width to 1-3/16 inches, just wide enough to fit a Hornet nut- (*Continued on page* 96)



Al (Buddy) Kramer with his "420" size Celestian. A member of the famous San Valeers air-model club, Al works for C&S Hobby Distributors, lives in Panorama City, Calif. Full size working drawings for his Celestian are part of Hobby Helpers' Group Plan #763.



Celestian

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plate inside to which the Tatone ½A mount attaches.

The pylon is made from 3/16" medium-hard balsa. When completed, it is cemented in place between the sides. Place a piece of 3/16" square balsa on the bottom of the fuselage to fill the gap that the pylon leaves. To help strengthen the nose, run this piece from the rear of the pylon to the firewall. The sub-rudder is now cut from a 3/32" sheet and laminated between the rear of the fuselage. The top and bottom are strengthened with 3/32" square pieces between the side vertical braces. Cut 1/16" sheet balsa the width of the fuselage, with the grain running at a 45° angle. Plank the top and bottom with the grain running in opposite directions. Glue on the 3/32" plywood motor mount and reinforce with cloth. Then glue on the 1/16" plywood stab platform. Wing platform is made of 3/32" sheet with a 3/32" square runner on each side. A VTO peg in the rear and a ⅛" dowel for the wing hold down peg complete the fuselage.

Begin the wing by laying down the leading edge and then the notched trailing edge for the full length. Cut out all of the ribs and notch them. Glue them in place and then glue in all of the top spars. When dry, cut the spars and wing edges to the proper angle and then glue the wing to the correct dihedral angles and let dry thoroughly. When dry, remove from plans and glue in the bottom spars. At the dihedral breaks, widen the slots for the spars and overlap the spars, thus forming a dihedral brace. This can also be done on the top spars, if so desired. The 1/16" gussets are at each dihedral break as shown and in the center of the wing on the top. Sand the leading edge to shape and make the ribs flush with the trailing edge; then, reinforce all dihedral breaks with cloth material. Cut out the tip plates, but do not cement in place until after the wing has been covered.

The stabilizer is started by notching the trailing edge and pre-glueing the leading edge in the center; then glue in place on the board. Next the 1/16" x ⅛" bottom caps are glued in place, followed by the 1/16" square diagonal braces, with a piece of 3/16" sq. on each tip. Place the 1/16" sheet planking between the center and closet caps on the bottom to keep shims from going through the tissue. A 1/16" inch square runner is cemented along the leading edge on top of the caps and diagonals. Front spars are tapered from ⅛" by ¼" to ⅛" by 3/32" and glued in place. The rear spars are tapered from ⅛" by 3/16" to ⅛" square. Those are then glued in place. The top caps are glued in with the 1/16" square diagonals running in opposite directions from those on the bottom. Gussets are glued in the center rear at the top and bottom, and at the front center on the top. More are glued at the tips at bottom rear.

Make the rudder from two pieces of a 3/32" sheet glued together as shown, then sand and glue in place. The 1/16" plywood front key and D-T band holder is cut, sanded, and glued in. When dry, re-glue at all edges. Sand the stabilizer to airfoil shape and cover it. After covering is applied, glue on two keys at the rear.

Celestian flies best with a right-right pattern. Almost all built have had to have a slight warp in the right-hand wing panel, with the trailing edge down, and a small bit of right turn in the rudder. This will cause the plane to climb in a right-hand circle with a left hand roll. When the engine quits, the plane should go directly into a right-hand glide with a fairly wide circle. Some models will vary slightly, so it is best to start off with no warps and all surfaces true. Try a three to four second engine run for the first few flights, and trim as necessary. It should never take more than about four or five flights to trim to contest performance. Make sure that your D-T fuse is lit.