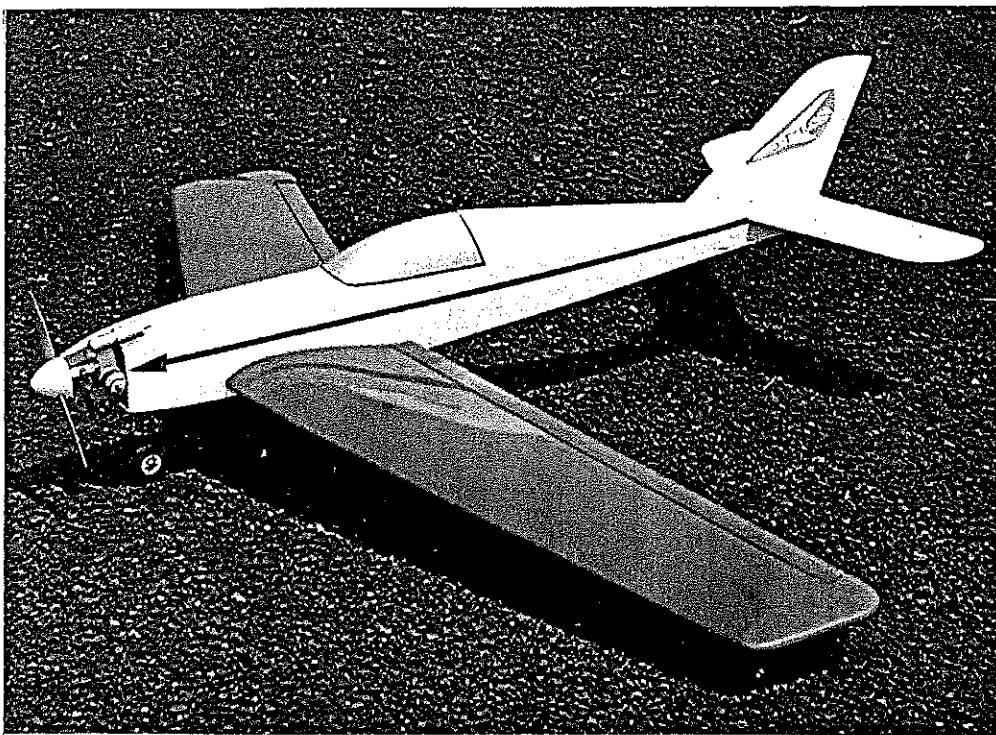


Straight Arrow

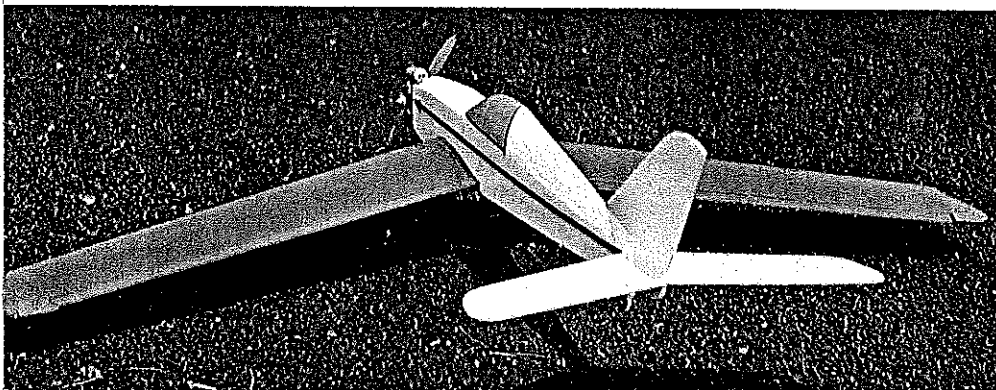
Tired of look-alike 1/2A aerobatic jobs? Grouchy over the high cost of everything? With neutral stability, this exotic 24-ounce, 3-channel bird performs advanced maneuvers with unusual precision—and gets 15 to 20 minutes on a 2-ounce tank. But it's not for the beginning pilot. Hank Stumpf



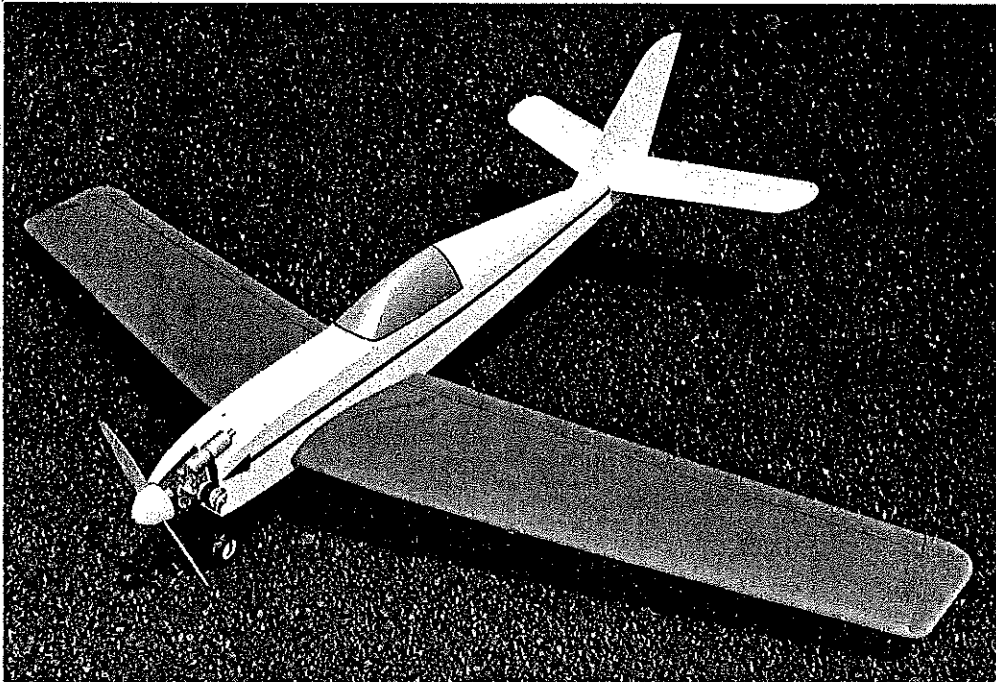
Hank shows off the racy little ship which brings a new look and a nice turn of aerobatics to the 1/2A pattern-like scene.



Combining a swept-back wing and tail, and adding a throttle-equipped engine and tripod gear, Straight Arrow is, in Hank's eyes, a second generation of 1/2A stunters. We'll buy that!



By now you have noticed the anhedral in the wing, required to cancel out the dihedral effect of the swept-back wing. A bonus of the configuration is that tip-mounted wheel struts are shorter.



Hiscott throttle was used on the Cox TD because it includes a muffler—and noise abatement is very important at the site where Hank flies. An Ace throttle sleeve, or Tarno carb also OK.

WHEN the Ace Pacer was introduced, it revolutionized 1/2A flying by providing for the first time pattern ship appearance and performance. Since then it has been imitated by numerous designs similar in appearance and capability.

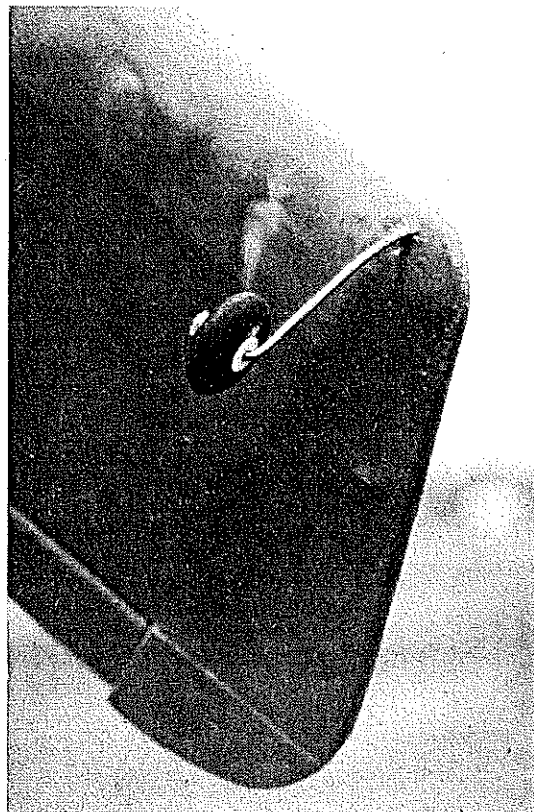
The Straight Arrow is not more of the same. It is the next generation in 1/2A pattern flying, combining swept back wing and tail, tripod landing gear and throttle-equipped engine.

As you can see, in addition to sweep back, the wing has anhedral. This is required to cancel out the aerodynamic dihedral effect of the swept back wing and, incidentally, has the desirable result of making the tip-mounted wheel struts shorter. The result is a plane with neutral stability and flight characteristics similar to the Pacer.

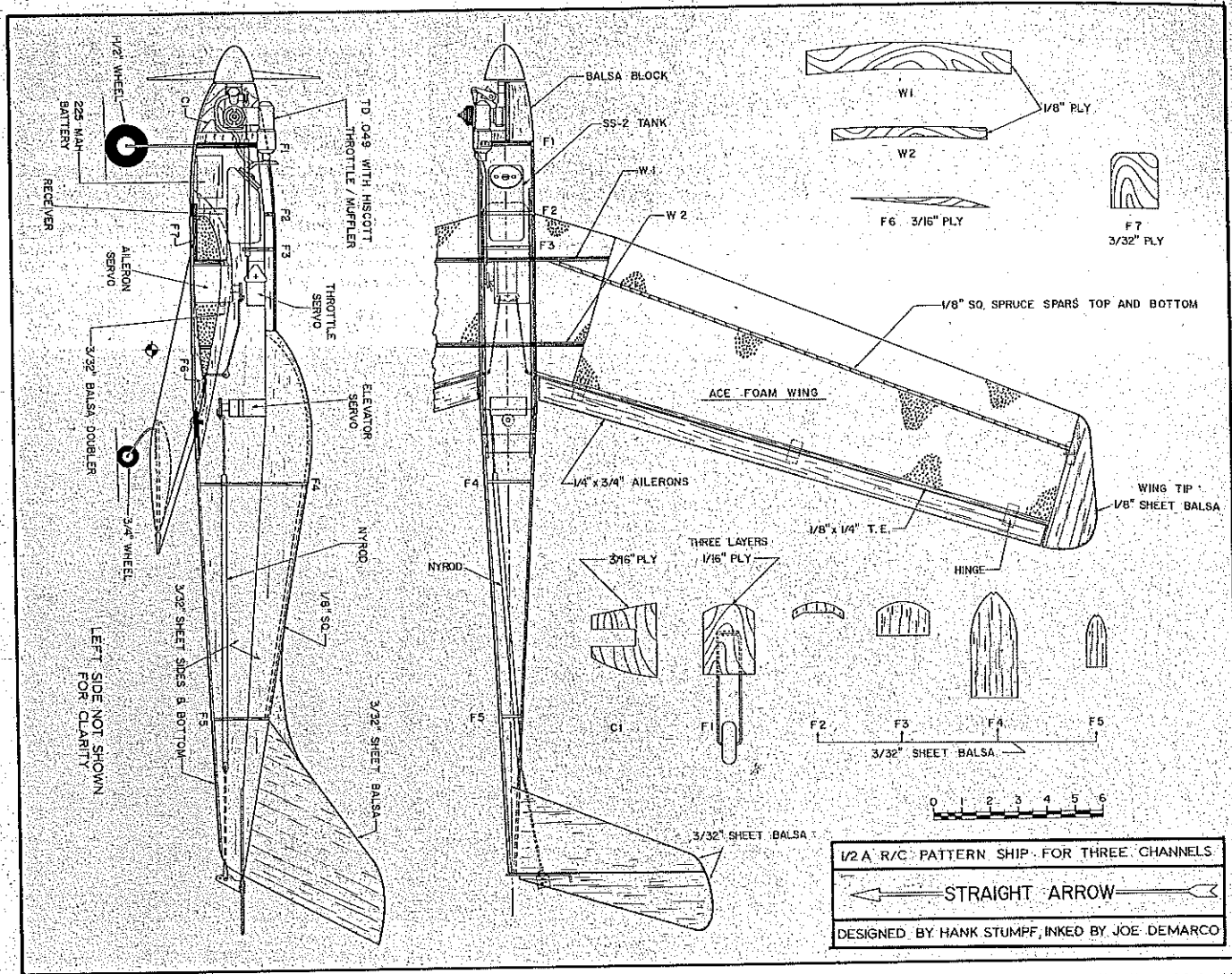
The availability of micro miniature radio flight packs, such as the Litco Systems and Ace RC equipment, makes the three-channel setup possible with a total airplane weight of only 24 ounces. If you desire, rudder and nose wheel steering could be added for one more ounce to make your Straight Arrow full-house.

Similarly, there is a group of throttles now available for Cox TD engines. In order of cost they are Hiscott, \$16.95 (includes muffler), Tarno, \$12.95, and the Ace Throttle Sleeve, \$2.50. A Hiscott was used because it includes a muffler and noise abatement is very important in our field. This unit does reduce engine power somewhat, so if you want a throttle with almost zero power loss use the Ace Sleeve. I have also tried this unit and found a noticeable improvement in airplane speed and climb rate.

Wing: Foam cores are Ace part no. 13L207 wing kit, \$4.75. These cores are joined at the center by two 1/8 ply carry-through spars which establish both wing sweep and anhedral angle. The constant-chord foam section must be sawed into six pieces at the correct angles to form the center section which is the heart of the wing.



The so-called wheeled tip skid actually is a part of an ultra-wide-stance tricycle gear—excellent because of the combination of sweep and anhedral. Should handle crosswinds well.



Actually, this is not very difficult. Start by locating the center of the constant chord-foam section and cut out the triangle formed by connecting the leading edge center point and two points on the trailing edge, 1 3/8 inches either side of center. Discard the triangular piece and lightly tack glue the two constant-section panels together at the center. You should now have a swept-back center section ready to be cut for the two 1/4 ply carry-through spars. This is done by measuring back from the leading edge at the center 1 3/4 and 3 3/8 inches and cutting perpendicular to the center at these locations.

Separate the tack-glued center and you now

have six foam pieces which you now glue to the two carry-through spars as shown on the plans. Be sure to leave a 1 3/8 in. space between the left and right foam pieces at the center. This space will be occupied by the aileron servo and receiver later.

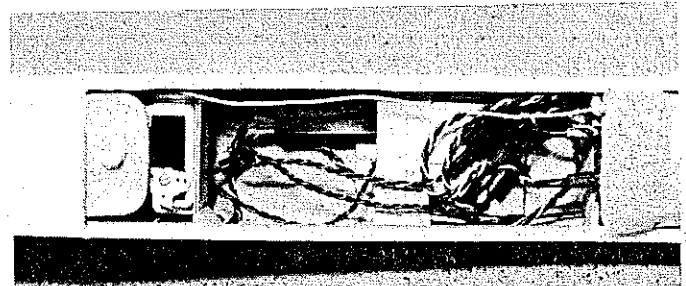
Once the center section is dry, block it up from the work table 1 3/8 inches and glue on the outer wing foam panels with the tips resting on the table. This will give you the correct anhedral angle. When dry, cut grooves in the foam for the top and bottom 1/8 sq. spruce spars. I used an Ungar soldering iron with a 1/8-wide chisel tip and a straight edge. Perfect recesses are easily melted

in the foam using this method. Finally, add the 1/4 x 1/4 balsa trailing edge and the 1/8 sheet wing tips.

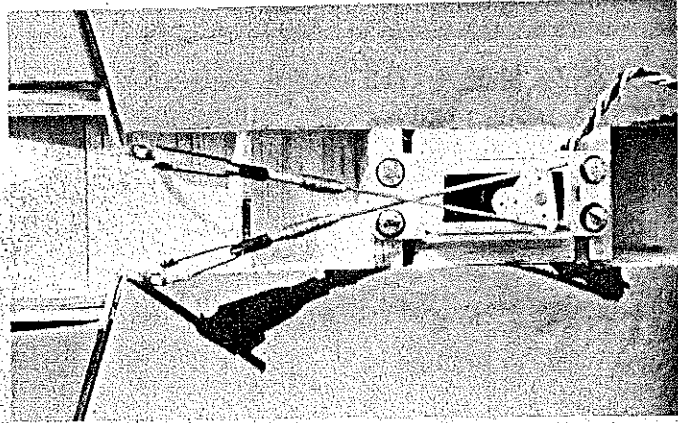
Now that the basic wing is complete, cut the ailerons to the correct length and trial fit the hinges.

Fuselage: Cut the fuselage sides from 3/32 medium hard balsa and add the 3/32 balsa doublers around the wing opening. The 1/16 dia. piano wire nose landing gear strut is sandwiched between three layers of 1/16 ply; the center layer being recessed to accept the wire. The engine mount is a 3/16 ply crutch extending forward

Continued on page 124



If, like us, you have a sensation that they went "that away," compare this picture to the plan. Hank uses an 8-channel Heathkit transmitter to operate a Litco Micro Flight pack with a 225-mAh battery and three micro servos. Wrap receiver in plastic bag since it goes underneath the gas tank.



As shown here the aileron pushrods cross over—but the plans show a straight run. A small servo direction problem—maybe different servo? Go by plans which show different style arm and servo turned about. Anyway it is nothing to be concerned over—do it however you need.

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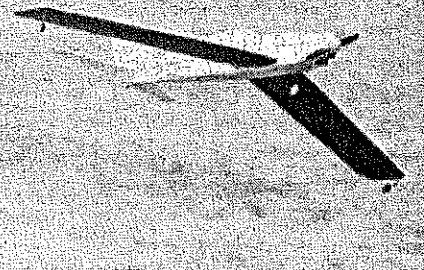
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before ironing on the hinge, to permit free movement. This type of hinge is quite durable and easily repaired.

Finish and Trim: Sand all wood parts with #200 sandpaper and apply one coat of Coverite Balsarite. This product really helps the covering stick on. Lightly sand the foam wing to remove any mould flash or irregularities.

The wing and ailerons were covered with red Solarfilm, but any low temperature iron-on covering will do. The fuselage and tail were covered with white Econokote. This was the first time I used this product, and it worked very well.

The arrow on the fuselage sides is 3/16 wide blue DJ Multistripe, while the canopy outline is 1/16 black Multistripe. The canopy area was painted silver. An alternate finish I think would look good is U.S. Air Force camouflage.

Radio Equipment: A Heathkit 8 channel transmitter provides the guidance for a Litco Micro Flight Pack. Three micro servos control the throttle, ailerons and elevator. The receiver and 225-mAh battery are housed in the forward fuselage under the fuel tank. For that reason, it is advisable to wrap them in plastic bags for protection. The aileron servo is mounted in the wing center, while the elevator and throttle servos are installed in the fuselage.

Flying: The first flight was on August 21, 1978 by local test pilot Glenn Spacht, with Bob Aberle, Ron Farkas and your author taking the controls on various occasions. There was plenty of time for everyone, since flight time on a 2-ounce tank is 15 to 20 minutes. Except for two turns of up on the elevator clevis, no changes or adjustments were required.

On later flights, the model has also been flown by MA columnists George Myers and by Nick Zirolli. The Straight Arrow has neutral stability and all maneuvers are easily accomplished: rolls, inverted flight, inside and outside loops, Cuban eights, split-S, hammer-head stalls, etc. When landing, keep the approach speed fairly high, and go easy on the flair to avoid ballooning. Stalls are preceded by wing droop, and are easily avoided.

Although this model is definitely not intended for beginners, it is not a tricky plane to fly. If you can fly a Pacer or similar 1/2A pattern ship, the Straight Arrow will not offer any problems. Flight characteristics were well summed up by test pilot Glenn Spacht as "Similar to my Pacer, but better, very precise."

FF SCALE/WARNER

continued from page 55

sheet of tissue, a tube of glue, or some dope thinner. Neither are they a very good source for friendly advice and help when you need it. Without your local shop, you lose in more ways than one. John O'Leary, writing in the *Minneapolis Modeller*, relates the following true anecdote: "About half a dozen FF and CL types are assembled at the local hobby shop on the Friday before Christmas, sharing holiday good tidings

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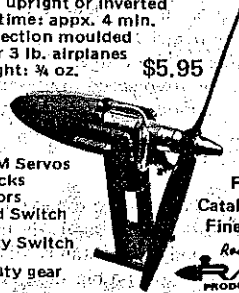
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during the latter part of 1979—and one of the two had to be at the World Champs!—he has had little opportunity for a crack at the record. It is hard to do that and fly in competition, too. The occasion was the combined San Valeres and California Eagles Annual at Taft on March 8. Thirteen straight maxes for a total score of 57 minutes will probably stay on the books for longer than many of us will care.

Bob Meuser, 4200 Gregory St., Oakland, CA 94619.

RC ARROW/STUMPF

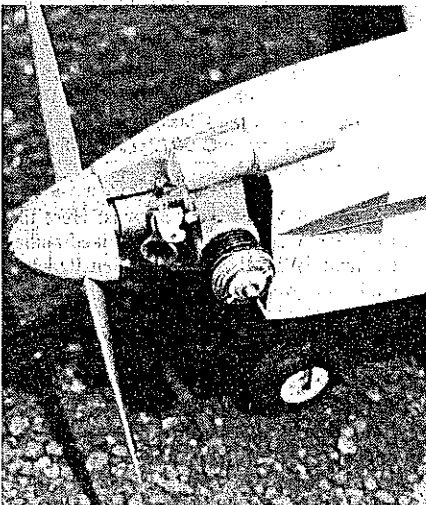
continued from page 63

from the firewall to the rear of the spinner. A balsa block fails the engine crutch from the spinner to the firewall. The firewall, crutch and block are assembled with epoxy.

Install the firewall assembly and four additional formers between the fuselage sides, add the 1/4 sq. stringer to the turtledeck and cover the fuselage top with 3/32 sheet, except for the canopy which is carved from a balsa block and hollowed out to approximately 1/8 thickness. Now add the Nyrod housings for the elevator and throttle pushrods and then cover the bottom of the fuselage with 3/32 sheet.

Tail Surfaces: The tail surfaces are made from

3/32 medium-hard balsa. The elevator halves are joined with 1/16 piano wire. The elevator uses a continuous hinge made from two 1/4-in. wide strips of the iron-on covering material. Be sure to bevel the trailing edge of the stabilizer,



The side mounted Cox TD and Hiscott throttle—which includes muffler. Neighbors were noise conscious. Ace sleeve throttle has almost no power loss and improves speed and climb rate.