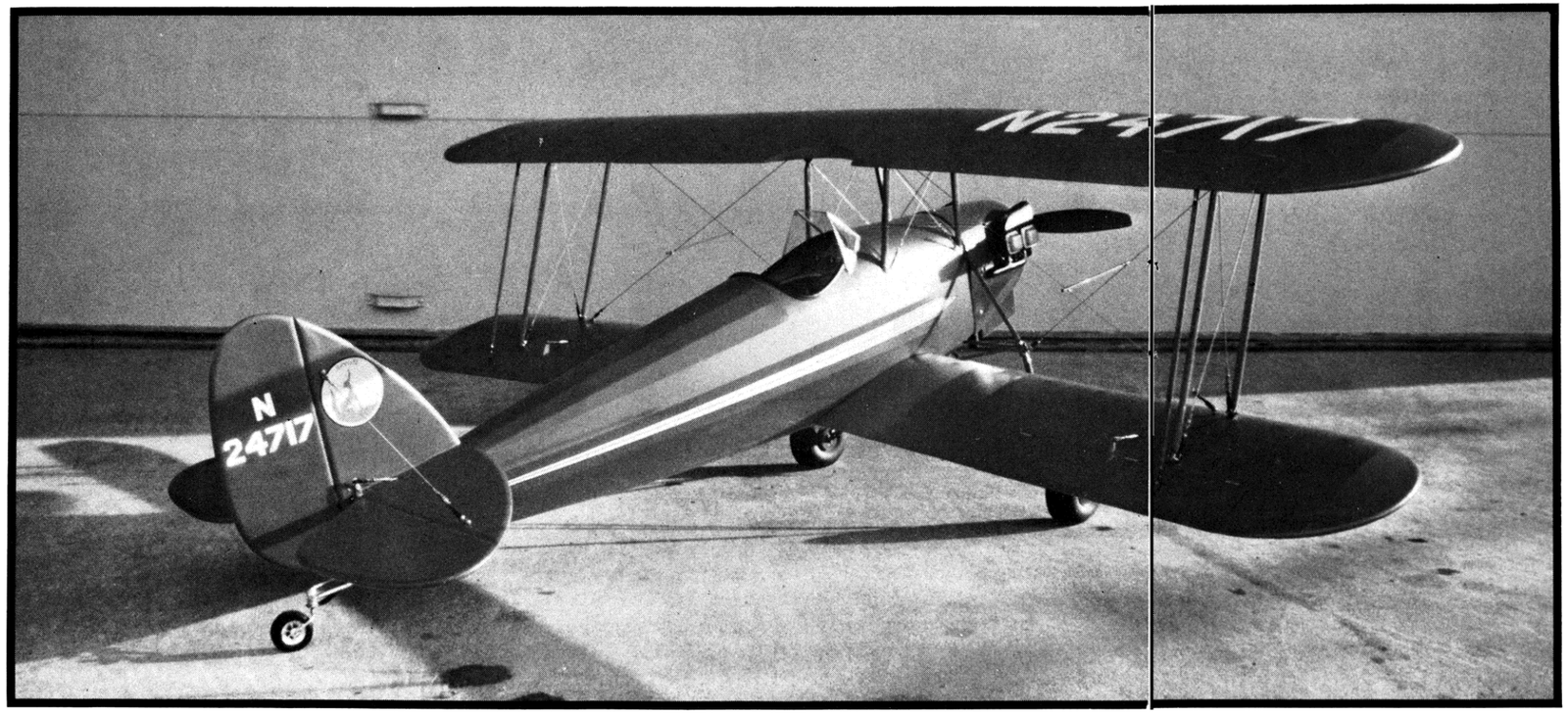


A single seat bipe reminiscent of the Rose Parakeet, the 20-foot span SKYOTE has become a popular full-size homebuilt aircraft most often fitted with a 90 hp Continental engine.

"THE SKYOTE": A Quadra Powered Kitten With Klass

By Jack Capen

(Photos by the author)

If you like them big, simple and rugged the Skyote bipe is a sure fire winner . . .

The full size Skyote is a small 20 foot wingspan biplane with a total wing area of 123 square feet. It has four ailerons with a total area of 14.20 square feet. The fuselage is 16 feet long overall and a height of 80 inches from the top wing to ground in flying position.

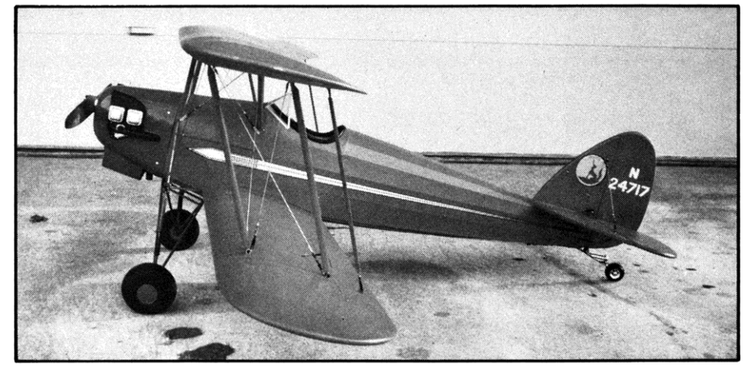
It is powered by a 90 hp Continental engine which gives the Skyote a 100 mph cruise speed.

The Skyote is a home builder's design with an all metal airframe and fabric covering. It is not intended for persons with little or no experience in metal work.

The design was done by O. E. Bartoe, Jr. and an information package can be obtained by writing to Skyote Aeromarine Ltd., Box 808, Clark, Colorado 80428. (Be sure to include $5 for mailing and handling).

This biplane is quite different in appearance from most aerobatic bipes with the combined looks of a Tigermoth and The Rose Parakeet. The landing gear is quite high to give ground handling clearance because of the seven degree sweep back of both wings.

I had some second thoughts on the design of this one because I'm not very fond of building two wings but the Skyote has so much appeal, I just had to draw it up and build it. On the subject of wings, that's where I started the construction of this



The relatively small rudder requires the pilot to get the tail up quickly on the takeoff for best directional control.

model. The materials used are much the same as I used on the 1/4 scale Super Cub (December 1982 *R.C. Scale Modeler*), with bass wood, luan plywood, and some maple stock where indicated on the plan as the major building materials.

I started both wings together by cutting the required amount of ribs. I used luan plywood door skin material for the ribs, but balsa can be used as well with a little less work as I cut lightening holes in them which takes more time. Next, comes the tip bows and upper wing cut-out. I used a method here that I read about in a newsletter from a Canadian club. The tip bows and cut-out are laminated from 1/16 x 3/8 bass strips. Use a piece of waxed paper over the plan and pin six strips of the 1/16 x 3/8 bass to the tip outlines being sure they are snug together and use your favorite C.A. glue letting it wick into all the pieces. In a matter of a few minutes you can pull it up and your tip or cut-out is made. It is a fast and simple way to laminate wing tips and tail outlines and makes for faster building chores that otherwise are a real pain.

Builder Jack Capen with his quarter scale SKYOTE bipe.

Start the wings by laying the 1/4 sq bass in place using the strips under them as indicated at bottom of upper wing layout, then set ribs in place and add leading and trailing edges. Before ribs 9, 10 and 11 of lower wing are installed and ribs 11 of top wing are in place, the lower spar braces of both wings have to be made and glued in place; then those ribs can be added to wings and upper spars and spar braces are put in place. Next the tip bows and tip blocks can be shaped and installed. When that is done, the maple blocks between upper and lower spars, front and rear where indicated on plans, can be placed.

The aileron leading edge, aileron ribs, and trailing edge gussets can be placed at this point.

The false ribs can be installed at this time by turning them at an angle to the wing and sliding butt of rib between upper and lower spar with triangular slot at front of rib and leading edge. Next the 1/32 ply webbing is glued in place as indicated on top wing plan (to both wings). After the cap stripping is added to both wings the 1/32 ply sheeting can be glued in place to the top and bottom center section of top wing and bottom section of lower wing. Before the top sheeting is glued to the bottom wing the servos should be installed, one on each side of rib no. 11. We use 3/64 aircraft galvanized cable for all control surfaces in a pull-pull system with

Based on a capricious little homebuilt real biplane by O. E. Bartoe, the giant SKYOTE model offers docile, smooth and stable flying, yet is capable of top akro.

C. & B. pulleys inboard of ribs 4 (lower wing only). These pulleys are mounted to front spar mid-way between top and bottom spar. Regardless of control system used, it will have to be in before lower wing is covered.

Next make all the strut and rigging clips and install at the indicated spots on upper and lower wings, bearing in mind to install top wing clips to bottom of wing and bottom wing clips to top of wing.

The ailerons are now hinged and horned as per plans, being sure to install the horns as indicated and where indicated.

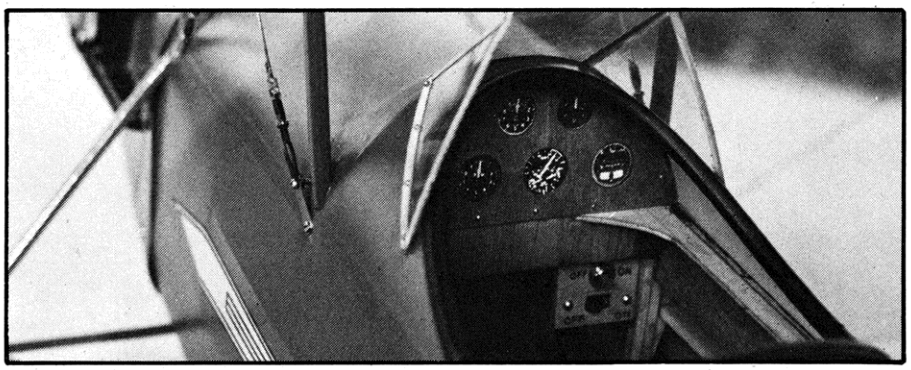
For ease of keeping everything lined up properly, the trailing edge should be kept in one piece until the hinges are ready to install. We have found it is also a good idea to shape the trailing edge stock before it is glued in place.

After the wings are sanded and shaped to suit the plans the tail assembly can be built. I started by making outline shapes of 3/8 ply as previously stated in wing construction and made all the tail outlines, then the rest of the tail assembly can be built in the regular manner. When the assemblies are compared for the horns, hinges, and rigsanded to outlines indicated and prepared for theh horns, hinges, and rigging. We use the Du-Bro large hinges for big plane use and with the exception of the Proctor horn in the rudder, all other fittings were made by us. (When you are building the vertical fin make sure the post extends to the bottom of the fuselage as shown on plan).

I started the fuselage construction by cutting all the formers, firewall, and forward fuselage sides as called for in plan. After the basic fuselage frame is completed, all the formers can be installed except B2 which is placed after the landing gear is built and bolted in place. It would be a good time to build cabanes and bolt them in place at this time too. Also, now is the time to select the engine you will use along with the fuel tank. We used a 16 oz. round tank for most planes and it is good for about a 15 minute flight full bore with the Quadra.

After all formers and stringers are glued in place, mount lower wing in place with 2¼ x 20 nylon bolts and turn bottom up on work table so B-2B and B-3B can be glued in place on wing. Add stringers and sheet this area with 1/32 ply sheeting, making sure not to glue wing to fuselage. I used some waxed paper placed between former B-2 and front spar and between rear spar and B-3 while I bolted wing in place. The 1/2 sq. x 9/16 long maple blocks which are glued to B-2 and B-2B for the front wing hold down strap are tapped 6-32 and the hold down strap should now be installed with the 6-32 flat head bolt in block at B-2B glued permanently in place. The front one is to be removable for wing disassembly. Cabane rigging clips should be installed at proper locations before side and top sheeting is in place. The rigging cable should also be in

Construction is straightforward and ruggedly simple, an ideal design for newcomers to scratchbuilding.



place at this time in the front view, then the top sheeting can be glued on. Don't forget to add the lower wing fairings and sand or carve to shape.

The initial construction should be completed now and a trial fitting of finished components can take place, making sure the wings are lined up with each other and parallel with hinge line of horizontal tail assembly. While the tail assembly is still clamped and pinned in position you can install your radio gear; fit control cables or push roods and servo rails. I mounted the servos and battery under pilot's seat which is removable for access to gear. At any rate make sure everything is working smoothly and properly before disassembly and covering begins. Covering materials; again your selection. I chose fabric because of the scale look that is achieved (Super Coverite on this one). I used Randolph Butyrate dope to achieve a somewhat dull finish, also three coats of clear brushed on and three of color sprayed on. Other finishes will work as well and some won't require as much work, yours to choose.

Flying the Skyote for the first time was quite a hair-raising experience because of something I forgot to do. I took it to the club field one evening last September and assembled it under the watchful eyes of several club members; checked everything twice (I thought), fueled it up and started the Quadra. After taxiing around a while to get the feel of it, I headed down the strip and with a short run it was up and flying. Climbing out it was smooth but when I tried to level off it couldn't be trimmed. It wanted to go up or down and I had my hands full keeping that bipe in the air. I finally got it down wind and made the turn to final approach and, with some wild ups and downs, landed in one piece. After taxiing back to the ready line I shut it down and really looked it over. I did not tighten the ¼ x 20 lower wing bolts and the trailing edge was moving up and down in flight causing the trim problem.

After tightening those bolts I started the engine, taxied out and with a short run was in the air again. The Skyote flew very smoothly this time with very few trim changes. Almost off the board flying!

In closing I want to add a few words on take-offs with this plane. When you push the throttle home feed in a tad of down elevator to get the tail up quickly as it steers down the runway better or tracks straighter because it is very quick in ground handling. □