



**Tom Collins'**

Orbit systems fits in with ease. The "Eagle" is responsive to command, forgiving of error.

# "American Eagle"

***For tight-sized flying fields, a biplane's the way to go.  
Try this scale classic from the 1929 era. A good ship!***

◆ "Ring . . . ring . . . ring!" I awoke to the ringing of the telephone. As I rolled over to answer the phone, I glanced at the clock. It was 7:00 a.m. "Hello?"

"Mr. Collins, this is Mr. Porterfield's secretary. The weather report looks favorable, so the flight has been scheduled for 10 o'clock."

"Great! I'll be there by nine." I hung up the phone and seated on the edge of the bed I stared at the wall with a big grin on my face. I had been waiting three months for this day, and now it had arrived. I hopped out of bed, showered, shaved, and went to have my traditional pre-test flight cup of coffee.

A welcome face came out of the office as I pulled up to the parking area of the flying field. It was Ed Porterfield. As we approached each other I said, "Ed, I can't wait to see this new crea-



The idle hours. Aircraft always look a little sad and remote as they await the hour to fly.



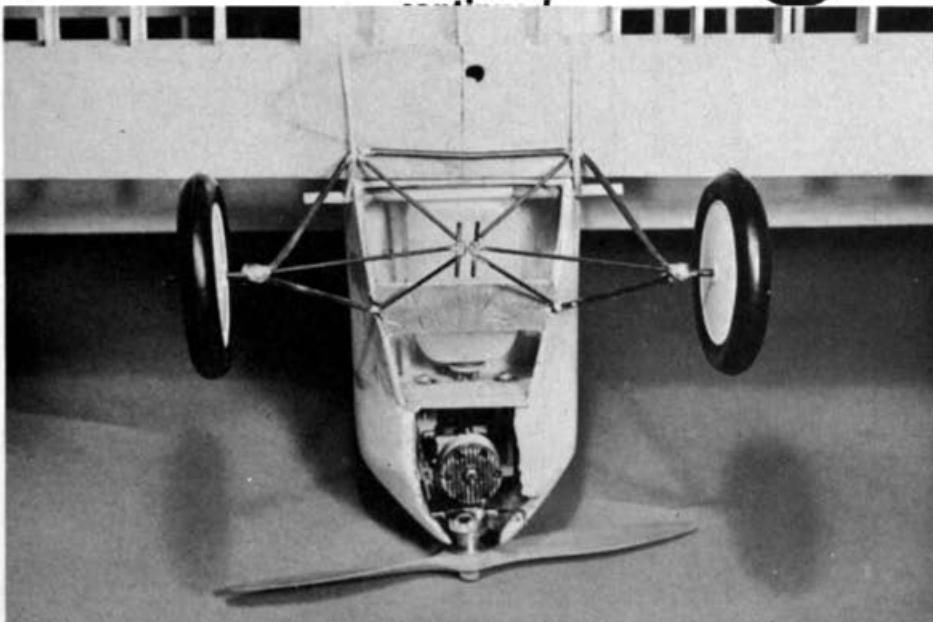
Note inter-connected ailerons, tandem cockpits. Orbit system within, flies well. Clean lines.

Tail surfaces are adequate, wings well braced. For a scale ship, it is easy to build and fly.



It takes you back in time. Stable and mild in air, proper contrast to streamlined types.

# American Eagle



The inverted .40 engine, tank and gear design. Rubber lashed around gear spreaders provides a shock absorbing quality. The ship is practical.

tion of yours! From what you've been telling me she's quite a bird!"

"Tom, I ought to make you suffer longer, but I'm so proud of it myself, that I can't wait to see the expression on your face when you see it." As we walked to the hanger, I glanced at the beautiful blue sky. There were very few clouds. The wind was blowing at about 10 knots and the temperature was in the mid-seventies—a perfect day.

Ed opened the hanger door and there she stood—The "American Eagle" A 129. "Wow!" We wheeled her outside to get a better look. My eyes immediately fell on her 30 foot yellow wings glistening in the sun light. I then shifted my attention to the rich leather upholstery which radiated the feeling that this airplane had received that extra little touch of inner love from its designer.

"Ed, this time you've really outdone yourself. This makes the Jenny look sick. If this bird flies half as well as she looks, you've got yourself a winner!"

As Ed went to get his mechanic, I started examining the "Eagle" very closely. From the aluminum cowling to the heavy tailskid, it was evident that this airplane was meant to fly. It just didn't look natural on the ground. All of the controls worked very freely and the instrumentation was scarce, but well laid out. Coupled ailerons, large rudder and stabilizer, lots of wing. "It has to fly, and fly well."

As the mechanic started filling the gas tank, Ed said, "Tom, take'er and fly the pants off her. She's built to take it and to love every minute of it." Anxiously I climbed into the cockpit and prepared for the flight of my life. After two flips of the propeller, I sheepishly noticed that in my excitement I had not turned on the magneto switch. Flip — pop — popopopopop — aughhhhh. I throttle back and listened to the motor purr for a few seconds then eased the throttle forward and started taxiing down the grass runway. The shock-absorbing landing gear was doing its share while I kept her headed toward the end of the runway. Reaching the end, I turned her into the wind, caught the high sign from Ed and, with sweaty palms and a lump in my throat, I gave her a last look over. I pushed the throttle in and started rolling down the runway. The wind was cool to my face as we gained speed. Finally the precious lift of the wings took over and we were airborne. What a feeling! Just think! . . . I was test flying Ed Porterfield's "American Eagle" . . . his latest and best creation. After gaining some altitude, I made a few left and right hand turns, a couple of 180's and finally a stall. "Beautiful!" This was a real dream ship. Flying over the hanger, I could see the joy written across Ed's face. I began thinking of what maneuvers to do next when I remembered what Ed had said about putting her through her paces. "O.K.—here I go." I climbed to about 4,000 feet, nosed over to gain some airspeed, dived for about

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# "American Eagle"

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500 feet, pulled the stick back and up . . . up . . . up . . . and over—a beautiful loop! The knot in my stomach had swelled up again as I began thinking of rolls, spins, etc. "Why not a roll next? Here I go—pull the stick to the left, hit the rudder to keep her nose up . . . over . . . over what's happening? I'm falling! Is the plane falling? Did I not have my safety belt fastened?" With these last thoughts I hit the ground. I opened my eyes and to my surprise I saw that I was not at the flying field! I was in my bedroom! The alarm was ringing and I had fallen out of bed. I lay there for a minute gaining my senses and coming to the realization that this had all been a dream. Excitedly, I got up to have breakfast and to put the finishing touches on my own "American Eagle A 129."

The American Eagle Aircraft Corporation was founded in December, 1925, in Kansas City, Missouri. The president and general manager was the well-known Ed E. Porterfield, later known for the series of light sport aircraft bearing his name, which were produced during the middle 1930's. The "American Eagle" was one of the first of the new production breed of light commercial biplanes built in the decade immediately following World War I. Introduced in 1926, a number of models were produced in varying numbers before declining sales brought production to a halt in late 1931. The majority of these ships were biplanes, although a four-place cabin monoplane and a light two-place parasol monoplane, the American Eaglet, were also produced. Three distinct series of biplanes formed the backbone of the American Eagle production lineup; these bore a number of

designations according to the engine fitted or, in the case of the A 129, the year in which it was produced. Lindberg's historic flight in 1927 caused a boom in the aircraft industry, with the American Eagle Corporation rising to third place in commercial aircraft production.

This particular model is the A 129 with the Curtiss OX-5 engine. The "Eagle" has a nice clean look which immediately sets it apart from the cumbersome Jennys and clipped-wing Standards, which were then in use.

When you take the "Eagle" to the flying field, that's when she'll come into her own. When you start her up and start to taxi down the strip, you will realize that this biplane is different. For an airplane with conventional gear and a tailskid, she taxis like a Taurus. Ground handling is excellent. We fly from a grass field and when I saw the "Eagle" taxi around in a 10 foot figure eight, I knew there was something special about her. The center of gravity places just the right amount of weight on the tailskid to keep the tail down, but not enough to make the tail drag deeply in the grass. With the use of a tailskid, the rudder is the only effective means of turning, and the "Eagle" makes the best use of it with no tendency to groundloop.

When ready for your first flight, taxi to the end of the runway and point her into the wind. Advance the throttle slowly and apply a slight amount of right rudder. This is to discourage a left turn tendency in short coupled aircraft. Relax the rudder as you pick up speed. Knowing that the plane will veer to the left, it is easier to start off with a little right rudder and ease up as you gain speed, rather than making a correction after the plane has started a left turn. Never, under any circumstances, pull the stick back. This airplane will naturally take to the air with a little up trim. This brings up the question of whether to use "up trim" on take-offs, or to trim her for level flight and pull the stick back gently as you reach flying speed. For the beginner, I feel that the "up-trim" method is best. This allows the airplane to climb slowly and positively. The flier can concentrate on keeping the wings level and doesn't have to worry about stalling the aircraft, provided too much trim has not been applied. Once some altitude has been gained, the trim can be set to neutral. With one less thing on your mind, you may save your airplane. If you follow this method, make sure the "Eagle" balances at exactly the point shown on the plan since the tendency is for this type of plane to be tail heavy.

Once airborne, the left wing will drop because of the effects of torque. Keep it slight. Use this to your advantage by making a gentle left-hand turn . . . why fight it. Once airspeed picks up, the air pressures against the flying surfaces will overcome the effects of torque and straight flying will begin.

For a biplane, the "Eagle" has far above average performance in rough air. Because of all the wing area (990 sq. in.), I expected it to be thrown around quite a bit in rough air, but it proved to be unusually stable. I even thought about postponing her maiden flight because of the gusts of air, but just couldn't wait to see how she would fly. Once in the air, my fears vanished. She rode the gusts like a champ. I made several slow fly-bys for pictures, and

each time I retarded the throttle she just rocked in the wind . . . a sight to behold. The stability is there with no sacrifice to nimbleness. She will perform acrobatics with the best of them. Besides the rough air capabilities, at slow speeds she is extremely stable. She has a slow sink rate, making it very easy to land. The airfoil was designed by Bryce Peterson (Fokker Dr I Triplane, FM Sept. '67) to allow the center of lift to move back at high speeds to make it groovy, and to move forward when slowing down to make it easy to land. And it works like a charm.

With the ground handling, rough air, and slow speed capabilities of this aircraft, I believe this to be a real beginners biplane. Of course you will want to get an experienced hand to take her up on the first flight to get her trimmed correctly, but after that you should have no problems.

## CONSTRUCTION

**Wings:** Both wings are identical except for 3° dihedral in the bottom wing. And to simplify things further, all wing ribs are the same. Just think—only 64 ribs to cut out. The easy way is to stack the balsa together and either spot glue or bolt the balsa blanks together with two 1/16" plywood ribs, cut to shape, on the outside. Then with a coping saw, or a jig saw, cut all of the ribs at one time. After sanding they are easily broken apart and construction can begin.

In building the wings I used a "Thermogrip" glue gun to hot melt glue all ribs to the 1/4" square balsa wing spars and to the 1/4" x 1/2" balsa leading edge. In just 60 seconds the glue had set and I then sheeted half of the wing with 1/16" x 3" balsa, presto. In just two steps I had half of a wing almost ready to go. The top wing can be joined on any flat surface, while the bottom wing tips must be propped up to give the correct dihedral. I used 1/16" plywood for the center-section on the bottom of the top wing and for both sides of the bottom wing. Epoxy the heck out of this area. I've seen two wings collapse this year at our field and I'm sure you don't want this to happen to you. Use the two 1/16" plywood ribs in the middle of the bottom wing to give it more strength, since the landing gear will rest against this area.

The bottom wing should be joined before the bottom is sheeted to allow the aileron linkage to be installed and adjusted without any trouble. A small hole can be cut in the bottom of the wing to allow easy access to the screw holding the servo wheel. The ailerons should be cut out after assembly of the wings. I used Rand scale-type hinges and covered the wings with "Coverite." This made the job of covering a joy. With two wings to do, I think it is worth the extra cost of

"Coverite". Both wings can be done in one evening. The wingtips were a breeze with "Coverite". If you use silk or something similar you may wish to use balsa block wing tips.

**Tail Surfaces:** The horizontal stabilizer is built from  $\frac{3}{8}$ " x  $\frac{1}{4}$ " strips with the rounded corners being three layers of  $\frac{1}{8}$ " stock cut to shape. The internal bracing is  $\frac{3}{8}$ " x  $\frac{1}{8}$ " strips cut to size. A stiff piece of piano wire was used to add strength to the center-section of the elevator. Be sure to determine the position of the elevator control horn so that you do not later try to drill into the piano wire. The vertical stabilizer is constructed by cutting out two  $\frac{1}{8}$ " balsa rudders with the grain of the wood running perpendicular to each other. By gluing these two rudders together you have the ease of constructing a flat surface and you eliminate the tendency of such a surface to warp. Keep this area light every ounce counts.

**Fuselage:** The sides and formers are  $\frac{1}{8}$ " balsa. Use  $\frac{1}{4}$ " plywood for the firewall and  $\frac{1}{32}$ " plywood doubler on former #2 as indicated on the plans. Use  $\frac{1}{16}$ " plywood doubler on the sides of the fuselage. Be sure to wet the balsa when joining the two halves at the rear to allow the wood to bend easily. The distance between the wing braces is exactly three inches to allow an easy job of planking the top of the fuselage. After joining the sides, build the small box structure for the front  $\frac{3}{32}$ " dia. music wire landing gear wire to rest in. Wrap the wire with Saran Wrap, place in the structure and fill with epoxy. When this hardens you will be able to move the landing gear to allow easy removal of the bottom wing.

A layer of fiberglass should be applied to the bottom of the lower wing to provide extra strength here. Another layer should be attached to the rear landing gear wire to lie flush with the layer on the wing. This will provide a large surface area to absorb the shock on landing. I built 3° right thrust and 3° down thrust into the  $\frac{1}{4}$ " plywood firewall and this seemed to be just about right. The engine cowling is simply a balsa block roughed out, mounted and then sanded to shape. I used a Super Tigre .46, which flew the "Eagle" like a dream. A larger motor would help the weight distribution, as I had to add a little weight, but the power is not necessary. This extra weight was easily added above the engine, glued to the cowling. The tailskid was built of  $\frac{1}{4}$ " plywood with  $\frac{1}{4}$ " dia. dowels for the pivot and the stops. A stiff spring was used to absorb the shock on landings.

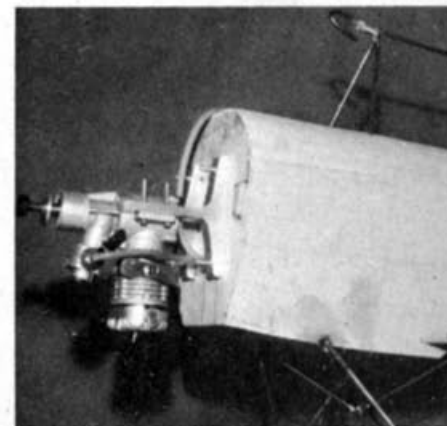
**Miscellaneous:** The outer wing struts are made from  $\frac{1}{4}$ " x  $\frac{1}{2}$ " hard balsa. The  $\frac{3}{32}$ " plywood strut connectors were coated with Hobbypoxy to give them added strength. I fastened the wings to the struts with lengths of solder. This will hold them rigidly, yet will allow them to separate easily in a rough situation. This will prevent the strut fasteners or the struts from breaking.



Gear solders up like so. Saran Wrap protects structure. Gear is sturdy, takes the bruises.

The top wing rests on a single wire. This makes wing alignment a snap. You don't have to worry about getting two braces exactly the same. The top wire connects the other two to form a "V". After silver soldering these together, mount the wings and align them, using the wing struts cut to the correct length. When you have this perfect, place a layer of fiberglass (3" x 7") between the top wing and the wire brace. (Wrap the wing with Saran Wrap to facilitate removal). Give this a coat of resin and you have perfect alignment. This will allow you to use camlocs if you desire and will provide more surface area for the top wing to rest on. If you do not use camlocs, add a couple of dowels to keep the wing from turning sideways or simply use a couple of screws to prevent a twisting motion.

I have gotten a great deal of enjoyment from this airplane and I'm sure you will to. She is a real crowd pleaser. The construction is quite straightforward and should not present any unusual problems. Although, if you have any questions or comments, please write to me: Tom Collins, 5508 Noyes Avenue S.E., Charleston, West Virginia 25304. I will be anxious to hear of the other "Eagles" taking to the skies. ●



.40 engine, ample power, scale flight realism.