



BUILD THIS FLYING "JEEP"

How to build and fly a model of Uncle Sam's new liaison plane

IN SHARP contrast with terrific advancements made by military aviation in the 400 mph pursuit ships and 2000 hp engines, we have developments made in the lightplane that is coming into its own in this modern war. Operational experience under actual warfare conditions have shown that there is a definite place and need for the "lightplane," as we have grown to call our sportplanes of under 100 horsepower. These lightplanes do practically any job called for: they act as observation ships and liaison work, personnel transport, cargo transport, air spotters, artillery directors, photographers, etc.

So desperate was the Army's need for

by **SYDNEY STRUHL**

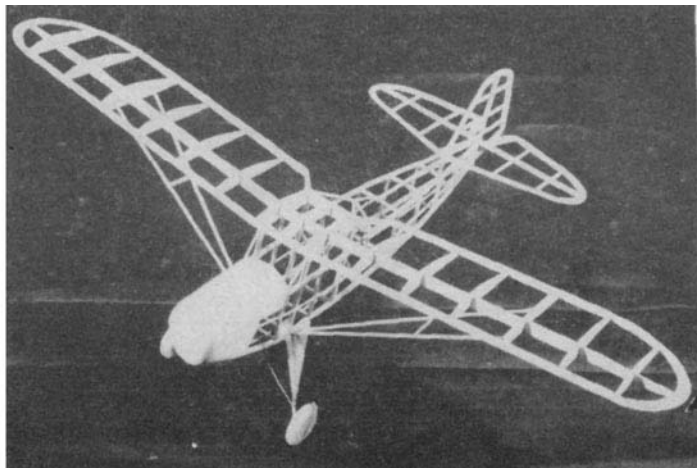
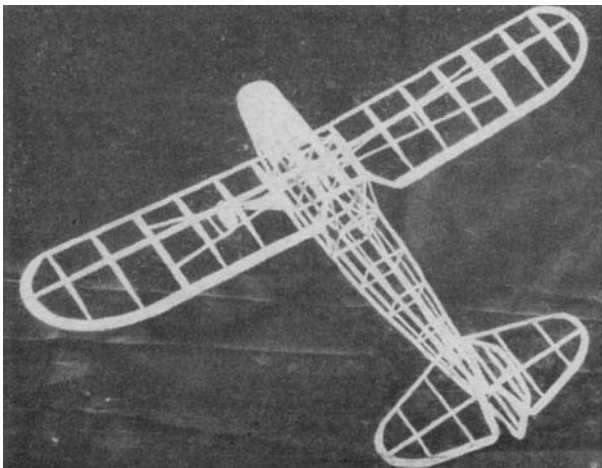
these lightplanes that they bought commercial versions of Aeronca, Taylorcraft, Piper and other manufacturers as they came off the assembly lines, painted the U. S. insignia on the wings and the ships were off to war. But typical of American industry, lightplane producers got busy over their drawing boards, made modifications on their planes that would give us every bit of advantage possible, and thus emerged the military versions of our peacetime sportplanes. We present one of these ships as our flying scale feature this month, the Taylorcraft

Liaison L-2B.

The Taylorcraft L-2B is the military version of the tandem liaison trainer. Arranged as a two seat machine, it differs from the civil type in that it has a completely redesigned fuselage with large transparent panels installed under and behind the wing for excellent visibility. Also a two-way radio is provided. It is powered by a four-cylinder horizontally-opposed Continental A-65 engine of 65 hp. Top speed, 104 mph; landing speed, 35 mph; climb 600 ft. per min.; cruising range, 300 miles on 14 gallons of gas.

The model has the same fine characteristics
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Top The finished model is not only realistic but a fine flier with its large propeller *Below* The completed framework is simple, light and strong.



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(Continued from page 17) tics of the real ship; construction is easy, and flight performance is matched only by attractiveness. The field plane is "sand and spinach" while the trainer version is painted all silver. This is how to construct the model.

FUSELAGE: Before starting, the fuselage plans should be joined; incidentally, if you do not want to mar your magazine, make tracings of plans on semi-transparent paper.

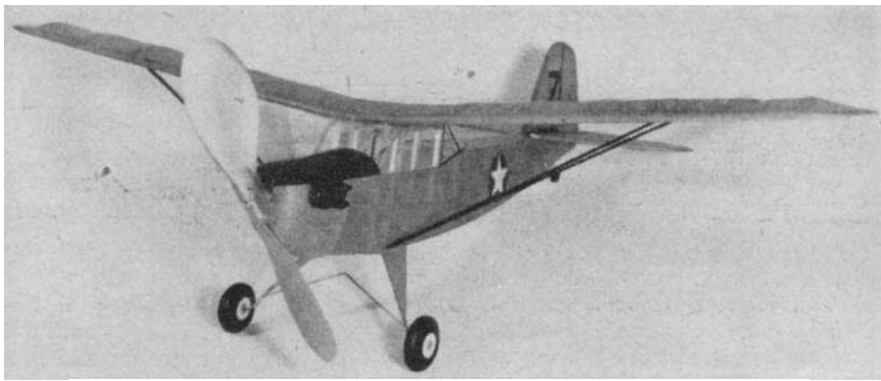
First make the fuselage underframe of 1/8" sq. balsa longerons and cross-pieces, indicated by light shading. Note that the cross-pieces behind the wing position are 1/16" x 1/8" balsa. Make two side frames, one atop the other for identity; cement will probably cause them to stick together but they can be separated by razor-blade. When dry invert the side frames over a complete top view plan and join with cross-pieces at the cabin. Next pull the backs together and add remaining crosspieces in the rear. Crack the longerons just in front of the cabin to pull the sides together as shown. Check continually for correct alignment.

Now cut the fuselage formers to shape. Bulkhead A is 1/8" sheet while the remainder are cut from 1/16" sheet balsa. Cut the notches shown and cement to position. All stringers are 1/16" sq. balsa, except the stringer on top the fuselage that runs into the rudder. Note that there are two 1/16" sq. stringers running along the fuselage bottom. Sand the ends of the stringers so that they fair smoothly into the fuselage contours.

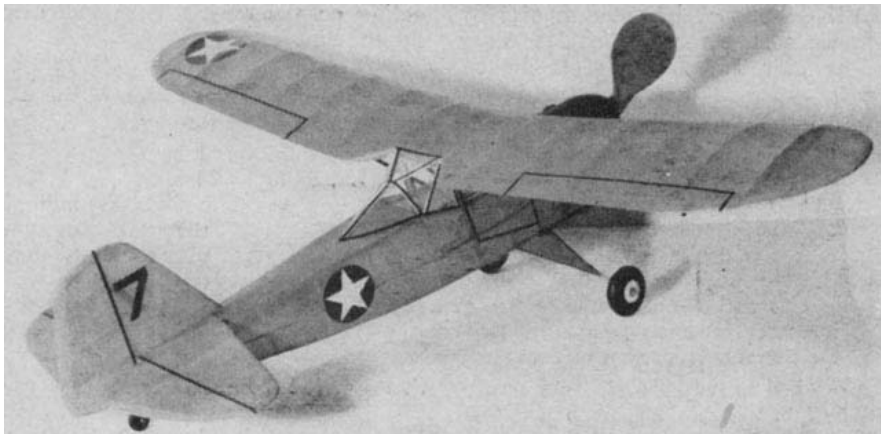
Cover the nose with soft 1/32" sheet balsa. Care must be exercised here. Use the widest sheet available; cement it to the entire adjacent frame using pins and rubber bands to hold it in place until cement has set. Extreme front of the nose is heavy sheet balsa, as shown. Roughly cut to shape, cut out a hole for the nose plug, then cement it to the fuselage front. When dry, cut the block to a smooth shape, then sand the entire nose to shape.

Bend the two landing gear struts to shape and size shown, from .040 music wire; attach to fuselage by neatly binding with thread and then applying several coats of cement. Join bottoms of the struts by winding with thread and cement. The 1/16" sheet fill-in can be cut and fitted but should not be attached until the fuselage is covered; the center struts likewise.

WING: Make full size plans of the right and left wing halves so parts can be assembled directly over them. Cut all necessary wing ribs from 1/16" sheet as shown in the plans. The wing should be assembled in one piece and then cracked at the center section for necessary dihedral. Pin all ribs together and sand to uniformity, then cut the notches with accuracy. Pin the 1/8" x 3/8" trailing edge and the 1/16" x 5/16" center spar in place on the plans. Pin the 1/8" x 1/4" leading edge into position also but note that it must be blocked up about 1/16" to meet the rib contour. The leading and trailing edges should be cut and sanded to shape prior to pinning to the plans. Insert ribs in their proper locations and cement firmly. Note that the center section trailing edge is blunt edged 1/8" sheet. Cut the wing tips from 1/8"



Dummy engine cylinders and carefully made wheels improve appearance



With line decorations, insignia and transparent cabin windows it looks like the real thing

sheet and sand to the proper cross-section. When dry remove from the plans and crack to 1-3/8" dihedral under each wing tip. Note that the portion of the wing over the fuselage is flat. Check for warps.

A pair of wing struts is next made; the struts are shown in the broken lines on the wing plan. They are made from 1/16" x 1/8" members sanded to a streamline cross-section. Struts are not installed in place until final assembly.

TAIL SURFACES: Tail surfaces are very simple to construct, and are built directly over the plans. As shown, the stabilizer is fashioned in one piece for strength.

Leading edge and center spar of the rudder and stabilizer are 1/8" sq. while tips and trailing edges are cut from 3/32" sheet balsa. Ribs are 1/16" x 1/8". Build a flat frame by pinning these members in their proper positions over the plans and cementing firmly. When dry remove and trim leading and trailing edges with a razor and sandpaper to the required cross-section. Rudder and stabilizer are not cemented in place until after covering.

PROPELLER: To obtain fine flights from any model the propeller must be efficient. Select a hard block of proper dimensions and cut the blank to shape shown. Drill the tiny hole for the prop shaft, then carve a right-handed propeller, by cutting away the back face of the blades until there is about 1/16" undercamber in each. Make each surface smooth and uniform with sandpaper. Blade thickness is then easily determined as the front is shaved away. Thin the blades as much as possible, still retaining desired strength. Round the tips like the prop shown in the photos. Carefully sand and balance the prop as the

final operation. Several coats of light dope, if sanded lightly between each, will produce a very smooth surface. A freewheeling gadget to improve glide should be attached to the front and a bearing to the rear. Prop shaft is bent from .040 music wire.

The nose plug is trimmed to shape from hard 1/4" sheet with a small cube to fit into the front of the model.

COVERING AND ASSEMBLY: Before the frames are covered they must be lightly but thoroughly sanded to remove any flaws or roughness that might mar the covering job. Colored tissue is used, banana oil or light dope is the adhesive. Use in-dividual sections of tissue for each flat section of each side of the fuselage, wing, tips, tail surfaces, etc. Work carefully to assure a neat job. Lightly spray covered parts with water to tighten the tissue. The flying surfaces must be supported level while drying so they will not warp.

Assemble the covered parts in this manner: Fit the wing on top of the fuselage and cement it firmly. If the structures have been made with accuracy, incidence will be correct. Cut the windshield pattern from celluloid, as shown, and cement in place. Build the observation station behind the wing and cover the entire cabin with thin celluloid. Landing gear fill-ins, made previously, are cemented to the wires. Cover the whole landing gear with colored tissue. Color the wing struts black and then cement in place. Cement the stabilizer in place, making sure it is parallel to the thrust line. Now add the rudder. The entire model is now given a coat of clear dope.

Now for more minor details. The four cylinder engine offers plenty of possibili-

ties for detail. Control surface outlines, insignia, etc. are all made from colored tissue. Tail wheel and similar parts are made from scrap material. Make the wheels from laminated- balsa and paint the tires on with flat black dope. Anti-glare cowling is dull black dope. More details may be found in the photos.

FLYING: Six to eight strands of 1/8" flat brown contest rubber should be used to power your Taylorcraft, depending on the

weight of your individual model.

Give the propeller a few turns and hand-launch the model in deep grass, if possible. A small lead weight in the cowling will counteract any stalling tendencies. Should your model be nose heavy, add a small weight to the tail. Warping the tail surfaces is not advisable as they may change from flight to flight. Once balance is obtained, increase the turns gradually, feeling out the

characteristics of your own ship.

The original model balanced very neatly on its first test flight; the climb was fast and the glide a real "floater" due to the general set-up of the plane.

On the whole, the model is very simple to construct and fly. And the Taylorcraft is a dandy flying scale for your collection— and just to get that extra duration, don't forget to use a good winder and rubber lubricant.