Curtiss-Wright Air Sedan

By WALT MOONEY. . .This month's Peanut is a design from the 30s reminiscent of many aircraft from the Golden Age. With a long landing gear and long nose, it should be a good flyer for you.

• Reminiscent of the more widely known Curtiss Robin, the Air Sedan also makes an interesting design for a rubber-powered model. The general configuration was very popular in the 1930s Travelaire, Monocoach, and Stinson, all built airplanes of a similar shape. The Air Sedan has two characteristics that lend itself well to free flight rubber. For some reason its designers gave it a very long landing gear, and it has a relatively long nose. Covered with white tissue and decorated with black trim and numbers, it makes an attractive and nice flying model in Peanut scale.

All major structure, with the exception of the landing gear wire and the small diameter struts, is balsa. The jury struts, (small, vertical struts between the main wing struts and the wing), and the struts to the horizontal tail as well as the landing gear aft and inner struts are round bamboo.

The fuselage is built using the time-honored method of building two fuselage side frames (shown hatched on the plan for

Long landing gear and a fairly long nose make the Curtiss-Wright a good subject for this month's Peanut Project.

Black and white color scheme is a match of an Air Sedan Walt saw one time. It looks good in the air.

clarity), directly over the plans from 1/16-inch-thick balsa sticks. When dry, these sides are removed from the plan and are separated (it's almost impossible to keep them from getting a little cement between them during assembly if they are built on top of each other at the same time, but that seems the most accurate way of getting two sides just alike) using a thin razor blade. Cement the sides together at the tail post, and add cross pieces top and bottom as shown in the top view.

When the fuselage box structure is dry, the forward end is shaped by adding balsa blocks to the sides, top, and bottom, which are then carved and sanded to a circular cross section at the front. A Williams Brothers' plastic thrust bearing is just right for the very front end. Note that the top nose block is hollowed out and that this must be done before it is finally cemented in place. The forward end of the cabin top is carved from a soft balsa block also.

The Air Sedan was supplied with a variety of engines, one of which was the Curtiss "Challenger," which had six cylinders. Obviously it was two rows of three cylinders, and this is simulated on the model shown using Williams Brothers' dummy cylinders. The smallest available are used, and they must be shortened to fit inside the ring cowl.

The ring cowl is made by first finding a usable dowel of a diameter to match the inside of the cowl. A broom handle will work but may have to be wrapped with several layers of masking tape to bring it up to size. Wrap the forming dowel with waxed paper. Using some A-grain, 1/32 sheet (it must bend easily), cut several strips the width of the cowl with the balsa grain running crossways to the strips. Three layers of strip are wrapped and cemented around the form. When thoroughly dry, they are sanded to the cowl contour. Note that most, if not all, of the top layer will be sanded away.

The wings are very conventional, not the "cutback" in the leading edge, and don't forget the trailing edge root gusset.

The tail surfaces are simply built directly over the plans using 1/16-inch-thick balsa.

The main wing struts and the main landing gear struts are made out of sheet balsa and carved and sanded to a streamlined cross section.

Sand all the structural assemblies to the correct contours and to remove any unwanted bumps, and then cover them with lightweight tissue. They are then shrunk by lightly fogging them with water and when dry given a light coat of clear dope. Now is the time, before the model is assembled, to add the color trim and the numbers.

It's best to do the wing numbers first, because they are cut out of contrasting tissue and doped in place on the wing. All the other trim is done later, because the dope acts as a solvent for felt pen and all the other trim is put on with felt pen.

Trace the wing numbers onto a piece of vellum or onion skin. Obtain a pad of disposable paper to cut on (eight or ten layers of newspaper or an old phone book will work well). Fold up a sheet of the contrasting tissue so that you have four layers large enough for all the tracing. Tape these four layers down on the pad of paper carefully so there are no wrinkles, and then tape the tracing down on top of the tissue layers. Now, using a very sharp blade, cut through the tracing and all four layers of tissue and hopefully a couple of layers of tissue along

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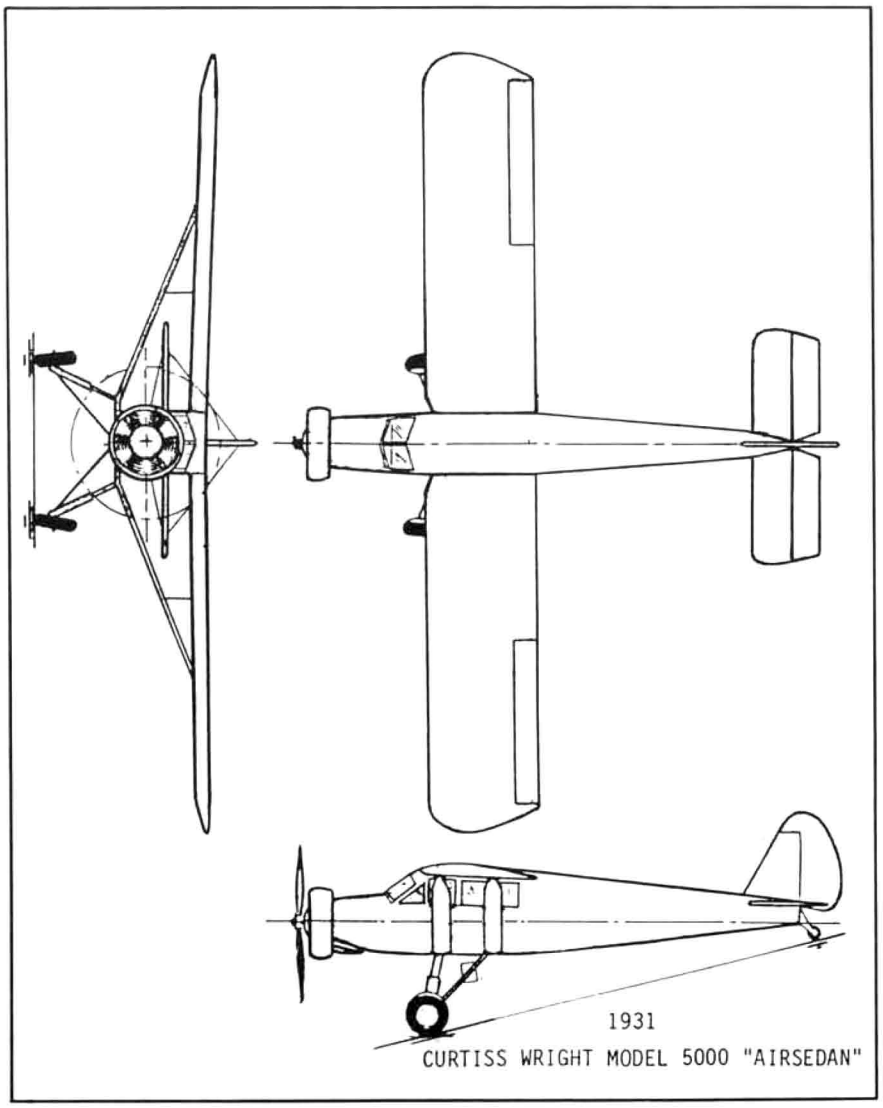

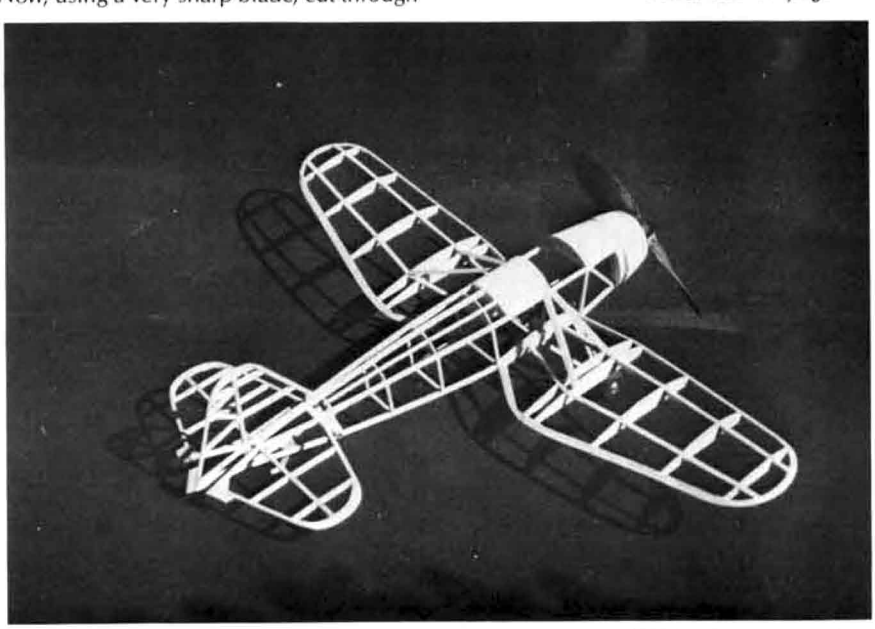

Next month: the Perfesser comes up with a Polish Peanut, the LWD SZPAK-4A. Stay tuned!

sight and resubmitted. Within a week, my sister in the payroll office called and told me that my material had been selected on the basis of merit for publication.

Jake

* * *

Dear Jake:

I made some modifications to my transmitter to try to get more range out of it. Apparently, I fooled with something I shouldn't have, because when I tested it in the basement it worked fine until I tried the throttle stick. When I advanced the throttle, my airplane disappeared into thin air. It was 2:00 p.m. on Thursday. At exactly 2:00 p.m. on Friday, my airplane reappeared on the bench where it had been before. The only thing I could figure was that I had accidentally created a time machine and sent my airplane one day into the future. That's why it showed up the next day. It was just arriving from my experiment the day before.

To test my theory, I tried it again. This time I pulled the throttle stick back. The airplane disappeared again, but it occurred to me that I couldn't go back in time myself to see where the airplane had showed up. So, I moved the throttle up again. The airplane reappeared, but the repair I had made on the wing last week was gone! The wing was whole and as good as new. It must have gone back to sometime before last week's crash.

This is all too weird for me. How can I get my transmitter back to normal?

Time Warped in Timberlake

Dear Time Warped:

Don't change it. Patent it! You've stumbled onto a crash damage preventer. Suppose your airplane is out of control and diving straight at the ground. When it's about six feet off the ground, you push the throttle stick forward and "poof" your airplane disappears. You run out and mark the impact spot with your hat. Now you have 24 hours to dig a deep pit and fill it with foam rubber or marshmallows. The next day your airplane reappears and plops harmlessly into the soft pit. Suppose you're going to hit a giant evergreen. Bleep your airplane into the future, and then dynamite the tree. Suppose you're going to hit a whole forest of trees. Send your airplane far enough into the future, and then sit back and wait for the forest to be leveled for a housing development. Suppose you don't like this answer. Suppose you don't like any of my answers this month. You take this issue of *Model Builder*, stick it in your airplane, advance the throttle, and zap my column into. . . . •

Simply Scale. . *Continued from page 34*

figuring out your pushrod locations and control horn sizes and locations for activating the surface. Horn shapes and lengths can be adjusted and played with until the right results are obtained. Experiment with differential control and internal linkages to determine the best setup. The time spent planning here can really pay off later in a smooth-operating, scale-like control system.

You can scratchbuild some simple things too. Hardwood or plywood with brass bushings can be used for some hinges. The brass bushings are important to prevent wear and binding. Eyelets are often useful bushings. Printed circuit board material, available from surplus stores or Radio Shack, can also be a very tough and useful material to make bellcranks, control horns, and pylons for externally hinged controls. It glues well and will wear better than wood. Sometimes if a thicker pylon must be made the PCB material can be faced with balsa and shaped as desired. Anchor all pylons and control horns solidly into the structure of the surface. Don't just install them on the surface. The flight loads imposed on them could loosen them.

No matter what kind of hinges you use or make, be sure of two things. First, that they are FREEEEE moving. The control surface should always be free enough that its own weight will allow it to fall unless, of course, it is balanced, but then that's a subject for another column.

Until next time, keep it simple and keep 'm flying! •

Air Sedan. . . . *Continued from page 53*

the edges of the traced numbers. It is probably best to make all the inside cuts first and then all the diagonal cuts, followed by all the vertical cuts. The final cuts will then

be the top and bottom horizontal cuts. Use a guide to cut the top one all the way across all the letters. Now make the bottom; cut one letter (or number as the case may be) at a time, and dope them in place in order.

Okay, so you actually have four of each number when you only need two. Well, you've got spares if some get loused up during the process of doping them in place, or if you are really good you have a spare set you can rearrange for some future model. The main reason for getting the numbers cut out just one at a time is to keep a sneeze or other errant wind from blowing them off your workbench into spots they are hard to pick up even if you can find them.

When doping the letters in place, use very thin dope. Place the letter in the right position, and put a single spot of dope on the letter to locate it. When this first spot is dry, it will hold the letter properly located while you carefully paint all the rest of the letters with a thin coat of dope.

Now use a straightedge as a guide and a thin black felt pen to make the control surface outlines. Depending on the trim color you select use that color of felt pen to draw on the trim, the tail numbers, and to color the struts and cowling.

The color scheme on the model in the photos is all white with black trim to match an Air Sedan that I once saw. It makes a very striking model in flight.

The model flies with a single loop of 3/32 rubber about twice the length of the motor base and does about 30 seconds if wound up close to the limit (about 1,000 winds).

The model in the photos required about 1/16-inch of up elevator, because it was nose-heavy with the plastic propeller shown on the plans. A lighter weight propeller is in order. One was made using a length of ballpoint pen tubing for the hub and blades using thin plastic cut from a cottage cheese carton cemented onto a short length of bamboo meat skewer for a blade shaft. This is not only lighter, it also allows blade pitch adjustment.

The model should balance about half way between the spars. It may then still require a very small amount of up elevator but not as much as before. No thrust adjustments were necessary on the model in the photos, but a little left rudder was required to get it to turn tight enough to fly in an inside basketball court without hitting the walls.

Have a lot of fun with your Air Sedan! •

R/C Soaring. . . *Continued from page 49*

sure transducers and a 16-bit A/D converter. Any contributions you can make will be greatly appreciated. Send them to Michael Selig, Gas Dynamics Lab., School of Engineering/Applied Science, Dept. of MAE, The Engineering Quadrangle, Princeton, New Jersey 08544.

Another interesting side note to Michael's research is that he has come into possession of an airfoil analysis program developed by a researcher at MIT (worth $30,000 and much sought-after by industry) which can do something the Eppler program cannot do. It can predict laminar separation bubbles *and* give the precise amount of increased drag caused by the bubbles whereas the Eppler code can only predict the bubbles. There is a big drawback with this program, however, and that is it takes 17 hours of computer time to obtain the data for one airfoil at one Reynolds number!

Yet another interesting side note related to similar wind tunnel testing done in Germany by Dieter Althaus is that the Selig 2091 airfoil (the "Improved Aquila" airfoil) has tested out *better* than the Eppler 214! Please refer to my March 1984 column for details about this section. Also, the Selig 3021 (the "Improved Eppler 205" airfoil) has tested *better* than the Eppler 205, thus confirming what modelers in Europe have already suspected by their "seat of the pants" analysis (see my December 1986 column for details). . . . I just thought you'd find that interesting!

UNITED STATES SOARING TEAM

The US FAI/F3B Team money-raising program is proceeding very well according to latest indications from David Williams, Media Coordinator for the team. However, they still have a ways to go and still are in need of your further donations. All donors receive patches, or pins, or both for their money (depending on how much is given) and all donors are eligible for the raffle. Prizes to be given away include: six Adante kits and six Championship Series radios from Air-