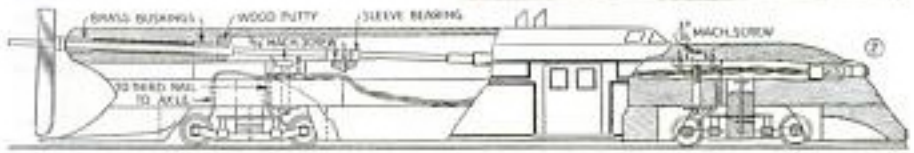
Air-Propelled RAILPLANE

the latest in streamlined model trains!

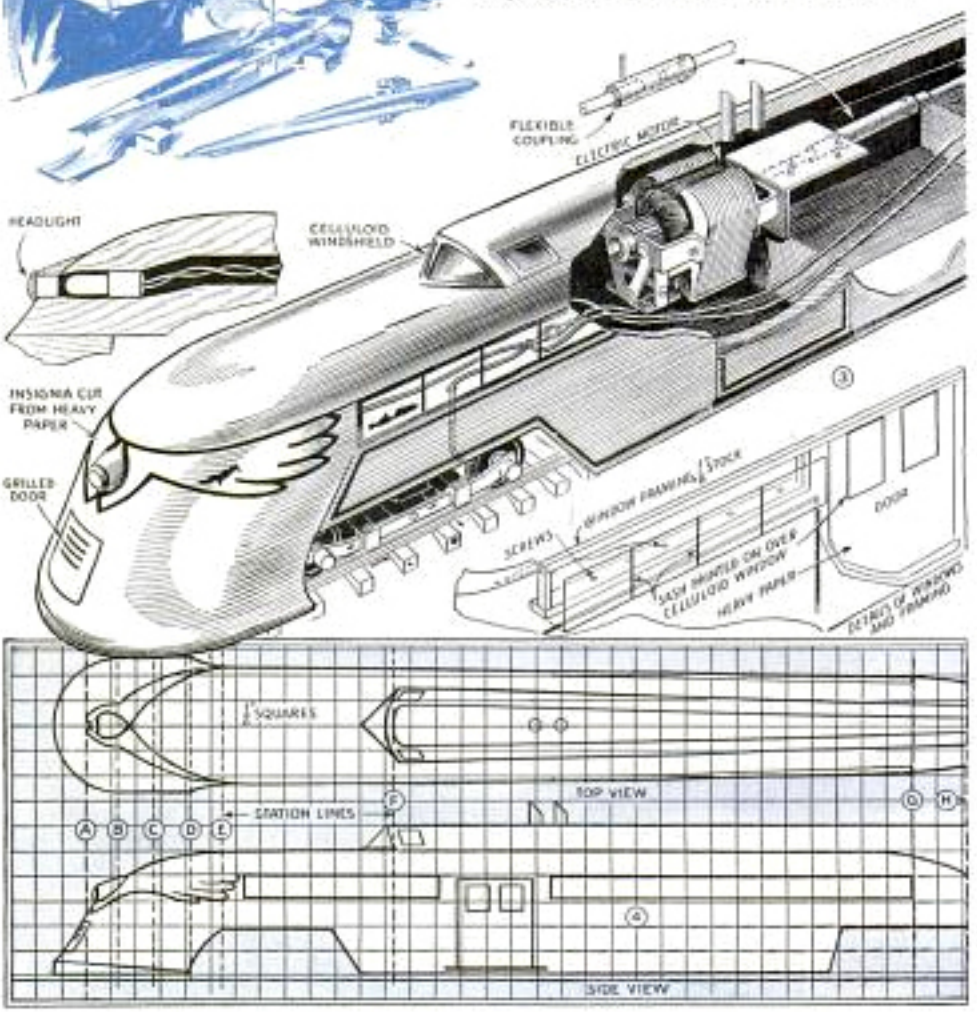
By Alexander Maxwell

THIS striking model gives the attic railroader a real-life glimpse into the future of high-speed rail transportation. Along with ultramodern streamlining, it combines simplicity of construction. There's no need to spend long hours over a lathe when making the railplane for there is no machine work to be done.

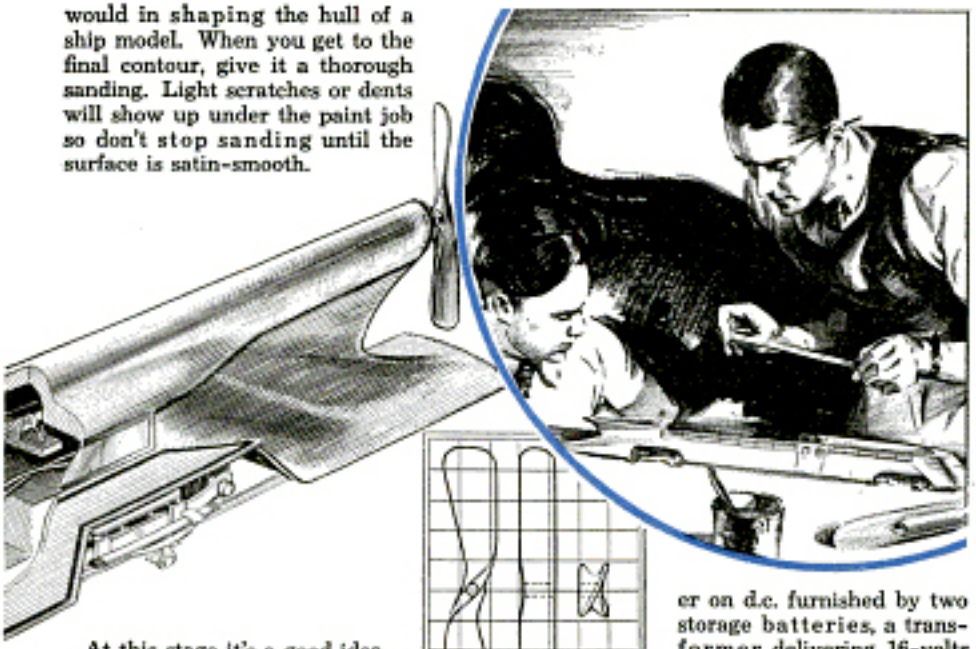
You start out in the same way as you would in building a ship model. In examining Figs. 1, 2, and 4, you will notice that the body consists of five lifts, the ⅜-in. lower lift being in three sections to make room for the trucks. The second is solid, with a slot cut down the center. This lift and those above it are ⅝ in. thick. The first three and the last two lifts are glued together as separate units and form the two parts you see in Fig. 1. The latter unit



forms the removable roof. Use selected white pine and cut all the lifts slightly oversize. Before you begin carving, enlarge the right-hand detail in Fig. 4 to full-size and make ⅛-in. plywood templates of all the curved lines. This detail is shown on ¼-in. squares. Notice from this that lines F to J inclusive will continue ¼ in. higher than indicated on the squared diagrams, as the top of the body is curved. Now fasten the two units together with two long screws driven up from the bottom and carve to the finish contour with a plane and gouge, using the templates on the station lines just as you

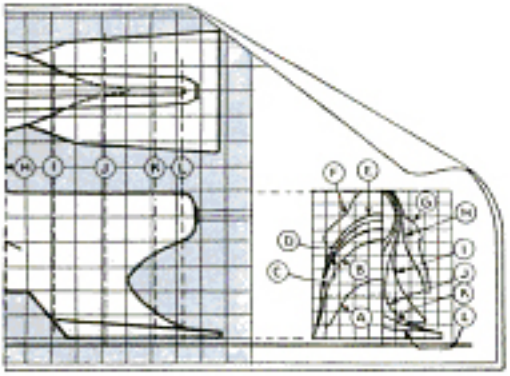


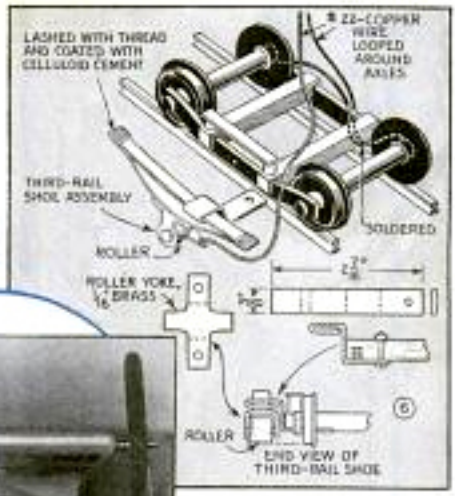
would in shaping the hull of a ship model. When you get to the final contour, give it a thorough sanding. Light scratches or dents will show up under the paint job so don't stop sanding until the surface is satin-smooth.

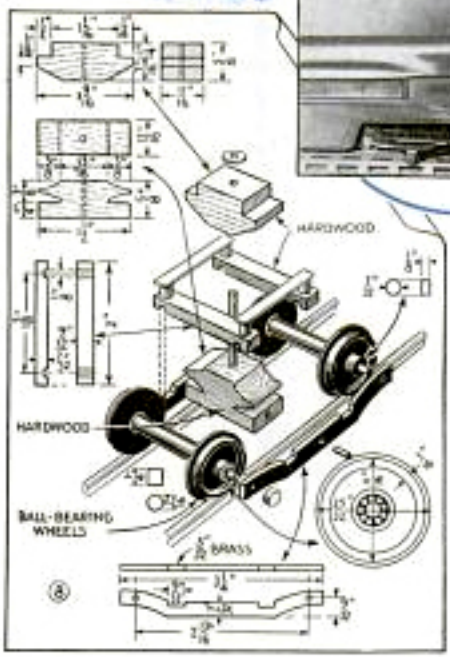


At this stage it's a good idea to give the wood a thin coat of shellac. Figs. 2 and 3 give you a clear idea of how the motor is mounted to drive the propeller. Dimensions of the motor and propeller-shaft compartments are not given as these will depend on the motor you use. The motor used to propel the original railplane is of the type designed for driving the conventional ¼-in. scale model locomotive. Its free-running speed is about 6000 r.p.m. Motors of this type will usually run on 12-volts d.c. or 16-volts a.c. Though the motor runs cooler on d.c. furnished by two storage batteries, a transformer delivering 16-volts a.c. will operate it.

Note from Fig. 1 that the entire power plant is fastened to the top section of the car body, the motor dropping into the well which is already formed in the lower section as in Fig. 3. The motor, as you see, is bolted to a ½-in. brass angle plate, which is screwed to the roof of the "conning tower." It will be necessary, of course, to pare away some wood to get the motor in position to line up with the propeller shaft. The latter is a length of 3/16-in. drill rod connected to the motor through a flexible coupling made of rubber tubing as in Fig. 3. The ends of the rubber tubing are bushed with short lengths of brass tubing, and holes are drilled transversely through the meeting ends of the motor and propeller shafts for cotters made from ordinary pins. When you assemble the coupling, coat the sleeves and the inside of the rubber tubing with rubber cement. To allow for error, you use a 5/16-in. bit to drill the hole for the propeller shaft, Fig. 2. The shaft can be made to run in a long bushing, or "log," or it can be mounted in two separate bushings, as in Fig. 2. It must be carefully lined up so that there is a minimum of







friction. Before you line it up permanently, notice that there is a sleeve bearing just ahead of the coupling. This is made "free-floating" by lashing it with heavy thread to a base, made of flat brass and screwed to the roof. With this in place you can line up the shaft. Wood putty is forced in around the bushings to hold them in place as in Fig. 2. Do the same if you use the single bushing, or log.

Now, with the motor mounted, you're ready for the propeller and trucks. The former is shown in Fig. 5 and making it is a matter of very careful shaping and balancing. Use a piece of selected, straight-grained mahogany. A true-scale propeller cannot be used, as it lacks sufficient "bite" to drive the car. Instead, the propeller is shaped into what is known as the "rabbit-eared" air-screw type. It must be balanced and pared lightly to shape by trial until both blades weigh exactly the same. Stain it red and varnish, then polish with fine steel wool. It is a press fit on the shaft; no pin is used. Two thin washers serve as thrust bearings.

In Figs. 6, 7 and 8 you have the details of the trucks. The wheels are ball-bearing and are available ready-made just as you see them here. They are designed for "0"-gauge track, which measures 1¼ in. between the rails. On the original, the side frame members are of 1/32-in. hardwood, as is the balance of the truck frame. You can use 3/32-in. brass if you wish. The frame is pinned and glued together. Some fitting will be necessary to get the trucks to swivel freely when you mount them under the body. The trucks swivel on a pivot pin passing through a rabbeted hardwood block or bolster recessed into the body, as in Fig. 2. Pivot pins can be made from small nails. To finish the assembly install the headlight, the third-rail shoe, window and door frames, windshield and the wiring. You'll find these details in Figs. 2, 3

and 6. Use rubber-covered wire for all connections and solder all joints. Because the truck frames are wood, electrical connections are made directly to the axles as in Fig. 6. Use No. 22-gn. wire, spring the side member away from the wheel, and wind three turns of the wire around the axle. When the frame springs back it will hold the wire in place. Repeat the operation on the second wheel. Then make "pigtail" connections to this wire, solder them and connect to the car circuit.

Use aluminum paint with an asphalt base for finishing the body. Paint trucks yellow and black. Notice in Fig. 2 that the two members of the body are fastened together with 3/16-in. machine screws. The screws pass through a metal plate and turn into nuts mortised into the roof. The screws are located off center in the truck wells so that they may be reached with a screwdriver without removing the truck. When you test the railplane see that the track curves are banked and that the trucks take the curves without binding. It may be necessary to cut away more stock to allow the trucks to swivel freely.