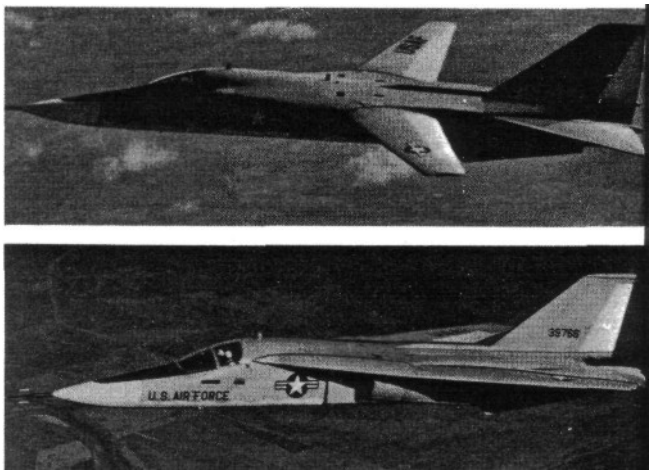
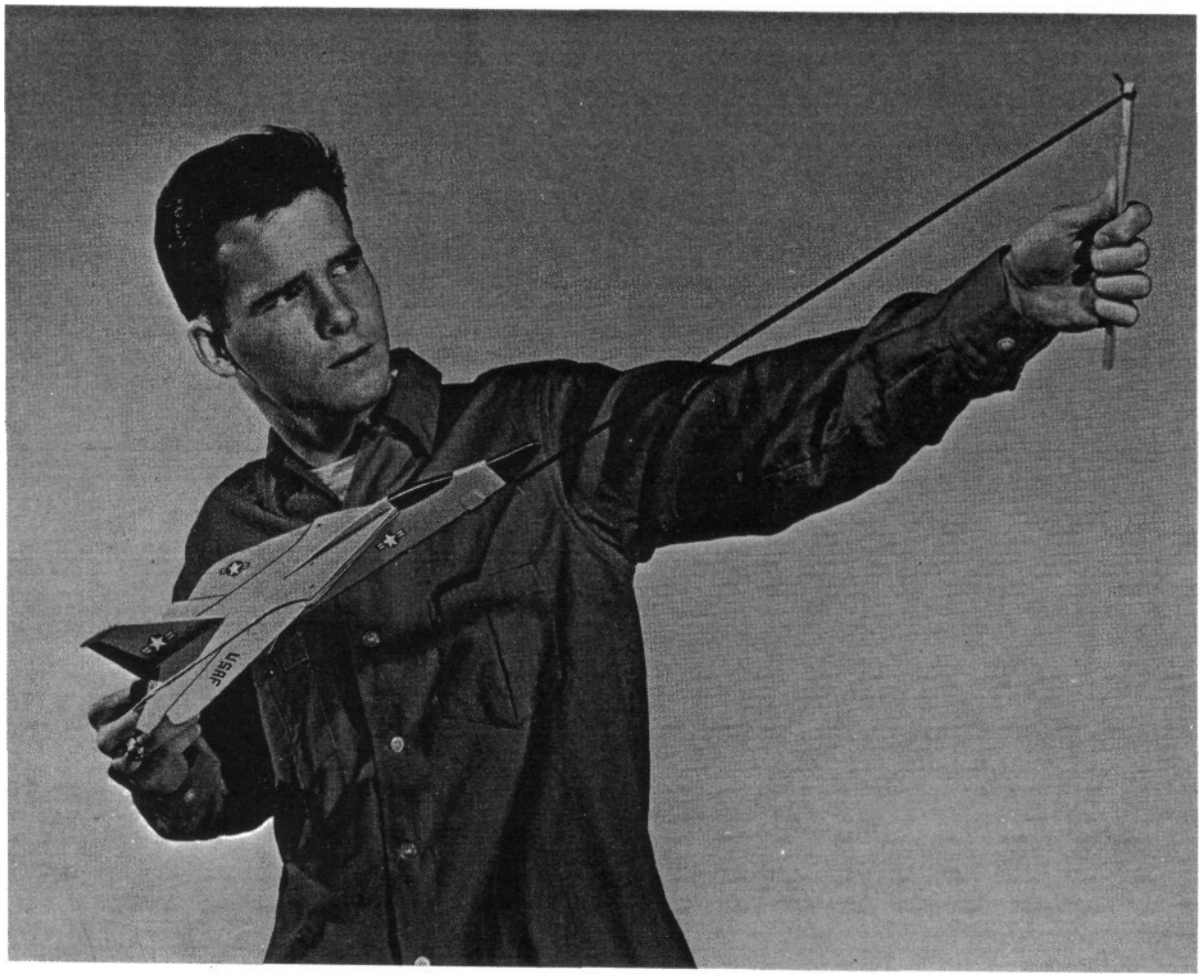
Made entirely from balsa, this "silhouette" mimics the action of its prototype in reverse by gradually extending its movable wings from full swept-back to full extended position during flight

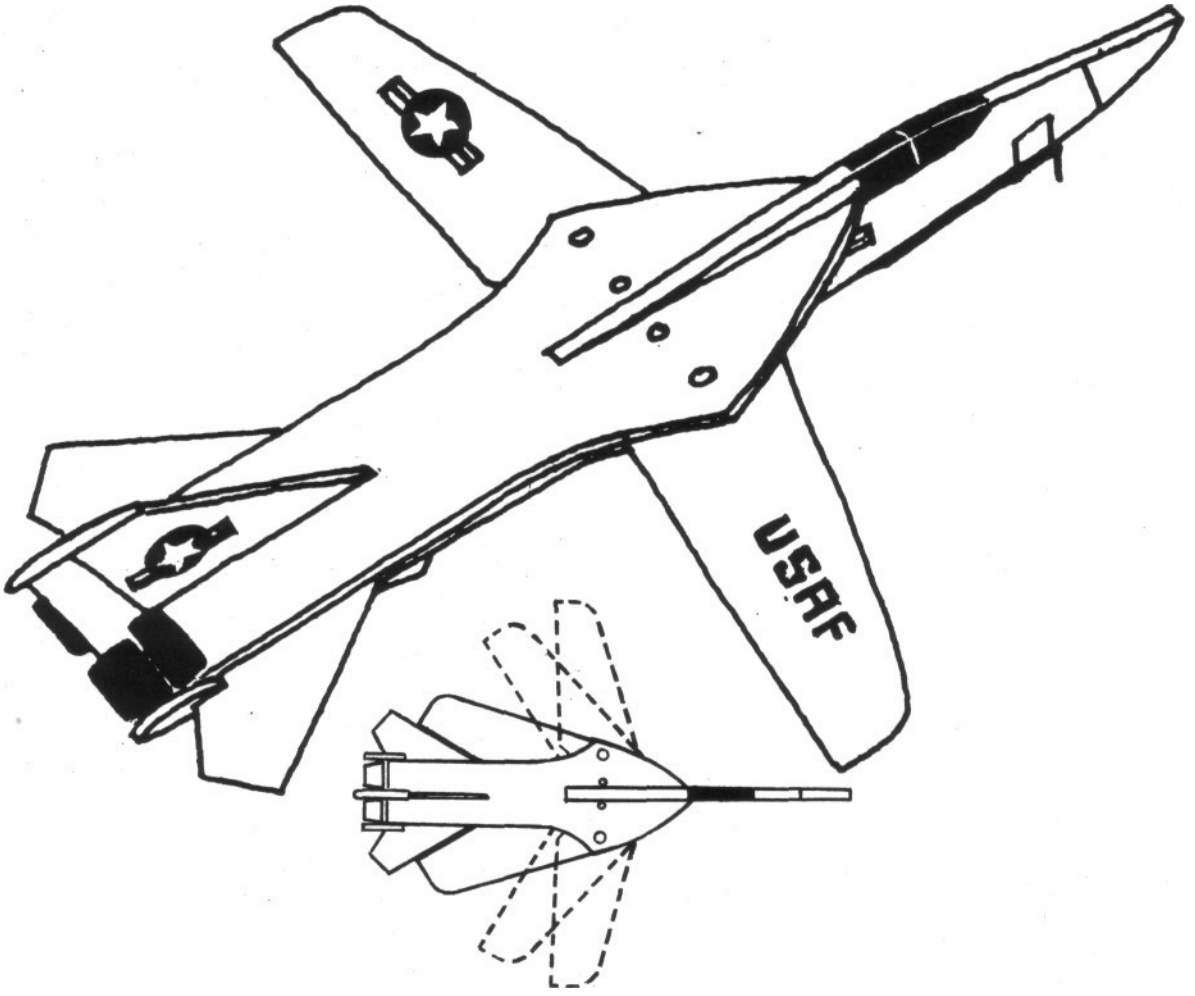
Modeling the pivot-wing F-lll

By ROY L. CLOUGH, JR.



Photos of an actual plane in flight show the USAF version of the supersonic craft with wings at full forward position (top) and swept fully aft. Takeoff and landing are made with wings extended, then swept back in flight for high speed. In our glider replica, flight performance is just the reverse; wings are swept fully aft in takeoff and then extend for the glide back to earth





REALISTIC ZOOMING flights that end with a slow glide back to earth are possible with this unique "silhouette" model of the F-111, the new multi-purpose warplane in service with the U.S. Air Force and the U.S. Navy. Its wings are built to extend for slow hovering, landing and taking off and to retract for supersonic flight.

Not only does this model slowly extend its variable, delta-like wings in flight (the reverse of the actual plane) but its wings can be locked at various angles of sweep to determine the effect at various speeds. It's quite considerable—the more wing backsweep, the higher the speed.

The wing-sweep retracting mechanism is simple and effective. Here's how it works: The wings are drawn back to a full-swept position by strong button-thread lines which attach to pins in the leading edges of the wings, and pass through an eyelet at the rear of the tail, then on to the eye of the launching hook. A rubber band, attached to the same wing pins and passed through a hole in the fuselage at the end of the cockpit, pulls the wings to a fully extended position.

The launching wire slides in a short length of neoprene model gas line. Friction between the wire and the tubing, which is adjusted by gently pinching the tin holder, causes the launching wire to retract slowly when pulled by a second set of rubber bands attached to the eye of the wire and to a small hook embedded in the lower edge of the fuselage.

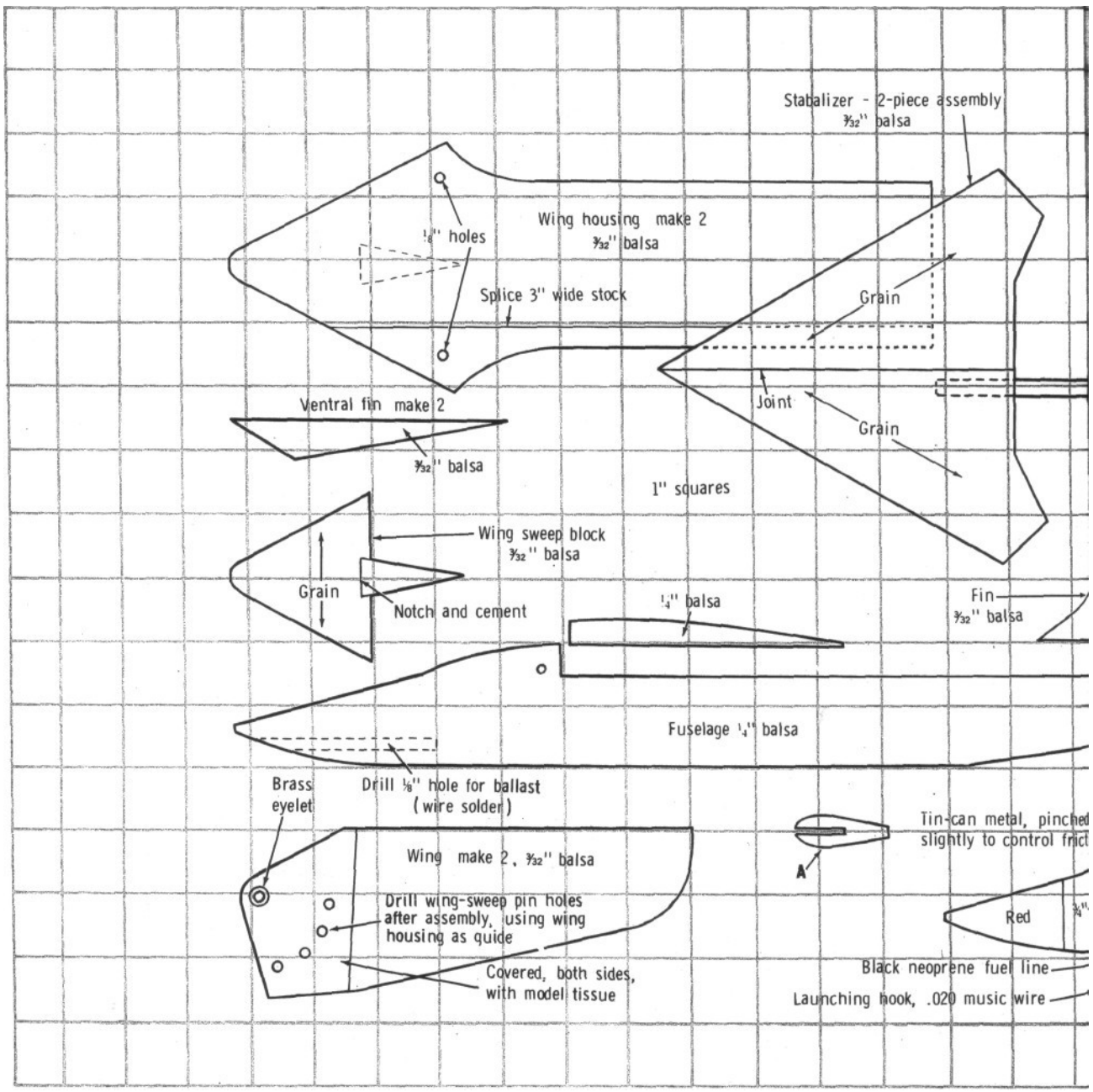
The launching wire is pulled forward to retract the wings to a full swept-back position and then the plane is catapulted by a sling shot consisting of a loop of 1/4-in. model-airplane rubber tied to the end of a dowel handle. When the plane is aloft and the hook is being slowly pulled back by its rubber band, the wings spread to full width in 3 to 5 seconds. Proper drag on the wire is found by experiment.

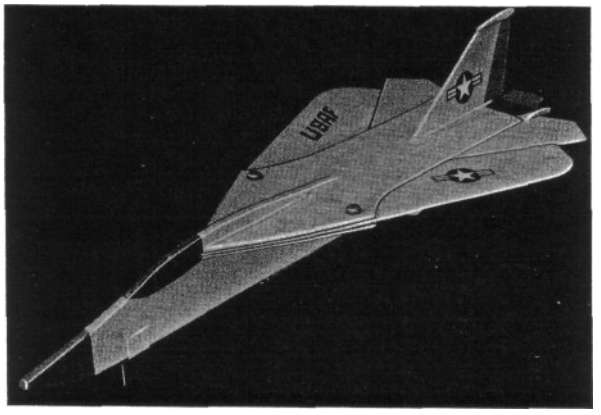
To fly the model with the wings in a fixed sweep, dowel pins are inserted through aligning holes in wings and wing housings to lock them at the desired angle. Flight trim is secured by adjusting the elevator tabs which occupy the position of the jet tailpipes on the actual F-111. When

F-111 model, continued

the wings are fully retracted, the elevators can be used as ailerons. Minor directional trim can be made by gently bending the trailing edge of each fin.

Patterns for the various parts are presented on squares for enlarging to size. Select a medium weight of balsa and note the direction of grain in the pattern for maximum strength. Build up the fuselage and the bottom of the wing housing first. The wings, are reinforced at their pivot ends with model tissue, and a brass eyelet, carefully pressed in place, reinforces the hole for the wing pivot pin. Take care in cementing the top half of the wing housing in place that you don't stick it to the wings themselves. While the location of the locking-pin holes are indicated on the wing pattern, it's best to drill these after assembly by using the holes in the wing housing as a guide. Heads are formed on the dowel locking pins to keep them from falling through.





Locking pins permit the balsa glider model to be flown with wings in one of four fixed positions. This photo shows the adjustable wings locked in full swept-aft position. Without locking pins, swept-back wings slowly extend to full forward position after plane is launched by a rubberband sling shot. With wings retracted, elevators become ailerons for directional control