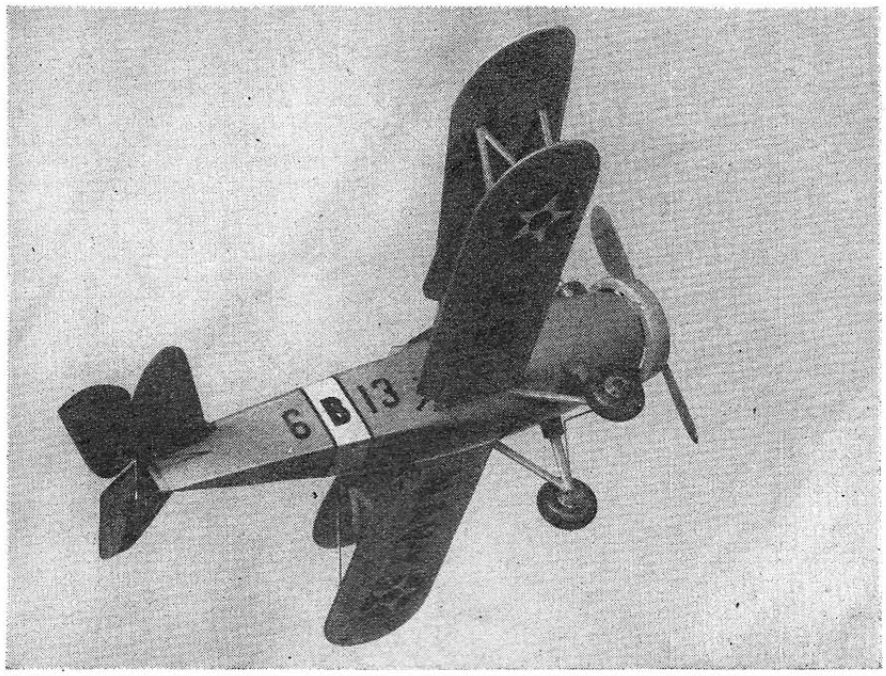
by WALTER MUSCIANO



No modeler can deny that the prime advantage of controline flying is the ability to fly his favorite scale model successfully, without worrying about lateral stability, looping tendencies, etc. The author has built and flown many controline scale models and the model presented is one of the best for sport flying. Engines from .099 cu. in. displacement can be used, but .19 cu. in. displacement engines have been found to be perfect for this model, and glow plug is recommended.

The full scale craft was one of the most famous planes employed in the service of the U. S. Navy. Designated as the 02C-1 well over a decade ago, it was intended for observation and dive-bombing; after undergoing minor modifications, this design was reclassified as the F8C-1 series. To withstand vertical dives, the plane was built extra strong, and it earned the nickname, *Helldiver,* thus becoming the first of this famous line of Navy dive bombers. Powered by a Pratt and Whitney *Wasp* engine of 550 hp, the O2C-1 served on shipboard as well as at land bases for many years.

CURTISS HELLDIVER

When your model is completed, it will be to a scale of 3/4"=1' and the plans are drawn one-half size, *except* for the front view. This makes it easy to enlarge them because all measurements are merely doubled.

The fuselage is of conventional longeron-crossbrace-former construction, using very hard 1/8" sq. longerons and 1/8" sheet balsa formers. After the "box" frame has been completed, the bulkhead can be added and the 3/32" diameter wire landing gear bolted to it. The engine bearers are added next, using plenty of cement. This is followed by the addition of the formers, balsa nose block (which is made of soft 1/2" sheet balsa) and filler pieces. The controls can now be installed. The bellcrank is mounted on a plywood platform which is attached securely to the upper fuselage longeron in the location shown. Cut the horizontal tail from 1/8" sheet balsa, and sand to a streamline cross section. Bolt the control horn to the elevator and cement well. The stabilizer is cemented to the fuselage and the elevator is hinged to it.

If you intend using electric ignition, install it now. Before covering the fuselage, test the ignition system to be sure of correct wiring. The switch can be located in the forward cockpit.

From the plywood bulkhead to the back of the rear cockpit, the fuselage is planked with 1/16" sheet balsa. The remainder is light *Silkspan* covered. If the builder so desires, he can cover the entire fuselage with sheet balsa. The author used *Silkspan* on the fuselage rear because the full size plane had fabric on this portion and true scale appearance was desired. Laminated 1/4" sheet balsa rings make up the ring type of cowl. Fin and rudder are added at this time. The wood landing gear struts (both front and rear) should be used for exhibition only and removed when flying, leaving the 3/32" and 1/16" wire to absorb the shocks. Cut the interplane and cabane struts of 1/8" x 1/4" pine and sand to a streamline cross section. These should be assembled to form the "N" before the wings are attached.

It will be noticed that the "knock-off" type of engine mounts are used. These consist of a bearer which is cemented well to the fuselage frame and the mounts which are cemented very lightly to the bearer. The engine is bolted *only* to the amount.

The wings are designed to be simple in construction and durable in operation. They consist of a heavy leading and trailing edge to take the loads, thus eliminating the spars. The upper wing is constructed in one section. Neither wing has any dihedral. Light *Silkspan* is used to cover these structures. The structures should be well sanded before covering.

It is suggested the model be colored before the wings are assembled because of the wide variety of decoration required. After four coats of clear dope were applied to the entire model, the ship was painted as follows: *gray*—fuselage, landing gear, wing struts; *aluminum*—lower wing, bottom of upper wing; *red*—entire empennage; *chrome yellow*—top surface of upper wing; *lemon yellow*—fuselage band, cowl, wing chevron; *black*—lettering, "U.S." under left wing and "Navy" under right, outline on fuselage band, chevron outline, ram insignia of the Sixth Bombing Squadron. As can be imagined, this makes a very attractive appearance, especially with the addition

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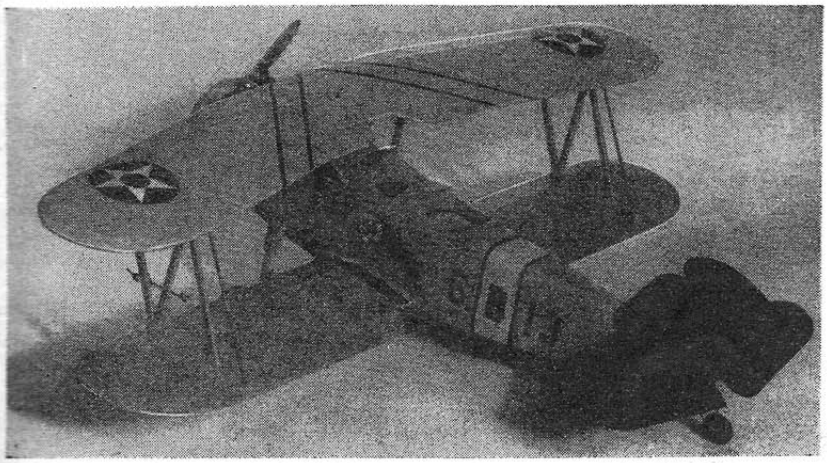

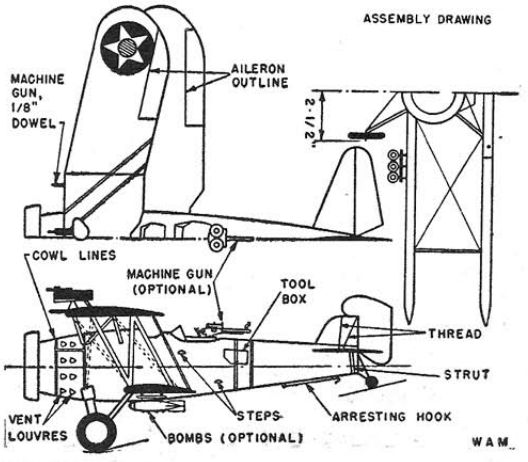

Curtiss Helldiver

(*Continued from page* 17)

of the star insignia at each wingtip. Regardless of the tail, chevron, fuselage band and cowl, the fuselage and wings must be colored as indicated. The tail color indicates the carrier or Naval Base, and fuselage band and chevron are only for flight leaders. Yellow is for flight No. 5 (three planes to a flight); hence the leader is No. 13. Cowl, chevron and band must be the same color (red, white, blue, green, yellow or black); the entire tail can also be any one of these colors, as long as you are certain that O2C-1 craft used it. (Many scale contests have been lost because of the wrong color scheme on naval craft.)

When cementing the struts to the ship be sure they are attached directly to the frame and not to the paper covering only. Cutting away a small area of paper where the strut location is marked on the plan insures a strong joint by allowing the cement to grip the wood structure. Plenty of cement should be used. However, heavy waxed thread can be used for the flying and landing wires if the builder so desires.

Attempt to fly the model only when it balances at the point indicated on the plan. The flight lines are 55′ long and are of 010″ stranded steel wire. The rudder should be offset to pull the plane away from the center of the circle in order to maintain tension on the flying wires. Select a calm day for the test flights. The flying site should be a close-cut field of grass or preferably a paved surface. Full power engine setting is required in order to fly the ship at its peak performance. When the flier has the "feel" of his ship, he will find he has a very maneuverable and a realistic model.