At the field, ready to receive its load of air mail for the night, our well-detailed Mailwing awaits action. The cover of the May issue shows a restored mint-condition Mailwing at Fredericksburg, Va. Authentic colors and some extra details were shown.

The Pitcairn Mailwing

Designed for night air mail in 1927 this plane brought reliability to the Air Mail Service. A control-line masterpiece for 35 power.

FRANK W. BEATTY

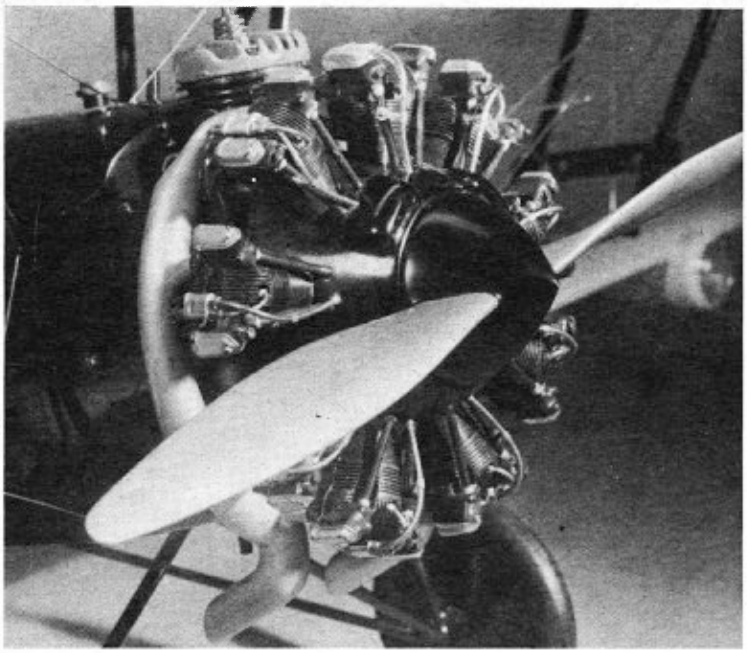
THE Pitcairn Mailwing was specifically designed in 1927 to be sold to contract mail carriers for night air mail runs. An immediate success, this craft which could carry 600 lbs. of mail at speeds up to 136 mph was being produced at the rate of one per week by the end of 1928. Many an airline that is world-famous today was equipped with Mailwings during this era.

Many Mailwings finished out their days as crop dusters and a handful of Mailwings are still flying today. Well preserved examples can be seen at the Tallmantz and Smithsonian Air Museums. For many aerophiles watching the TV late movies, the real star of *Blaze of Noon* is the Pitcairn Mailwing.

James Triggs' fine three-views which appeared in the January 1959 American Modeler and the Fall 1960 Air Progress were used in preparing the Mailwing working drawings. Mr. Triggs' drawings did not include coloring data, but replies to letters sent to Eastern Air Lines, Tallmantz Aviation and the Smithsonian Institution all verify that the plane was painted as described in this article. It was noted that if Mr. Triggs' three-views were to be enlarged four times, the Monogram Wright Cyclone Plastic Engine Kit would be exactly the right size for this model. The model has therefore been built to a rather unusual scale of $1\frac{3}{16}'' = 1'$ and has a 39" wingspan and a 26" length. The ship is powered by a McCoy 35 R/C engine with a Roberts bellcrank operated throttle and all up weight is some 51 ounces.

The model's high-gloss finish reflects prize-winning detail and workmanship. Lighting can be operative and the engine exhaust can be routed through the curvacious manifold.

It was originally intended that the Mailwing's construction would follow closely an old favorite sport scale model built many years ago — Chuck Hollinger's Fleet Biplane (Air Trails May 1951). Such a model would have gone together much faster and would have had some stunt capability. But as the drawings and construction proceeded, more details with their supporting structures and vast amounts of filler and dope were added until the model far exceeded its original proposed weight. The Mailwing's configuration is such that unless some care is exercised in keeping the model's tail as light as possible, ballast will be required in the model's nose. Having gone overboard on details and paint, the Mailwing required some 10 ounces of ballast in its nose; six to eight of these ounces being packed in the hollow plastic engine cylinders. Many of my scale models have had wing loadings of 20-25 ounces per hundred square inches of wing area, so this model which sounds brick-heavy at 51 ounces has a reasonable (for me) wing loading of 14.3 ounces per hundred square inches of wing area. It has flown and



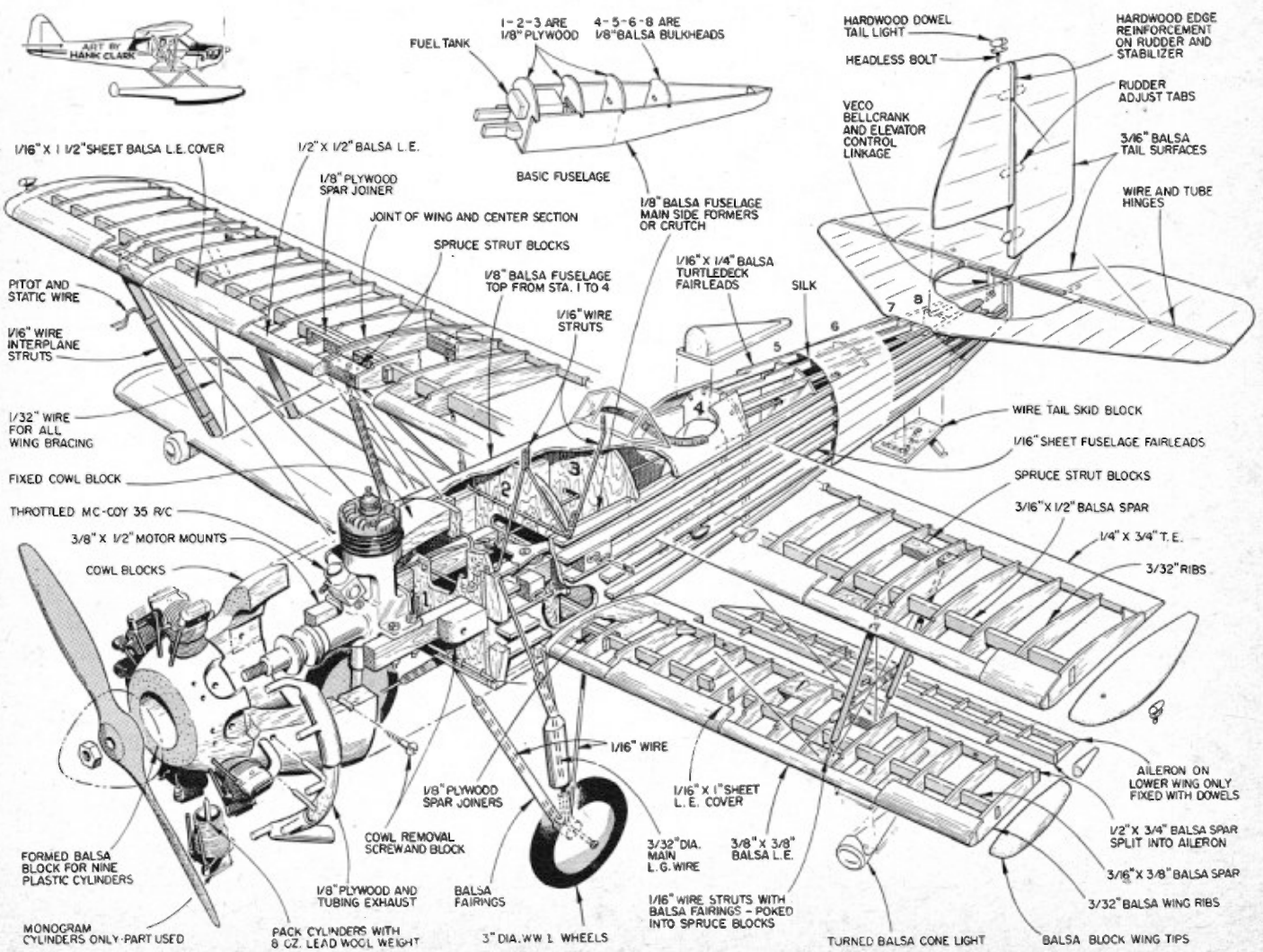
Monogram Wright engine kit was the source of the scale cylinders. They are mounted on a removable false cowl and are loaded with lead weight.

The "anti genius" fires up the McCoy 35 R/C. It is well built and not a light-weight, and is a realistic flyer.

handled well, even in gusty-wind contest conditions. A model of 40 ounces or less could be a true week-end sport flyer, so build to suit your purposes, but **DO NOT FLY** your model unless balanced per drawings.

Wings: Cut out all ribs, spars, spar joiners and leading and trailing edges and cement these frames together. Shape the leading edges and then add all 1/16" sheet balsa panels and the tip fairing blocks. Epoxy all pre-shaped spruce strut and rigging blocks in position and then sand both wings to final shape. Drill the lower wing rear spar for the 1/8" dowel aileron supports before cutting ailerons separate. This assures that the aileron will mate perfectly with the wing on final assembly. Mark all strut and rigging wire locations on the

Continued on page 53



Pitcairn Mailwing

Continued from page 25

spruce blocks and drill all strut locations with a 1/16" dia. drill and all rigging wire locations with a 1/32" dia. drill.

Tail surfaces: Saw the fin and rudder, and the stabilizer and elevators out of 3/16" sheet balsa. If you plan to install full rigging wire details, cut a 3/16" wide strip off the rear edge of the fin and stabilizer and cement 3/16" square spruce spars in their place. This harder wood will resist the sawing action of vibrating rigging wires far better than the balsa it replaces. For even better results, install a 1/16" dia. tubing bushing through these spars at each rigging wire location. Sand these parts to shape and add the Veco control horn and hinge details to the horizontal tail surfaces.

Fuselage: Cut out the 1/8" sheet fuselage crutch members and all bulkheads. Lightly score and crack the crutch members at stations #3 and #8 and cement all bulkheads between these members. Epoxy the 3/8 x 1/2" maple motor mounts in position (Bulkheads #1 and #2). The Roberts bellcrank with leadout wires bolts in next. It is good practice for every model that one owns that is equipped with a Roberts operated throttle to idle down or speed up with an identical trigger movement at the control handle. Otherwise in an emergency situation when an automatic reflex might save a ship, confusion and disaster may result. For this reason a Roberts **suspended** bellcrank was installed in an **up-right** position in my model. Analyze your own fleet of models and the throttle throw of the engine you will use to determine the proper bellcrank for your model. Temporarily bolt the engine and pin the horizontal tail surfaces in place to make up the throttle and elevator linkage wires. Make sure these move without binding before proceeding. Some slight bending of the bellcrank pushrod horn will probably be required if the suspended bellcrank is used.

Make up the cabane and landing gear struts, then bind and epoxy these into place. Four of the landing gear struts have short bent-over ends that pass through the bulkheads to help position and prevent shifting of these struts during installation and on hard landings. Epoxy the fuel tank with its special modifications into position next, followed by all stringers and balsa filler blocks. Make up, finish and install the cockpit floor and all cockpit details. Epoxy spruce rigging wire locator block to top of Bulkhead #1 and then plank fuselage top from Bulkhead #1 to #4. Do not cut cockpit opening till after all sanding, doping, and rubbing is completed. Bind 1/16" dia. aluminum tubing rigging wire locator to Bulkhead #1, install lower wing spar support, then sheet cover fuselage bottom from Bulkhead #1 to #3. Add tailskid detail. Make up cowling block, hollow same, fit to model and carve to shape. Note that cowling slides forward to remove leaving an unsightly hole aft of the McCoy cylinder head which must be filled with a balsa block that is permanently cemented to Bulkhead #1. Sand the entire fuselage/noseblock assembly to final shape and cover these parts with silk. Install all cabane strut and landing gear strut fairings and reinforce these with silk wrappings.

Assembly: Toughest problem for most people who attempt biplanes is the finish, assembly, alignment sequence. Our goal with this model is to be able to dope and rub down all parts separately and then have all these finished parts cement into pre-drilled holes that automatically align the wings during final assembly.

Slide the lower wing into position, check for alignment and cement well. Pin the three balsa wing alignment templates to the top wing and slide the upper wing into position. Trim just enough of the balsa cabane strut fairings away so that the center template rests on the fuselage top when the cabane strut ends have been fed into the pre-drilled spruce blocks. Bend each 1/16" dia. wire interplane strut to size and slip into the pre-drilled spruce blocks. After all interplane struts are fitted, check the assembly for alignment and pin and tape the whole together rigidly. Solder the brass line guide to the port pair of interplane struts and then fit all interplane struts with balsa fairings. It is important for each strut fairing end to be a close fit. The assembly can now be dismantled and the struts with their balsa fairings will automatically align the top wing during future fittings. Set the alignment templates aside, reassemble and tape the top wing into position again. All the 1/32" dia. rigging wire can be bent and cut to size and temporarily fitted in the model. Label each rigging wire with masking tape before dismantling assembly once more. Soft copper wire can be wrapped and soldered to each strut or rigging wire end in widely spaced coils. Enlarge all 1/16" dia. predrilled strut location holes to 3/32" dia. and enlarge all 1/32" dia. rigging wire location holes to 1/16" dia. A cautious builder might reassemble to check that the fit and overall alignment of these parts has not changed.

Covering: Cover the wings, struts, and tail surfaces with silk. Make up the headrest, landing lights and aileron horn fairings and cement in position. Prick a pin hole in the fabric at each pre-drilled strut or rigging wire locator hole or these will be lost under all the coats of paint to come. Use your favorite method to finish the model. Briefly, mine consists of four brushed clear coats, followed by eight thinned-out sprayed filler coats, followed by at least six thinned sprayed color coats with a wet or dry sanding thrown in between every two or three coats. Then rub all parts with Aerogloss Rubbing Compound. Wash thoroughly with soap and water and use home-made stencils to spray the various marking and lettering details. These stencils are a story in themselves. Letraset rub-on lettering is used for the "Pitcairn Mailwing" rudder markings. Protect this rub-on lettering with a clear dope overspray. Rub these marking and lettering details with compound. Carefully cut out the cockpit opening and use white glue to cement very thin leather padding around this opening and on the headrest. We are now ready for final assembly and detailing.

Butter epoxy cement on all strut ends and slide all cabane and interplane struts into the appropriate pre-drilled holes in the top and bottom wings. The wings should be accurately aligned automatically. Tape this assembly together and allow to dry overnight. The following day all rigging wire ends can be buttered with epoxy and slid into position. These too should dry overnight. Cement all tail surfaces to the model. Make up and finish details like the windshield, oil and gas filler caps, steps, aileron horns, vibration dampeners, pitot tubes, position lights and wheels and cement or solder these to the model.

Dummy engine: The Monogram Wright Cyclone Plastic Engine Kit PE52 was cannibalized for the cylinder details. The cylinders were filed so that a 1/8" dia. dowel pin could be centered in the cylinder for alignment and reinforcing. Before joining the cylinder halves, pack each with lead wool. About seven ounces of ballast can be packed in the nine cylinders. Additional ballast can be installed in the cowling bottom. The author's model required about 10 ounces of ballast for proper balance for control-line flying. See plans for drawing of a simple jig that can be bolted to the McCoy crankshaft to drill the 1/8" dia. pilot holes for the cylinder dowel pins. After all pilot holes are drilled, carefully cut away cowling at the base of each cylinder until proper cylinder height is attained. The reverse side of the aforementioned jig will accurately locate the height of each cylinder. Install the pushrod and ignition harness details with plastic cement. None of the Pactra enamels or plastic parts used in detailing the cylinder details seem to have been effected by our model fuels. Weight can be tolerated in the model's nose, so use plywood and tubing where desirable for strength when making the exhaust collector ring detail.

Rather than have an unsightly needle valve extension shaft cluttering up the engine and cowling details, the entire flexible spring needle valve extension was snipped off. Needle valve adjustments cannot be made with the cowling in place. Needle valve adjustments must be made with the cowling removed prior to moving to the flight circle. When a satisfactory adjustment has been achieved, the cowling can be replaced and model is ready for flight. The McCoy does not have a touchy needle valve setting so this is a safe procedure. This procedure would not be practical for all model engines.

Recommended for those who love classic biplanes, contest flying, and trophy collecting, the Mailwing is hard to beat!