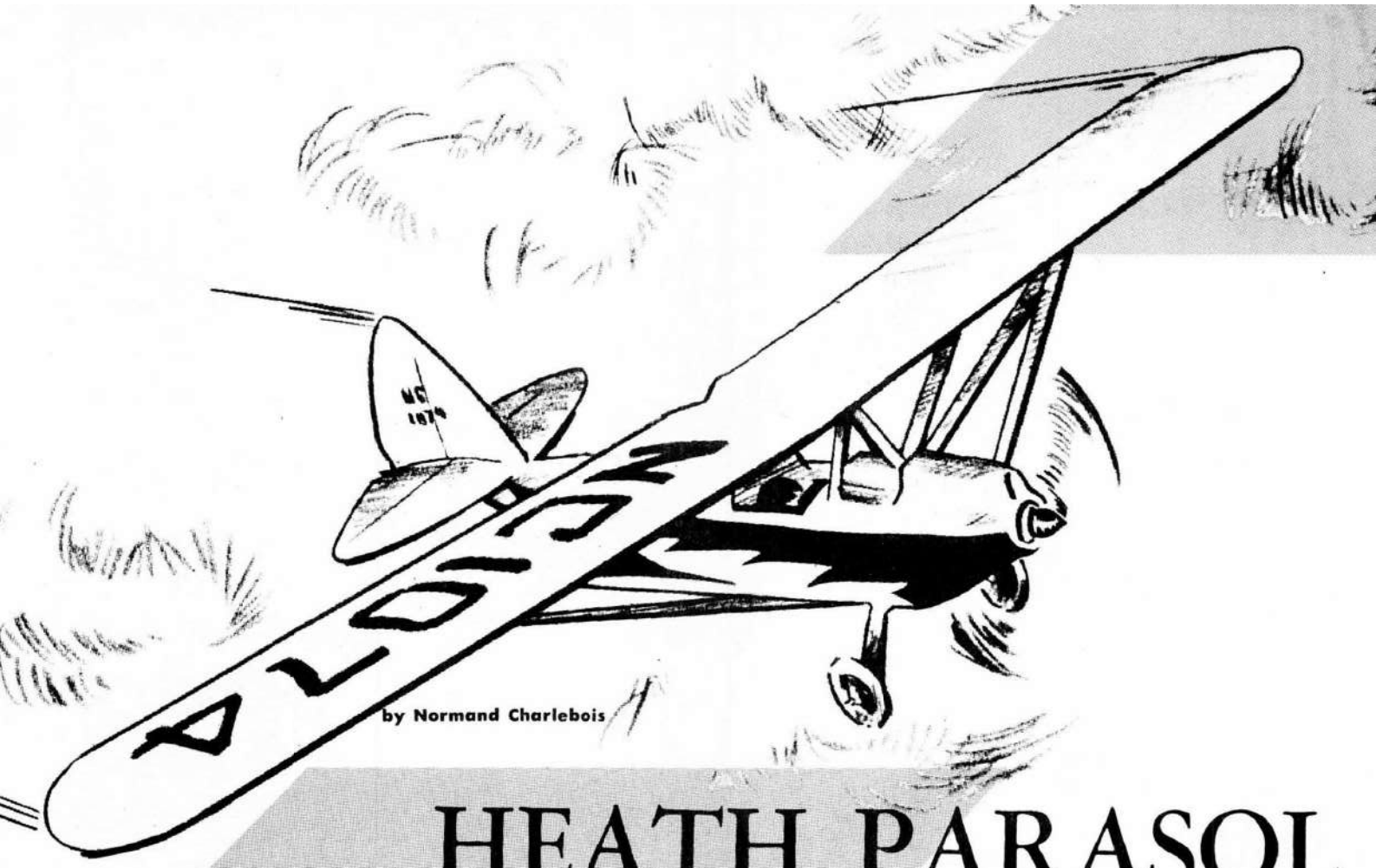

by Normand Charlebois

HEATH PARASOL

An ever-popular favorite, this model is presented here as a small rubber-powered fly-for-fun project

● Presented here is a flying scale model of the famous Heath LNB-4 "Parasol" of the early 1930's. It has been designed as a rubber-powered model, the original having first flown in 1951. Plans are drawn to a scale of ¾" equals 1' 0". The prototype had a wingspan of 31' 0" and a length of 17' 3" and was powered with a variety of motors ranging from converted auto engines of the period, to imported foreign light-plane motors. It can safely be said that the "Parasol" was the most popular and best loved ultra-light plane of the era, and there are still a few existing samples flying in various corners of the world.

A neat looking model can be built over the weekend and flown on Sunday afternoon. For the demanding modeler, a more elaborate version, such as the author's original model, can be achieved by adding cockpit details, joystick, pedals, seat, controls, movable rudder, elevators and ailerons. Although no record-breaking performance will ever be attained even in near-skeleton form, the small size and the appealing lines will give a rewarding little jewel to hang in your den.

Its basic construction is unusual although simple enough for any beginner to attempt without being driven away to plastic models for life. With this in mind, instructions are comprehensive enough for anyone to follow.

Building a model, using the side plan as a base, usually confronts the modeller with a perplexing problem related to building the fuselage in halves. When ready to cement the two sections, one often finds them far from symmetrical because of variation in quality of balsa and more or less accented distortion due to cement. To avoid this problem, it was decided to adopt the horizontal spliced construction for the fuselage. This way, although every effort is made to prevent misalignment, should there be any, it will be less obvious, since very seldom is a fuselage symmetrical along its line of thrust and a slight departure from scale will be hardly noticeable.

FUSELAGE: Begin construction by cutting all formers and splicing as shown. The nose block is then cut to shape and hollowed out, using former No. 1 as a template. When still in the rough stage, carve the spinner from hard balsa and use it as a template to finish the nose block. Tack the plan down to insulation board. Now, pin down the longerons shown on top view of the fuselage, after taking the normal precaution of covering the plans with waxed paper. The bottom half of the fuselage can be built directly on these longerons. Curved side and belly stringers can be "stress-relieved" before cementing, by rolling and pressing them with any round bar, pencil or knife handle until the approximate shape is reached. In this fashion, most future distortion is prevented.

After this section is dry, remove it from the board and cement the top half of the formers and add the remaining stringers. The rear rubberband hook should be installed at this stage. Propeller hub, front hook and scale details are then fitted to the motor block. This unit is fixed to the main fuselage by sewing in milliner's dress snaps to the front former and to the rear of the motor block. Cover the tread with cement, taking care not to encroach on the contact surfaces.

PROPELLER: A flying propeller is made by trimming the ends off a 6" diameter plastic propeller. Scale propeller can be carved from hard balsa and inserted in the hub.

LANDING GEAR: Cut the wire to length and bend it to shape. Trim the

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strut to a tapered section and groove it to the receive wire. Cement firmly and unsparingly in position against the fuselage former. Sandwich wooden wheels between washers, nick the ends of the piano wire with a file and stop the ends with a blob of cement. To make the tail skid, bend piano wire, or a pin, to shape and cement it at the rear of the fuselage. Plastic reeds, giving scale effect, should not be cemented before covering is completed.

RUDDER AND STABILIZER: These items are straightforward in construction and need no special instruction. They are made in the conventional manner by cutting leading and trailing edges from 1/16" sheet balsa, pinning these to the board and cementing parts directly over the plan. Wait until dry, then lift up and sand the edges to shape.

WING: Place the balsa leading edge, lower spar, wing tips and trailing edges directly on the board. Then, add celluloid or clear plastic panels, strut support bars, ribs and top spars, in that order.

WING STRUTS: Cut these from hard balsa or pine strips. Shape all pieces to a tapered section. Pin and cement the main strut assemblies directly over the plans. Do not remove until thoroughly dry.

COVERING: Fuselage sides can be covered in one long strip. Top and bottom should be covered in short sections from former to former unless wet Silk-Span is applied by more experienced modellers. Fuselage side and bottom trims are cut from Silk-Span and doped on. The motor block is to be covered with Silk-Span applied wet and matching the fuselage trims. It is the easiest method and will give the best looking finish. Painting should not be attempted unless certain a uniform shade will be obtained.

For the rudder, it was found best to lay the outline on a piece of Silk-Span tacked to the working board, and backed with heavy cardboard. The hinge is then marked on with very soft black pencil. Lettering is done in the same fashion. After both sides are finished, the Silk-Span is removed from board and cemented to the balsa.

The stabilizer can be covered in one piece and markings added over the balsa spar.

Cover the underside of wings first. The top is best covered after the wing is cemented in place and the correct dihedral has been set by wing struts. Covering before general assembly, will only be a source of unwanted wrinkles, and these are always difficult to remove. Mark the outline of the ailerons in the same way adopted for rudder and stabilizer.

ASSEMBLY: To install the rubber band, a square stick of balsa, with its end notched to hold rubber is necessary to reach the tail hook from inside fuselage. The rubber band should be looped once and be just long enough to hold the propeller in position, when unwound. After slipping it on front hook, snap the motor back into place. Cement the stabilizer on, then add the rubber and external bracing after carefully aligning and squaring the members with fuselage.

Cut small openings near the points of attachment of the wing struts to the sides of the fuselage. Since these points will carry the brunt of landing shocks, be liberal with cement. Install the support in front of cockpit first. After this is dry, turn the fuselage on its back shimming the front wing support with a ¼" block, and secure the tail end between hooks. Now, cement the wing struts in place, allowing their outer ends to rest on the board. Only after this is firmly dry should the model be turned over and the wings cemented in place.

The open upper surface of the wings allows one to reach inside the wing structure and reinforce the wing and strut junctures with an additional quantity of cement. The rear wing and top of the fuselage struts should be trimmed to length and cemented in place. Now, the top covering can be added, ailerons marked on. As for the other side, and lettering, cut these from Silk-Span and dope over the covering. Dampen the covering all over after model is completed. One coat of thin clear dope can be put on although adding to the weight.

FLYING: The nose should be weighted with nails forced inside the soft balsa nose block, until model balances at the main spar. Test glide in tall grass, away from tough reeds or branches that tear easily through the covering. The author's first model was strictly an exhibition model. The second one, was powered by a single loop of rubber. This was found sufficient to fly around the house. No more was ever added, since contest performance is difficult to achieve with a model of this size. Up to 4 loops could be accommodated within the rather slim fuselage, giving commendable power for sport flying. Of course, weight and room are the deciding factors in this case.

Before closing off, an item to watch for. The near perfect proportions of

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the prototype, except for the short nose moment arm are a guarantee that good flights will almost always occur; but beware of walls. The location of the wings on their struts will not stand too much rough treatment, and a headlong glide into a blank wall can mean a lot of repairs. The solution: carry a tube of cement to the flying site.

BILL OF MATERIALS
(Balsa unless otherwise specified)

8—1/16" x 1/16" x 36".....Longerons, spars
1—3/16" x 1/16" x 36".....Wing struts
1—1/8" x 1/16" x 36".....Wing fuselage supports
1—1/8" x 1/8" x 36".....Leading edge
1—1/16' x 3" x 36".....Ribs, formers, outlines
1—1/4" x 1/16" x 36".....Trailing edge

.050" piano wire; pair of 1" diam. wheels; soft block balsa; 5" diam. plastic propeller; Silk-Span; sandpaper pins; dope; thread; dress snaps; plastic reeds; colored dope; rubber motor.

DON'T FLY NEAR POWER LINES