**INTRODUCTION.**

This model is one of the Frog Senior-Series, which consists of a range of models of near-scale design and appearance, representing popular full-size light aircraft, all approximately 18in. span.

They embody very simple and quick constructional methods, as in the Frog Junior Series models, all the main parts being ready-cut to shape, and only require cementing together.

To ensure a satisfactory job, study the plan and check the parts with it before commencing. Assemble the model step by step as shown.

Cement and dope are not included in this kit, but they can be bought at any model shop. Use quick-drying balsa cement such as Frog Universal. You will also need a balsa-cutting knife or a razor blade, and a few pins.

When you have built this model, remember there are many others in this series equally attractive.

**THIS KIT CONTAINS:**

1. Plan and instructions.
2. Balsa Sheet of cut-out fuselage sides.
4. Balsa Sheet of cut-out bulkheads, ribs, etc.
5. Balsa Sheet of cut strips.
6. Balsa Block for front lower cowl.
7. Shaped wire undercarriage.
8. Propeller with shaft and bush.
11. Wheels.
12. 2in. elastic bands for wing.
13. 2in. elastic bands for motor.
14. Transfers.
15. Piece tissue for covering.

in envelope.

**FUSELAGE ASSEMBLY.**

Carefully remove: knife or a piece of razor by cementing pieces 1.

Then cement bulkheads fig. 1. Make sure they other side in place. W and the front piece 5, a

Fit the top front side fig. 2. The rear stringer:
**BUILDING INSTRUCTIONS.**

Remove all the parts from the balsa sheet using a balsa- or razor blade to separate them with a clean edge. Start pieces of balsa strip 1/8" x 3/32" to bulkheads 2, 3 and 4. Bulkheads 2 and 3 to one of the side panels, as shown in the side view drawing. Then cement the pieces, allowing them to dry. When dry, assemble the other bulkhead pieces and cement the rear ends of the fuselage together. 

Front stringers in place, followed by pieces 9 and 10. See strings are fitted after the tailplane is assembled.

**UNDERCARRIAGE.**

Bend the top part of the shaped wire piece against the side view drawing; then cement it into place in the place of 1/2" x 3/32" strip against the wire. Then fix the lower cowl block, 3/16" thick, with piece 5, and level it off flush at the front. Fix front pieces 6, 7 and 8 in place, and round off the cowl block to obtain a smooth shape.

Fit the wheels in place and bend over the small paper washers to the axles to hold them on from note paper to the shape shown on the diagram. Glue them to the wire legs.
TAILPLANE AND FIN.

Remove the shaped tailplane from the balsa panel, round off the edges and sandpaper the surface smooth. To form the dihedral 'V', bend the tailplane at the two 'score' lines, then place it on a flat surface with the tips raised 2½in., and cement along the score lines. Then cement it to the fuselage as shown in the side view. Cement parts 11 and 12 in place against bulkhead 3, and the half-bulkhead 13 together with the strip which fits into the notches in the side panels. Then the rear stringers can be cemented into place.

Cut away part 10 to the shape of the cockpit, and cement the shaped cellastroid cabin in place, holding it in position until it has set.

Cement the lower cross-struts in place, together with the tailskid 14.

Remove any sharp corners with sandpaper, and smooth down the whole model to obtain a good finish. Apply a coat of dope or clear lacquer before covering.
**WING.**

This is built over the plan in two halves as shown in fig. 3. It is advisable to pin a sheet of greaseproof or tracing paper over the plan to prevent the cement sticking to it.

Pin down the leading and trailing edges over the drawing, then remove the ribs W1—W4 from the printed sheet and cement these into place, together with the tip pieces. Then take two 1/8in. x 3/32in. strips for the spars, trim the ends as shown in fig. 3A, and cement them in place as shown in fig. 3. When both sides are set, lift them from the plan, and assemble them, with the tips raised as in fig. 4. Build up the centre section with short pieces of the same materials as the wing, and well-cement round the spar joint. See fig. 5.

When it is quite set, remove the wing from the plan, and shape the trailing edge as shown in fig. 3. Round off the leading edge and tips, smooth down the whole wing and apply a coat of dope before covering.

**COVERING.**

The fuselage and wing require covering with the tissue paper supplied. Start with the strips of tissue wide enough pasted for sticking it to the fuselage, stretch a strip of the other sides, leaving a gap or tailplane and fin.

When the paste is dry, and when it is thoroughly dry, help to tighten the pasted paper to the ribs. Whittles the paper to the section, and keep the paper to the airfoil shape.

When the covering is to shrink it, and pin it down fully warping.

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**Fig. 3**

**Build Wing in Two Sections Over Plan.**

SHAPE TRAILING EDGE

STRIP AS SHOWN

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**Fig. 4**

1/2 DIHEDRAL

LEADING EDGE

3/16" x 1

SPAR

1/8" x 3/16

TRAILING EDGE

3/8" x 3
"WIDGEON"

1. Cover the fuselage and cover each side separately. Cut enough to allow a small overlap. Use dope or to the framework. Apply some to one side of the tip of the tissue over it and smooth out any wrinkles and smooth down the edges. Repeat this for the gap on the bottom surface below the rear motor pin. If dry, lightly spray the tissue with water to shrink roughly dry again, apply a coat of dope. This will the paper. Apply a thin coat of clear lacquer to the with 4 separate pieces. Start with the bottom surface to the outer edges only. There is no need to stick it. When covering the top surface start at the center. The paper taut from end to end, to help preserve the wing is complete, lightly spray the paper with water it down to a flat board when it is half-dry, to prevent

When it is dry, dope each half-wing separately, as before.

DECORATING.

The appearance of the finished model can be by the addition of a little cellulose paint. This should the fuselage, to save weight, unless it is sprayed or painted by hand, applying it quickly and evenly without put it on heavily or the model will not fly well. The transfers can be affixed to the wing or fin, as or decoration required.

MOTOR.

This is composed of two 9in. elastic bands. Lubricate them with Frog Rubber Lubricant or put them into the fuselage with the help of a length of wire a hook at one end of the wire and insert it into the fuselage. (If a thread is being used, tie a weight at it through).
Separately, and pin down again.

can be improved considerably
This should be restricted to
prayed on lightly. It can be
venly with a soft brush. Do
fly well.

or fin, and any other lettering

Hook the bands on to it through the opening at the rear and insert
the rear motor pin (cane) through the holes in the fuselage and through
the loops of elastic. Pull the bands out through the front, and hook
them on to the airscrew shaft (complete with airscrew).

The wing is held in place with two elastic bands stretched over the
centre-section, and hooked onto the pins pushed into bulkheads 2 and
3 in the fuselage.

The model is now complete and ready for flying. A drop of thin
oil on the airscrew shaft will improve the running.

FLYING.

This model is intended to be flown out of doors, but choose a calm
day for your first test.

Test-glide the model first to check the balance. Hand-launch it in
a slight downward direction. If it dives to the ground, carefully bend
up the rear edges of the tailplane, known as elevators, or glue a small
weight in the rear end of the fuselage. If the model climbs steeply and
stalls, bend the elevators down slightly, and/or add a small weight to
the nose of the fuselage. A small nail or drawing pin can be pushed
into the cowl block for this.

When the glide seems satisfactory, put a few turns on the motor
and launch the model (into wind) if any. The turn can be adjusted by
bending the fin, or by twisting the wing slightly.

Increase the turns on the motor gradually, up to a maximum of
approximately 350; if the motor is not lubricated, the turns must be
limited to 200. An unlubricated motor will wear and break very quickly.
Stretching the elastic while winding will enable more turns to be obtained.

This model will take-off from the ground without assistance. Having
wound the motor, place the model on a smooth surface, and release it
directly into wind.

Designed and Made in England by

INTERNATIONAL MODEL AIRCRAFT LTD.
MORDEN ROAD, MERTON, LONDON, S.W.19.

1/2" x 3/32"

STRIPS