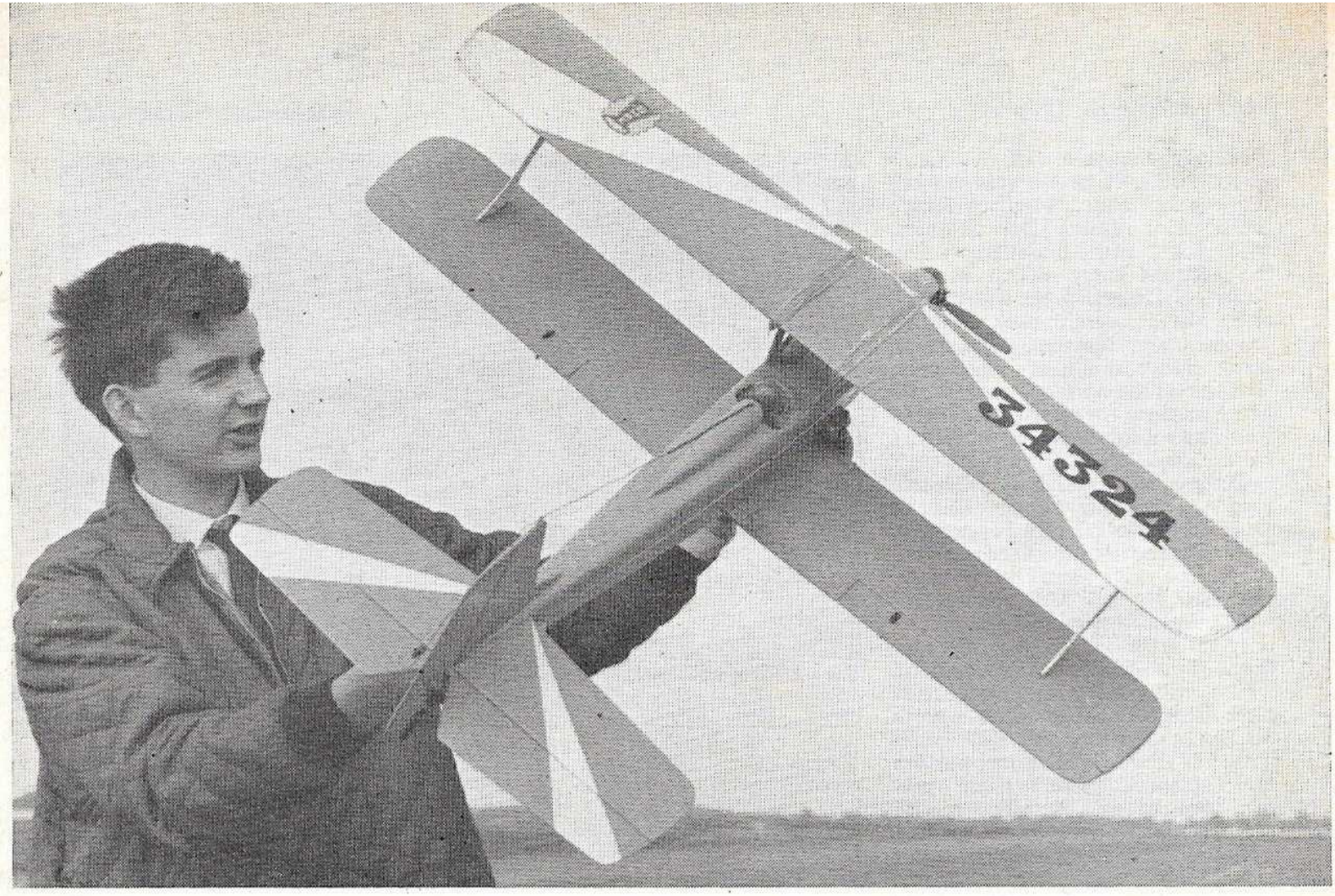

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Pasadena Special

by PAUL NEWELL

attractive mini-multi bipe – ideal for biplane racing!

HAVING done a considerable amount of flying with my original *Moonprobe,* I formed the opinion that small models, whilst having obvious advantages for transportation, are not particularly interesting to fly if one is used to precision aerobatic aircraft. This is because a small model is more susceptible to outside disturbances of the flight path, making it virtually impossible to do anything but the simplest of manoeuvres with any accuracy. However, along with many other modellers, I find that there are often occasions when I just want to fly and am not particularly interested in aerobatics. It is at such times that a small model comes into its own.

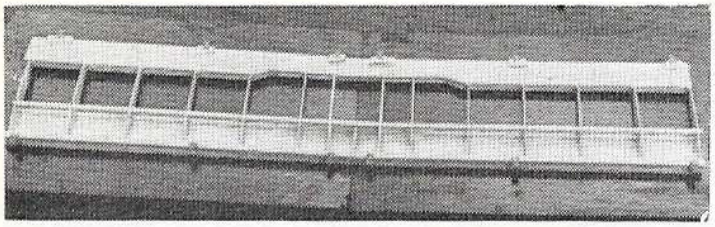
With this in mind, and the increasing interest in biplane pylon races I decided that a semi-scale model based on the American home-built racing biplanes would satisfy the wish to build something a little different, so *Pasadena Special* was sketched out on the back of an envelope (Well, I don't smoke!). That name—it's taken from my successful series of free-flight gliders in the hope of inducing some competition successes!

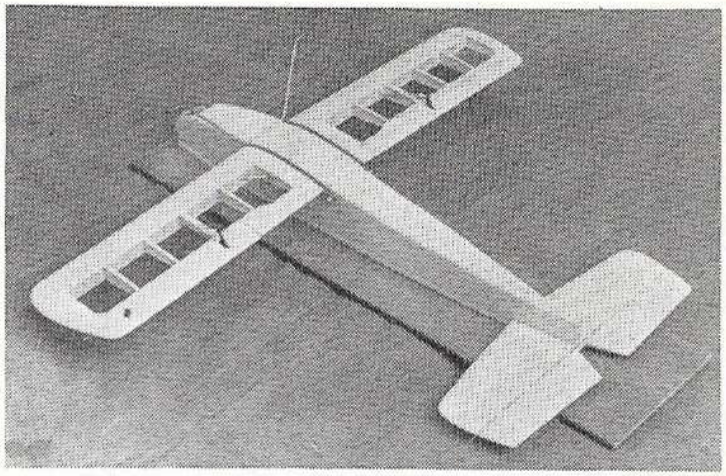


Looking around at other biplanes, it was apparent that with full house control, virtually no dihedral would be necessary. Hence the top wing is flat and this, together with an absence of ailerons, makes it extremely quick to build.

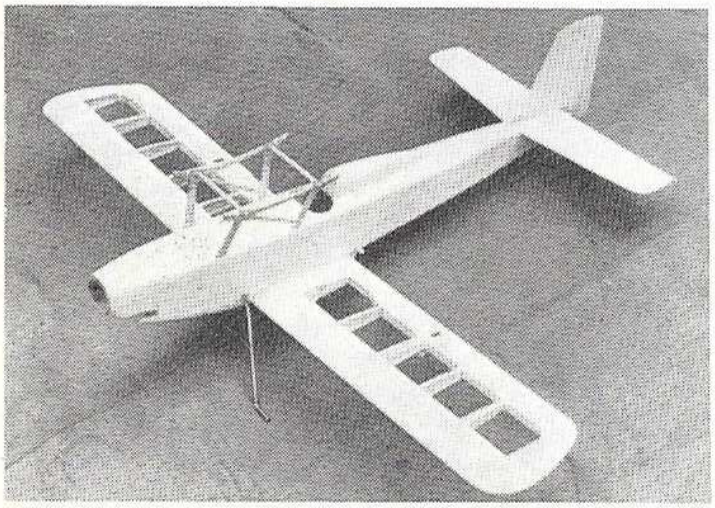
Having heard of ground-looping difficulties with short tail-moment biplanes, *Pasadena Special* was given slight positive tail incidence and a fairly long moment arm. This, together with the large rudder, makes the model fly very much in a groove and is, therefore, ideal for pylon racing, particularly as the short span gives the ailerons a quick response.

The positive tail incidence also gives the model an interesting and not undesirable characteristic. Due to the incidence, the faster the model goes, the more nose-down

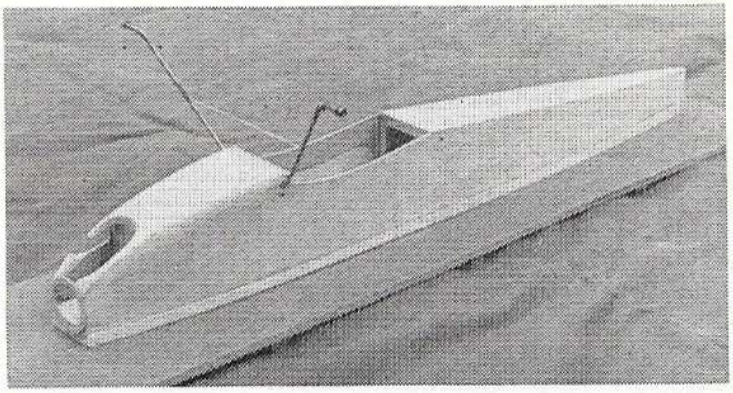




These photographs of a *Pasadena Special* under construction are by Brian Hewitt, who built an advance check-model from our plans. As seen above, Brian uses a dihedral board for building his wings—and plenty of bulldog clips. Right: fuselage was built on (but not permanently attached to) the top $\frac{1}{8}$in. sheet, cut to profile only. The lower wing, tailplane and u/c are aligned at this stage. Below: nearing completion, with cabane struts, shaped and hollowed decking, headrest and tail unit all in place.



Below : note cutaway for motor and silencer—Brian used a .40—and the model goes like a good 'un!



it flies. For landing approaches, on throttling back the nose automatically comes up as speed is lost. One does have to be a little careful on the throttle since with all the extra drag of a biplane, speed is quickly lost and it is, therefore, easy to undershoot the intended landing area. I have found it useful to have the tick-over set slightly faster than usual, particularly when flying in a wind.

The motor was side-mounted for two reasons; firstly to lower the needle-valve position, since I have found it difficult to get a consistent run from a Merco 35 if the tank is a bit low. Secondly, the silencer projects below the fuselage and so acts as a skid in the occasional nose-over landings. A metal radial mount is recommended, since ordinary bearers would obstruct the tank compartment. Note the locating block for the tank. This is to prevent the fuel lines becoming kinked due to the Deac pushing the tank forward.

The cabane structure has been made from $\frac{3}{16}$in. ply as I consider it easier to cut a piece of wood to shape than to bend wire accurately! Also, it solves the problem of fixing to the main fuselage. The spreader-pieces are used to give a degree of rigidity, and also serve to eliminate the otherwise austere lines of the structure.

Throughout construction, care must be taken to keep the rear end light; otherwise ballast will have to be added to get the C. G. sufficiently far forward, so choose the wood carefully for the fuselage and tailplane.

CONSTRUCTION

Wings

The lower wing is initially built flat, without ailerons or dihedral, these being built in later. Both upper and lower wings are thus identical in the early stages, except for the centre rib. Using the preshaped T.E. the ribs may be added, followed by the L.E., working "in mid-air." Using this technique, it is easy to ensure that no warps are built in during the early stages.

The lower wing should be cut in half at the dihedral break, and cemented together at the correct angle using the dihedral braces clamped in place. When the lower surface sheeting is added, the structure becomes more rigid, when the ailerons may be cut out and the false T.E. added. The P.T.F.E. tube for the control linkage must be fitted before adding the top sheeting. The outside of the tube should be roughened with coarse garnet paper so that the epoxy adhesive has something to key to. Upper sheeting and cap strips complete the basic structure.

The top wing is similarly built, but does not have the extra complication of dihedral or control linkages.

Fuselage and tail

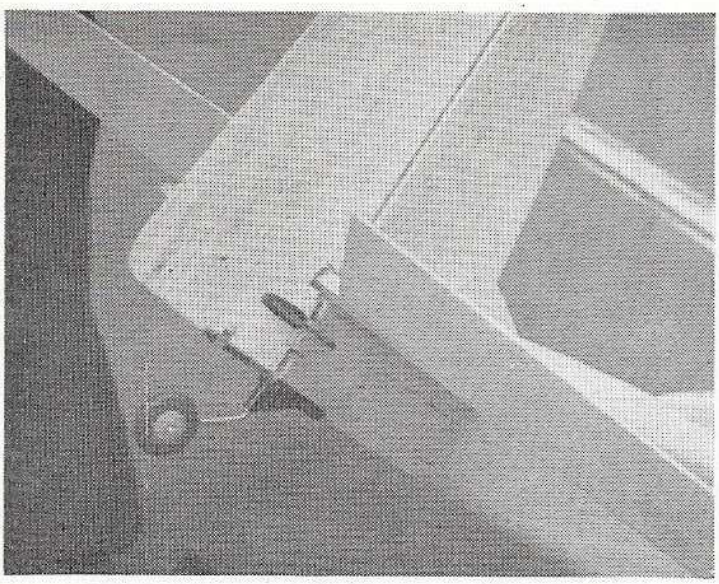
Two sides are cut out, noting carefully the profile at the underside of the nose. Add the triangular longerons before joining the sides with the formers.

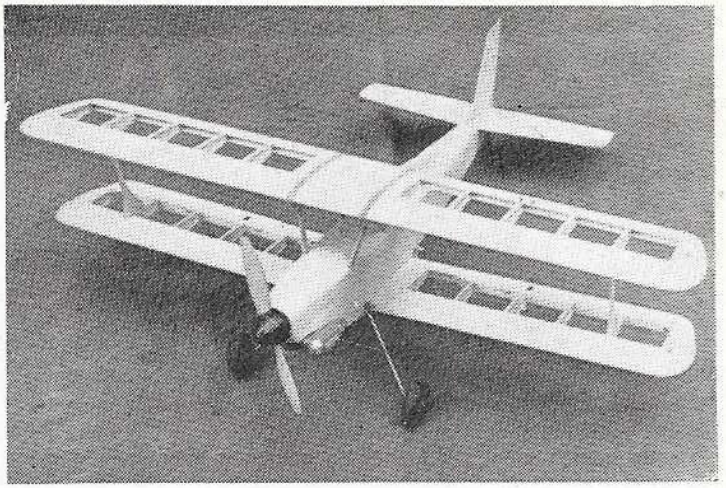
The cabane struts should be fitted at this stage, clamping them firmly to the fuselage sides until the glue has set. The tail seating may be shaped and the tail fitted during this period. The undercarriage and mount, and the ply gussets for the wing dowels, should be added before fitting the top and bottom sheeting.

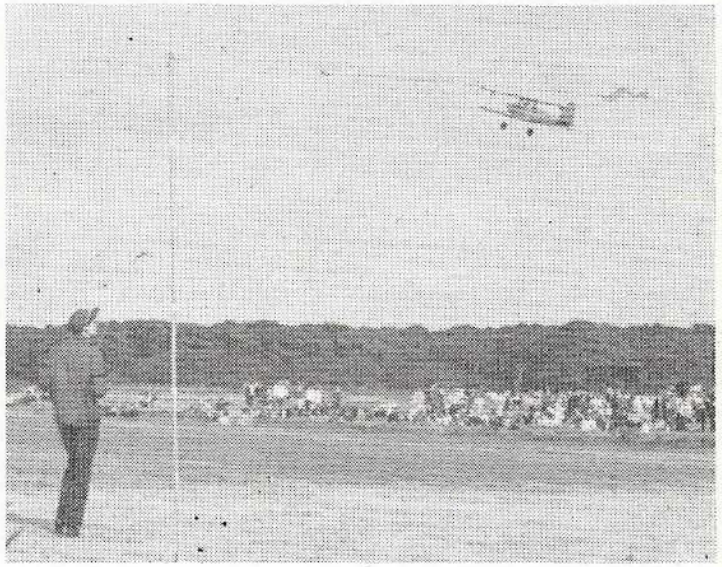
It is easier to shape the fuselage before cutting out the cockpit recess and cementing the headrest in place.

Wing struts

As it is somewhat difficult to maintain absolute accuracy in the dihedral and cabane structure, the model should be assembled and a cardboard template cut to determine the correct length of wing







Above: a steerable tailwheel helps ground handling. Top right: ready for covering—again, Brian Hewitt's check model. Right: designer Paul Newell flying "P.S." under the limbo tape with ease at South Coast R/C Rally. Below: another view of prototype.

struts. Allowance must be made for the thickness of foam plastic that should be fitted at the wing seatings.

Covering and finishing

On the original, the fuselage, tail surfaces and wing struts were covered with lightweight tissue, and the wings with nylon. After sufficient coats of clear dope to fill the tissue and nylon, polyurethane paint was used to give the colour scheme and fuel proofing.

Equipment installation

The servos should be fitted on medium-to-hard balsa blocks and secured with woodscrews through the rubber grommets. This method has been found to minimise the vibration transferred to the servos and also avoids damaging the servo lugs in a major catastrophe.

P.T.F.E. tubes and cables are recommended for the control linkages and again, to minimise the risk of damage to servos, a nylon quick-link should be used at the servo end. Care should be taken with the installation of the receiver, ensuring that it is entirely surrounded by an adequate thickness of foam rubber.

Trimming and flying

Unlike some small models, *Pasadena Special* is not oversensitive when the control surfaces have about the same amount of angular movement as on a normal multi model. The two-wheel undercarriage may require some getting used to, if the pilot is new to such an aircraft.

For take-off, a small amount of right rudder trim should be applied until safely airborne. From a standing start, hold on up elevator and gently open the throttle. As the model gains speed, ease off the elevator so that the tail can lift. After a little more speed has been gained, up-elevator is gradually applied to lift off completely. From then on, all that must be remembered is to keep on a reasonable amount of throttle for the landing.

The model is capable of basic aerobatics plus a few not in the schedule, such as flick-rolls. Take care in the spins; with the drag of two wings the model takes longer to regain flying speed, so allow sufficient height to apply down-elevator for a moment before levelling out!

Once you get to know the flight characteristics of this little bipe, you will be all set for many hours of enjoyable flying.

