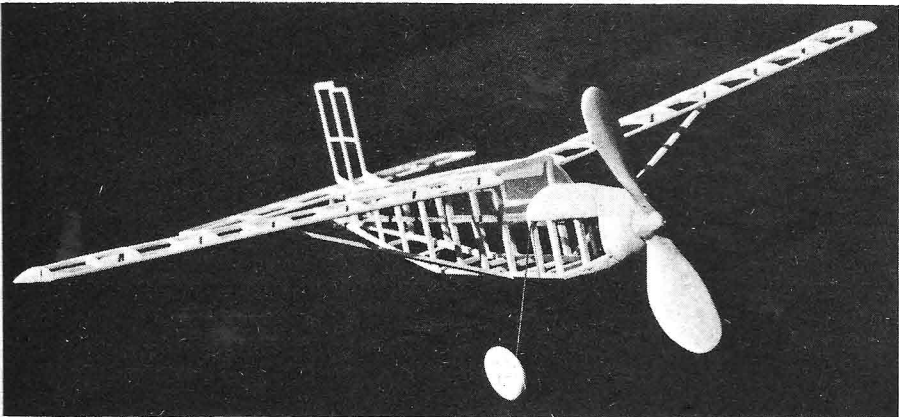




Slow and easy does it. A gentle launch and away it goes for a very fine realistic flight.

# PILATUS PORTER

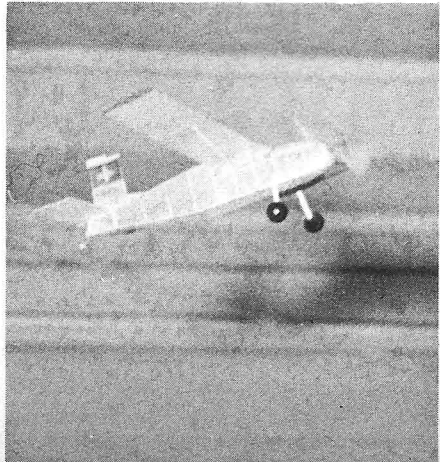
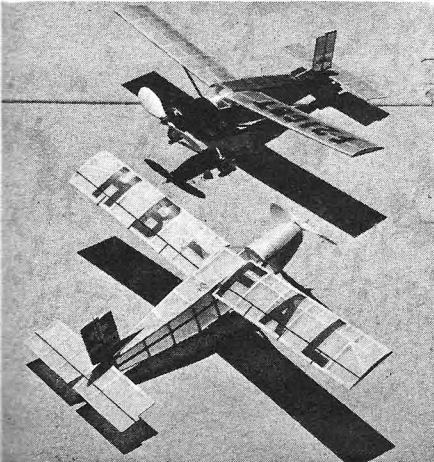
By WALT MOONEY . . . OUR OLD PROFESSOR OF RUBBER-POWERED SCALE FREE FLIGHT MODELS FOR INDOOR/OUTDOOR, HAS A WINNER IN HIS LATEST DESIGN OF ONE OF THE BETTER PRIVATE AIRCRAFT.



Strong, functional and very lightweight design is apparent in this uncovered view of the plane.

Not satisfied with one winner, our author has built two of these fine flying machines.

On its way to the rafters for good duration in the slow and shallow climb of a contest winner.



Once in a while an airplane is destined by its design to be a great success. Not always, however, does it have the most graceful shape. Such an airplane is the Pilatus Porter. It also happens to be an ideal subject for a simple rubber-powered flying scale model. Several models have been built to these plans and all of them have flown extremely well, so you can be assured of a successful model if you decide to construct a Porter. The plans are presented full-sized so the model can be built directly from the magazine pages. At this size, the model has consistently exceeded 60 seconds duration outdoors, and has done 36 seconds under a 25 foot ceiling. (I was fourth in a local contest behind 3 Porters built by Fudo Takagi, Plut Shimazu, and Gene Wright).

The model is built up of standard sizes of balsa sticks, mostly 1/16th square, 1/16 by 1/8, and 1/16th sheet balsa. No difficulty obtaining these sizes should be found. Structure is quite conventional, and with reasonable care a good model will result. Try to select light wood as weight is important for maximum duration. The structure is more than sufficient for all flight loads and collision with walls, etc. Handling this model is likely to give it the severest of wear.

Use a piece of wax paper over the plans to protect your copy of Model Airplane News, and let's get started.

Your author, has a reputation around San Diego modeling circles, to be a rapid builder. It's not that I do anything in a rapid manner but generally, do not waste time, but plan things ahead with a given sequence. Try following the sequence in this article and see if it doesn't help construction time.

First, cut out all the pieces made from 1/16th sheet balsa. Ribs, formers, rudder bottom, and nose block laminations. Cement nose block laminations together now as they should have maximum time to dry prior to shaping.

Now, make the two fuselage sides directly over the plans so that they are exactly the same. Sides are cross-hatched on plans to make them stand out. While sides are drying, build the wings and tail parts also over the plans. Note wing ribs that attach to the fuselage are slightly slanted towards the tips to allow for dihedral angle. The procedure for all the above parts is to pin the outside pieces in the correct place on the plan, and then fit and cement the cross pieces in place. It is important that the pins are used only at the sides of the pieces, and not through (Continued on page 51)

**FULL SIZE PLANS  
OF PILATUS PORTER  
ON NEXT TWO PAGES**

Photographs by Fudo Takagi

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Mr. Bev Smith  
c/o Pettit Paint Co.  
Belleville, New Jersey

Dear Bev:

November 6, 1964

So much has been written about the strength of epoxy glues and their ability to hold parts together under severe conditions that the following may not seem remarkable to anyone but me.

Last season, during the Westchester R/C Contest, I made one of my "better landings", promptly tearing the engine and magnesium mount from the airplane (I later found out that the inverted portion of the pattern doesn't include the touch and go!). A replacement mount was unobtainable so an old buddy introduced me - and the broken mount - to Hobbypoxy Glue. In 45 minutes the entire nose - engine, mount and firewall - was glued together and the engine was running up a storm. We went on to pick up a first place.

Wiser men would have installed a new mount after the contest but I proceeded to continue to fly this for weeks after. Vibration, heat, fuel and numerous hard landings of the one point variety never loosened things.

I would like to report that the engine is still glued in place, but I can't. Three months later, after concluding a beautiful figure 9 about 10 inches under the ground, I did succeed in pulling the mount out again; that is I pulled the entire nose off! I can report, however, that I still haven't gotten the mount off the engine - help!

Seriously, may I say that this glue is really very fine and when mixed according to directions, better than any other I've used. Believe me, my brand of flying demands the strongest of glues. Thank you for putting out a great product.

Sincerely,  
*Art*  
Arthur F. Schroeder Jr.

the number 2 and 3 pylon unless a pylon is cut. There will be no pilot's helpers at any of the pylons.

At the number 2 and 3 pylons, the official flagman will stand in close proximity to the pylons they are judging. If sufficient personnel is not available to act as flagman for each entrant, one flagman can be used at each of the number 2 and 3 pylons. He will use an appropriate method to notify a missed pylon.

A maximum of four planes per heat will be allowed.

A minimum of 25 feet will be strictly adhered to. Any violation of this minimum altitude by the pilot will bring cause for disqualification by the contest committee.

A three-minute time limit for starting the engine will be allowed. A 6-minute flight time will be the maximum endurance of any flight. Any time over that will not be counted.

All laps are to be flown counter clockwise with turns to the left.

If the model fails to fly outside the pylon, it must re-circle the missed pylon immediately or the flight will not be scored.

### Pilatus Porter

(Continued from page 19)

them, to keep from splitting the small balsa sections. By the time wings and tail are set down, fuselage should be dry enough to remove from plan. Do this carefully using a thin razor double-edged blade to separate from the paper if required. Then use a thin blade to separate fuselage sides.

Bevel inside of aftmost crosspiece and cement fuselage sides together at back end, leaving front side ends separated by about 3 or 4" and block up on the board carefully with books, old bottles, or something that will hold sides exactly vertical as they dry. While fuselage is drying, remove wings

and tail from plans.

Next cut out all the fuselage cross pieces shown in top view. Note, that in most places there are two required, one top, and one bottom. Install them in fuselage, working from the back to the nose. Small rubber bands can be used to hold sides together while cement is drying. Take particular care that fuselage is held in perfect alignment while drying.

Bend landing gear wire, and tail wheel wire. Install formers, A, B, C, D, E, and F, on fuselage. Landing gear wire is a little unusual in that it is cemented to a former on top of fuselage. Add cowling cover on top of forward fuselage. This can be 1/32 sheet balsa or heavy bond paper. Most of the models I mentioned at the start of this article used bond paper and it looks fine.

Fit back rectangle of noseblock in front of fuselage and carefully carve laminated nose block to shape in order that it fits fuselage shape. Drill a 1/16th hole through noseblock and install a short length of aluminum tubing as a bearing.

If you have trouble carving or shaping a prop, a commercially produced wood or plastic will do perfectly well for this model. If not, carve one from the balsa block indicated on the plan. Bend a propeller hook and install propeller on nose block. Use a couple of washers between nose block and propeller as a thrust bearing. No free wheeling device is shown and none is required if model is flown indoors only but outdoors model duration can be increased by using a free wheeler so install your favorite.

Now, prepare structure for covering. This requires lots of careful sandpapering—very careful—and very much. Round leading edges of tail and taper trailing edge of wings to a sharp edge. Sand fuselage roundings longerons as shown in typical fuselage section. Make wing struts a little

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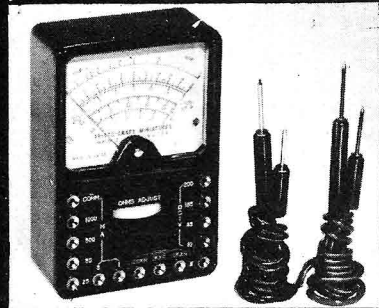


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longer than necessary for later trimming to size, sand them to a teardrop cross-section.

Cover model with light weight tissue. Since the Porter is mostly civilian owned, any color scheme can be used. The one shown is for one of the prototype Porters, it is red on a white background. The airplane was actually silver and red but I haven't seen any silver tissue in twenty years. When model is covered, spray it lightly with water to shrink tissue. When it is dry, give model one or two coats of very thin dope and then add the color trim and license numbers in contrasting color tissue.

Assemble the model, cementing the wings and tail in place. Get them perfectly aligned and block up wing tips to correct dihedral and allow the cement to dry. Cut struts to fit exactly and cement them in place. Add windows and windshield from thin celluloid. Fit wheels and retain them with a small drop of cement on the end of wire.

The airplane is now complete in all its essentials points and can be flown if desired. However, let's add the rest of the minor details, those that really will make the difference on the appearance of a scale model and it will take only a small amount of additional effort.

Use ruling pen and black ink or thin strips of black tissue to outline the control surface hinge lines. Mark door outline, if desired. Paint in air inlets in front of nose block as shown in front view. Paint the tires black.

Carve the exhaust pipe from soft balsa, fit it to fuselage and paint it dull black. Add the V brace struts to landing gear. These attach at bottom bend of landing gear wire and at center of fuselage bottom as indicated by dotted lines in top view. Add streamlined paper fairing for the shock absorber detail. Carve a balsa spinner and fit it to propeller.

The above is the limit on the model shown here. However, if you really like detail, find a good photo of the Porter in an aviation magazine and use it as a guide in adding details such as, aileron and flap hinges, steps, and navigation lights, etc.

Prepare for flight by installing a single loop of 1/8th flat rubber about two inches longer than the distance between propeller hook and rear motor peg. A piece of 1/16th diameter hardwood dowel is used for the rear peg. Lubricate motor with commercial model rubber-lube or castor oil. This motor is not long enough to give the maximum duration possible with the model but will give fewer problems than a longer motor during test flights.

Be sure that model balances in a level attitude when held by wing tips above point indicated for CG. If it does not balance, add weight to the nose or tail.

Check model visually to see that no warps are apparent in the surfaces and things are properly lined up. Now, hand glide model about four feet up. Adjust surfaces by slightly bending horizontal and vertical tails to give a smooth glide with a wide right turn. For indoor work, turn should be as wide as is safely possible in your flying area.

Now commence powered flights starting with approximately fifty turns and gradually working to the capacity of the motor. It's best to make all the initial powered flights from an unassisted take off. Add thin balsa shims between fuselage and nose block to direct thrust-line of propeller and give desired flight pattern. Generally some downthrust, (a shim at the top) and some right thrust, (a shim on the left side) will be required to give a right circle under power, and to keep the initial climb from being steep. The nice thing about a right turning airplane is that under high power, max winds, the circle tends to straighten

out during the first second or so and take-offs are easier. If there is a very low ceiling at the indoor site, a left turning airplane burning off the first burst of power in a steep turn, without gaining much altitude, may keep plane from the ceiling and give better durations. Experiment with longer motors until the model lands with the last couple of turns in the rubber.

Outdoors, watch out for thermals—this one can be lost out of sight.

## N.A.A. Flightmasters

(Continued from page 21)

Fairchild 24.

The R/C boys took over each hour as the field was cleared for safety, and put on a superb show. Granger Williams, in his usual fine form, put the Howard "Mike" through its high-speed paces only to have Frank Capan step up and post high flight score with his yellow and red Bird Dog. Because of the constricted nature of the flying site and large number of spectators, the horizontal eight was omitted. Woody Woodward with his sleek Corbin Super Ace wound up grabbing a hotly-contested second behind the gorgeous entry of Jack Stafford: a red and white Piper Comanche (which, incidentally had top R/C scale points just ahead of Woody's Ace.)

Jed Kusik has his FF Aeronca Champion adjusted right on the fine edge—looking more like the real thing in flight than the real thing! All the Open modelers relaxed when they found out he was a Senior, and not competing against them. The Juniors and Seniors were relieved when he came down short of the minimum forty-second qualifying time on those excellent flights!

Hard-luck champ of the day, Rick Stice in junior FF gas, finally broke an unenviable unbroken string of ground loops, crashes, etc., to qualify for first in his class. Talk about happy!

Although the weather was considered near-perfect from the standpoint of calmness of the air, the bright California sun took its toll through warped wings, rubber motors breaking prematurely, and balky engines. Warner's BE 2E spiral dived in for a spectacular crash from about 100 feet due to a vicious warp in one lower wing. Surprisingly enough, due to the miracle of what the British call "knock-offable" components, it emerged unscathed save for a few minor scratches!

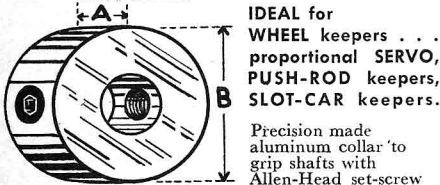
One of the greatest crowd-pleasers of the day was Walt Mooney's ducted-fan Vigilante. This tiny ship had the engine, a Cox .010, lying flat in the fuselage pulling air from a large hole in the top and directing it out the rear through a couple of 90° vanes. Though very marginal on power, it did manage to ROG after a run of about sixty feet, and flew rather well. On one flight, it became airborne, settled back with a bang, and then bounced almost straight up—just barely clearing the spectator area fence like a kangaroo! Walt's boy, Curtiss, described its flight pattern as resembling that of an "enraged grasshopper."

Not to be outdone for spectator attention, Dan Lutz' "Jeep" decided on a strafing run of the area, scattering people to the winds. Miraculously, its only victim was a foolish folding chair which, deserted by its occupant a split second before, neglected to duck.

The new FAI international scale rules proposals were tried out by six selected free-fighters who had their planes judged a second time according to the proposals, with a special judge in addition to the regular judges. As you may know, the new proposals entail many extra points for  
(Continued on page 54)

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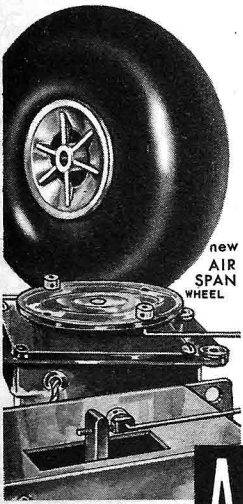
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3/16 1/4	3/32
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3/16 3/8	-5/32
3/16 3/8	3/16

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