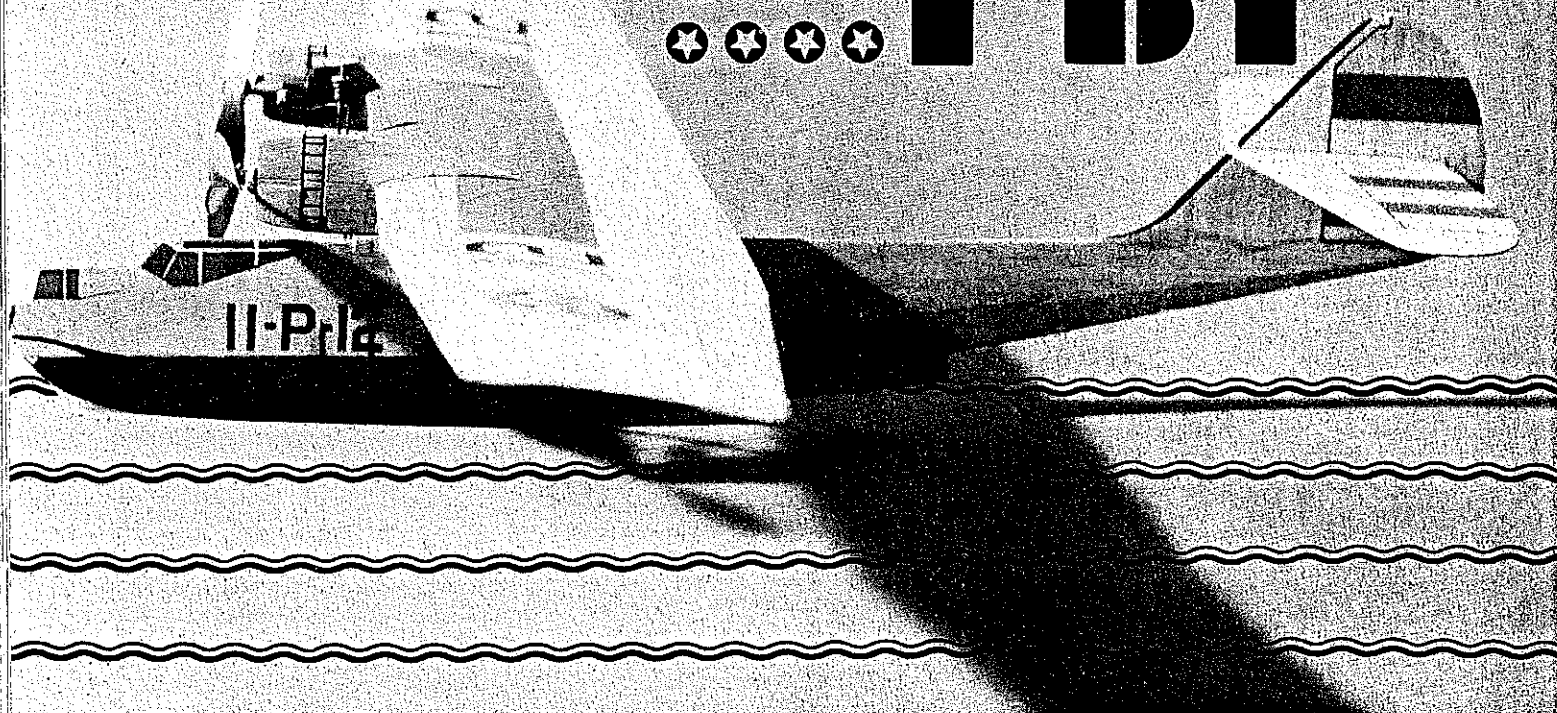


This small twin is perfect for flying indoors, but it has enough ruggedness to also allow flying it outdoors. ■ Bill Caldwell

CO₂ PBY



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WITH BUT FEW EXCEPTIONS, multi-engine Free Flight Scale models turn into disasters or never leave the drawing board. One engine always seems to quit at the wrong time. Profile Scale offers quick, simple answers to just such problems.

The PBY is a good starting point for a twin-engine venture because the parasol wing gives it natural stability. It has no

landing gear to knock off, and the engines are very close to the centerline.

This particular model was built in two evenings, and over half the time was spent in decorating it to keep it from resembling a flying lumberyard. The decorating scheme can be found in the center spread of *Profile Publication #183*.

The model was intended to fly indoors

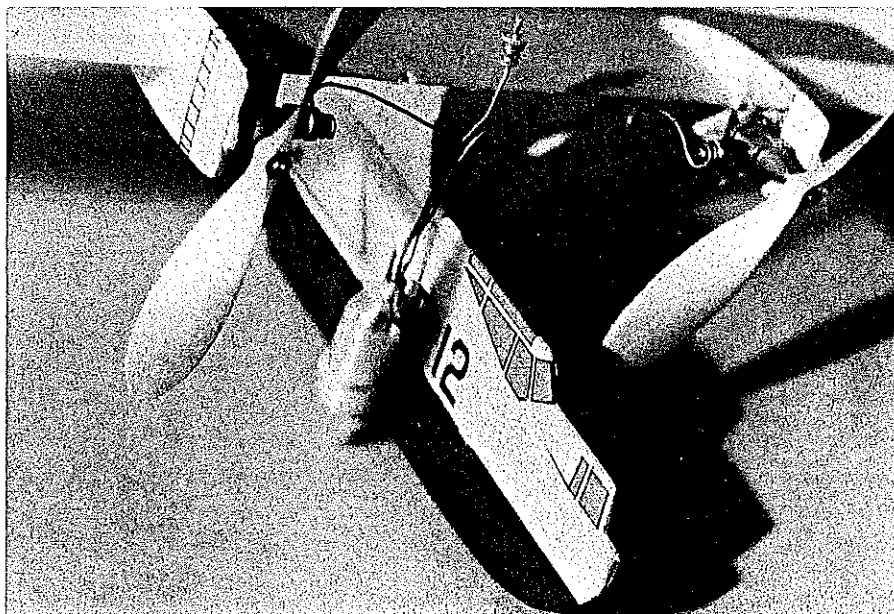
over a basketball court with a 26-ft. ceiling, although it flies just as well outdoors. Just take the Hot Stuff along. Brown MJ-70 motors were used, but the new Campus Bee or the Telco should work fine (if the Telco is provided with a Brown tank for a single "fuel" source).

Construction. Cut all the various parts from the appropriate balsa as indicated on the plans, making sure of the grain direction. Decorate the model before assembling the parts. Japanese tissue held down with a Pritt glue stick was used along with a Sharpie pen for black outlines. Avoid doping! Just finish-sand all the parts with 400-grit or finer sandpaper. Think light!

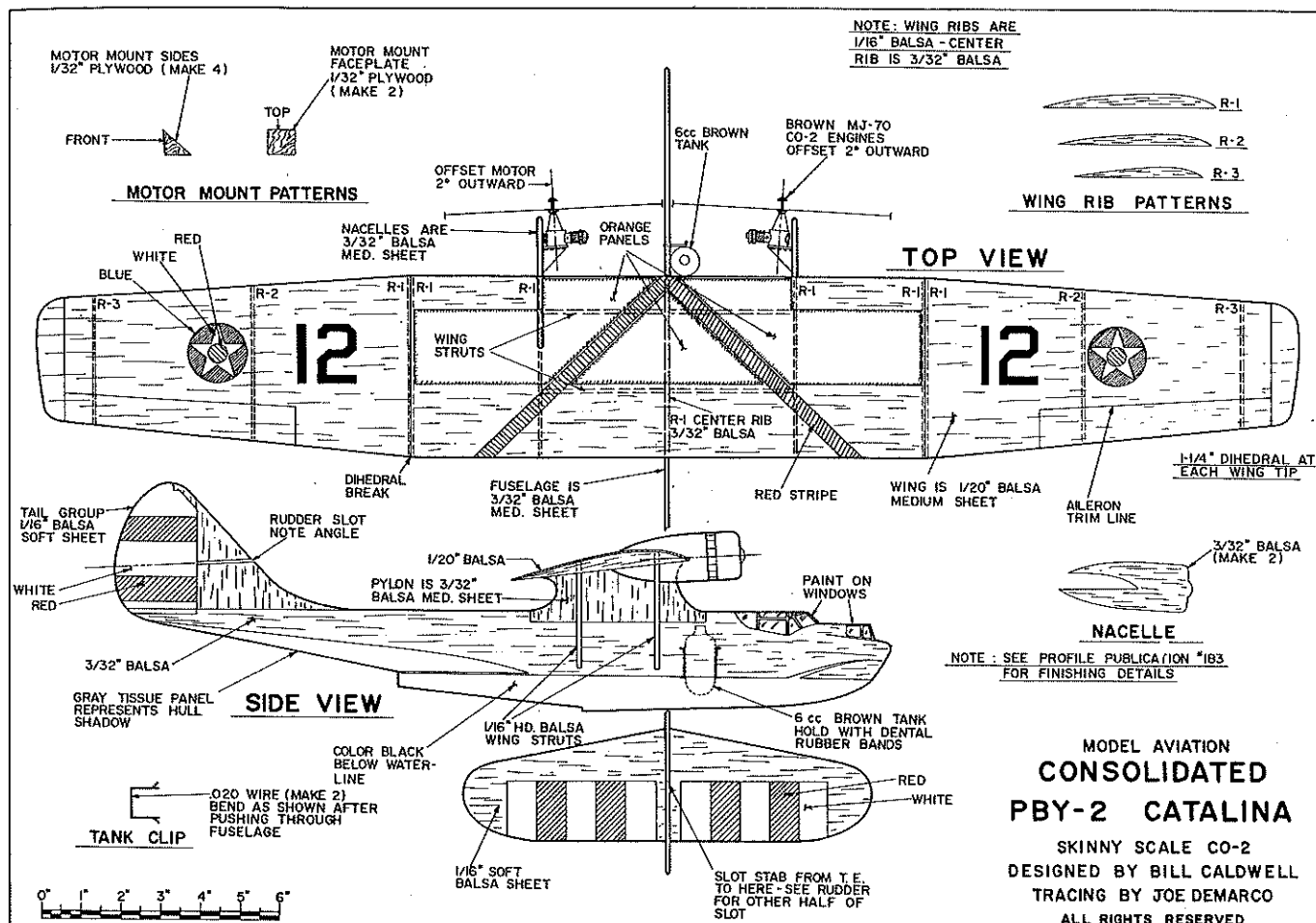
Make the wing in three sections. Turn each section upside down on something flat. Starting at the trailing edge, Hot Stuff each rib in place to form the airfoil. Sand the inner rib of each outer panel to form 1¼ in. of dihedral at each wing tip. Butt-glue the panels together.

Glue the pylon to the main fuselage with Hot Stuff, then glue the wing to the pylon—bracing the assembly with the four wing struts. Slot the leading edge of the rudder and the trailing edge of the stabilizer. Glue the rudder to the fuselage, then the stabilizer into the ruder slot. Glue the nacelles to the wing and the plywood motor mounts to the nacelles.

Make sure the props clear the fuselage and each other. Mount the tank with wire



Bend the plumbing to fit before screwing the motors into place. Take great care to avoid any kinks. Mount the tank on the outside of the flight circle for more consistent running.



clips, and clean up the "plumbing."

Flying. A 6cc Brown CO₂ tank "fuels" both motors. This allows flights of up to 30 sec. on a gas charge, landing with both motors still running.

For the newcomer to CO₂, a gas charge results when the charging source is pointed upward, delivering the gas off the top of the source. A liquid charge results when the charger is pointed downward, delivering liquid. Both charges deliver nearly the same power initially, but the motor on a gas charge will slow down continually, while the liquid charge maintains a constant rpm for 80% of the running time and afterward slows down the same as with a gas charge. Liquid-charge runs are about four times as long as gas-charge runs.

When working on the "plumbing" where an O-ring is involved, use a dab of Vaseline, and don't screw things back together more than finger-tight. A crude method of checking for leaks (but effective and seemingly harmless) is to immerse the whole apparatus (motors, tank, filler, tube—everything except the model) in a sink filled with water. Any leaks should be corrected before installation. The motors in the PBY have thrived on this treatment for seven years.

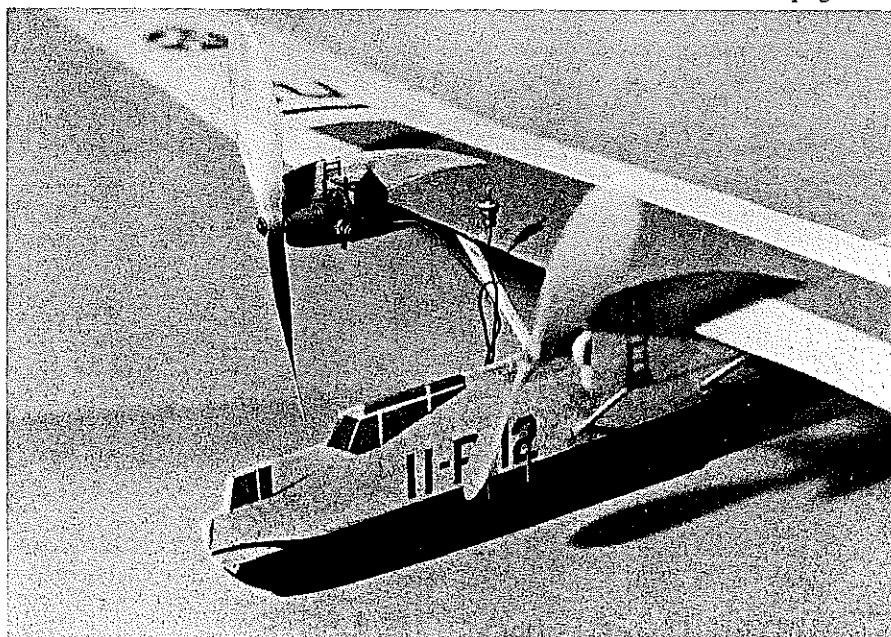
Both props are standard Williams Bros. nylon. They revolve in the same direction, but not at the same rpm. The model will fly in either direction, but it appears to be more stable to the left.

Coupled to a single tank, one motor will invariably run longer than the other due to wear, etc. The "good" motor should be on the outside of the flying circle; i.e. flying to the left, the "good" motor should be on the right.

Flying this model outdoors will be much the same as flying it indoors, even with a liquid charge, but my results indicate that settings should be to allow landing with the

motors running. Should you boost the power enough for all the thrust to be exhausted in the climb, you'll be breaking untried ground (but hopefully not literally!). Thrust line adjustments in any direction seem to make very little difference.

Back to the difference in motor speed, my left one turns at 1,600 rpm while the right one turns 2,200 rpm. This is fairly low
Continued on page 165



Hold the model by the nacelle and motor mount, and start the longest-running motor first; this is to help even out the running time. Text has more operating instructions and hints.

See ya downwind!

Harry Murphy, 3824 Oakwood Blvd., Anderson, IN 46011.

PBY/Caldwell

Continued from page 73

power. Learning to set this differential by ear is not as hard as it might seem.

Starting low, gradually increase power on both motors until the model climbs gently. The PBY simply turns tighter to the left when the right motor runs too fast, and vice-versa. A red face results when one motor starts backward.

This model is quite majestic in flight, and the glide is nice.

Indoor Champs/Clemens

Continued from page 77

open title on ice; his 11:46 withstood repeated assaults, the most determined of which came from the Chicago Aeronauts' Chuck Markos with an 11:12 on his third flight, good for second. Don Steeb of Rochester, NY took third with 11:12, a personal best as well.

While no Seniors flew in NPP, Junior Don Slusarczyk took a first with 7:13, followed by Richard Smith at 5:17. Slusarczyk also won Pennyplane, posting 6:05; Smith was again runner-up with 5:41. Bob Skrjanc took Senior with a 7:55 flight.

Veteran Pennyplaner Gordon Wisniewski easily took Open with 13:01, besting second-place-finisher Walt VanGorder, who turned 11:37, and newcomer Dick Miller, whose 11:17 earned him third.

Less than a minute separated first place from third in Manhattan Cabin. Chuck Markos clocked 8:45 to win, but Walt VanGorder was hard on his heels, a mere turn of the winder crank away, at 8:37. Third went to Ron Ganser; his model did 7:56.

FAI Stick resumed at 2 p.m., along with that most excruciating of all model airplane events, Indoor Cabin. Larry Loucka, not a man to inflict undue pain and stress on himself, cranked up a lone official flight of 20:11 and didn't have to do it again, as this very good flight stood the test. Ron Ganser's Flying Disc stayed up for second with a 17:42 flight, and Dan Belieff's best was 15:01, good enough for third in the four-plane field.

In the FAI hotbed, Dick Doig posted the single highest FID time of the meet, an excellent 33:47. Unfortunately, Ron Higgs floated to a 32:41, giving him a winning two-flight total of 65:18, 1:16 ahead of Doig's 64:02. Merrick "Pete" Andrews was third with a total of 52:41.

The second day's flying came to an end at 7 p.m., and fliers, families, and friends adjourned to the nearby Ramada Inn for the traditional USIC banquet. Following the buffet dinner, master of ceremonies Tony Italiano again thanked Jack Brown of Grand Island, NY for his continuing efforts

in securing the use of the convention center as well as arranging for contestant hotel discounts. AMA President John Grigg was introduced, as was Doc Martin who presented MIAMA trophies from the 1986 Peanut Grand Prix. Speaker for the evening was again Jack Beilman of Calspan Aeronautical Laboratories, who showed an interesting audio-visual presentation about the lab's research and development activities.

As always, the final day was a frantic one. Easy B and Intermediate Stick ruled the air from 8 a.m. until 2 p.m., and with 41 entries in Easy B (highest single event entry) and 21 in Stick, there were always a fair number of models airborne at any one time. One of these was Pete Andrews' Easy B which put in a good 14:22 clocking on its fourth official; another was Walt VanGorder's. It did 14:05 on its fifth and final flight. Both flights topped last year's winning flight (by VanGorder) of 13:52.

But they were chasing—in vain—the current Category IV record holder (22:01 at the Akron Airdock back on May 18) who had demonstrated that his model could do very well under a lower ceiling, as well. With only one touch of the beams, Gerry Nolin of Fairborn, OH flew his 18-in. ship to an outstanding winning time of 16:36. A hallmark of Nolin's airplane is its use of a "backwards" 6% airfoil section on the stabilizer. Its center of gravity is located $\frac{1}{8}$ in. behind the trailing edge of the wing.

Bob Skrjanc won first in the three-flier field in Junior/Senior Easy B. He put up a 12:01 flight, while Don Slusarczyk did 10:24 for second, and Richard Smith was third at 9:14.

Intermediate Stick has existed as an official AMA event only since January 1 of this year. The 18-plane Open field at Niagara Falls was a mixed bag of plastic-film-covered designs as well as condenser paper holdovers from the now-defunct Paper Stick event. Dan Belieff flew one of the latter, racking up a 19:31 flight on his second official of the day that was good enough for first place. Only seven seconds behind him came Larry Loucka, also flying a c-paper-covered model, at 19:24. Jack McGillivray's new film-covered model drifted in at 18:56 to take third.

Those same three young men fought it out in the Junior/Senior class: Skrjanc, Smith, and Slusarczyk. They finished in that order with times of 8:09, 7:45, and :05.

Peanut and AMA Scale flying took over the stage at 2 p.m., as did the contestants flying in the MIAMA Peanut Grand Prix. And a close battle it was in AMA Scale: Jack McGillivray, flying his venerable Peanut-size S.E.5a, put a best two-flight average of 1:27 together with a static score of 84 to total 171 points and take first place. His Canadian comrade, Ken Groves, flying an equally venerable Dream Fike, finished second with a 170.5! Another Fike, this one by Les Garber, finished third with 161 points. His very lightly-built model had two "max" flights of 90 sec.

The 22-plane Peanut Scale field had a

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