

# REAPPRAISAL OF THE TAILWIND

By Budd Davisson

Americans are inveterate statistics keepers. We keep track of the number of cattle that cross state borders, the number of hairs on Joe Namath's beard and any other useless number that can be compiled. But one label that doesn't appear in any record books is "pylon/miles." There are no records of how many miles have been burned up by racing pilots in pursuit of trophies. But even if there were a file on pylon/miles, you wouldn't have to open it to know who has done the most traveling in a 4-G, 80-degree bank. It would have to be Steve Wittman, the original backyard speed merchant.

Back in the early 50s, when the races were dying and homebuilding was just beginning, Wittman took everything he knew about going fast, packaged it into one little wedge-shaped parcel and called it Tailwind.

It was 1953 when the first Tailwind rocketed off the ground. Wittman had designed the little airplane partly for himself and partly for a bunch of guys down the road from his Oshkosh, Wisconsin home. They were forming an organization called the Experimental Aircraft Association. (Homebuilding has been described as the art of convincing your wife she's going to be crazy about whatever it is you're building in the garage. Building a single-place racer puts unnecessary demands on the average builder's ability to con his wife, so Wittman took a clean sheet of paper and whipped out the Tailwind—a family airplane with racer instincts.)

The Tailwind is like all of Wittman's designs: absolutely conventional both in concept and construction, but somehow still unique. Aside from the tubing gear, which Wittman patented, nothing on the aircraft was new. Its speed doesn't come from exotic airfoils or brute power, and it's not a compound-curved nightmare created by stretch-forming an entire latex airplane over a mold. It's a perfectly



straightforward collection of steel tube, fabric and plywood. What makes it different is that the tried-and-true basics are put together in a slightly unconventional way that results in thoroughly unconventional performance.

Aerodynamically, the Wittman relies on the fuselage shape both to hide the passengers and to provide much-needed lift to augment that of the tiny wing panels. The airfoil is a Wittman special based on an NACA 4309, a thinnish section that generates enough lift to get up, but not enough drag to slow down. In 1966, he modified both the airfoil and the wing. It's one of the rare instances in which a plane goes faster when a wing is lengthened. Because of the small amount of power available, the Tailwind depends on clinically clean building. The slightest wiggle in a plywood surface, a little rough spot or a protruding bolt head is going to cost a tremendous amount of speed.

In the quest for economy and speed, Tailwind builders have installed engines varying from 85 to

210 hp. Wittman himself prefers to see builders stay in the 85- to 140-hp range. His own airplane uses a 145-hp, four-cylinder Continental from a Cessna 172. In its new home, this engine is getting a much faster ride than it ever got in the Cessna. Wittman claims a top speed of 200 mph, and a cruise of 165 to 185 mph with that engine, and when Steve Wittman "claims" a particular speed, you can bet he's doing even better than that. Most builders are sticking with the O-200 100-hp Continental, which he says is good for a solid 165-mph top speed.

With nearly 400 sets of plans on the loose, it was only a matter of time before the parts manufacturers started producing pieces for it. Superslick fiberglass cowlings are made by one company, landing gear by another and complete tubing or wood kits by another.

Clyde Bott of Newfoundland, New Jersey, was one of those who bought Tailwind plans. Then he did something more homebuilders should do: He spent a year learning how to weld. Not just learning how to make a pretty weld bead, but how to stick steel together so it stays stuck. He had the advantage of a job that had test lab facilities, so he'd make a test weld, section it and then acid-etch it, checking for penetration. He put test specimens in vibration machines and more than once found the piece embedded in the ceiling because it had broken under stress. Clyde says building any airplane is not easy. It's not impossibly difficult, but it's certainly not a job that you tackle thinking you'll finish it next week. He says that nothing in the Tailwind is really hard to build, and some of it, especially the wings, are both easy and fun. They are all wood, plywood covered. The fuselage is steel tubing and Clyde felt that the plans leave a little too much to the builder's imagination in some areas of the fuselage. Figuring out a few of the little details is going to take the







Bott spiffed up the blah stabilizer called for in the plans, and is now attacking the inverted-J center control stick.

inexperienced builder extra time.

How does it fly? Exactly the way you'd expect it to. Very fast in the air and quick on the ground, though it's not nearly the tiger I had expected.

Actually, there were other surprises: The first was that even though it's a high-wing airplane, you have to practically crawl under the wing to get at the door; the second surprise was that once inside, I wasn't at all crowded. You don't have room to rattle around, but it's certainly as big as a Cessna 150 (the only comparison between the two).

The stick is centrally mounted and shaped like an upside-down J. It arches over your right leg and down, which is not only strange, but uncomfortable. Clyde's planning to fit normal dual sticks during its annual winter modification stint.

Clyde opted for a 135-hp Lycoming O-290, but it might have been a Merlin from the way it felt when it fired up. With so much engine on so little airplane, the initial starting torque felt as if it were going to pick up one wheel. Even with that amount of power, it took a pretty good chunk of throttle to get us rolling in the soft grass where we'd parked. Our combined weight had started driving those little tires into the sod.

Once on pavement, the tiniest nudge of the throttle ate up taxiway much faster than I wanted. It needed a fair amount of brake for directional control because it has neither enough rudder nor tailwheel to keep it

straight at slow speeds. I knew I'd find that mighty important when I came back to land, so I made a mental note to be awake during the last part of the landing roll. All during taxi and run-up the engine let me know every time it fired, by assaulting my ears and rattling my seat with vibration. I could almost feel each power pulse as the propeller pulled us forward.

The takeoff was something else! The noise reaches in and stabs you in the ears while the acceleration flattens you. The runway lights begin to blur. That little rudder is working as soon as the propeller starts blowing on it. As long as you don't get horsey about it and bang the throttle to the stop, the little bugger tracks straight ahead. But it doesn't let you know when it's ready to fly. If you picked up its tail and left the controls alone, it would probably taxi to Miami before lifting off. At 75 mph or so, a slight tug on the stick pulled it off cleanly.

Clyde said (or shouted) that 100 mph was a good speed for climbing, so I held that while we wound our way out of the pattern. Although I was a little too busy to play with a stopwatch, the rate of climb appeared to be around 600 to 700 fpm, with full tanks and full seats on a warm day. Even in the pattern, I could see it was not the kind of airplane that you'd get drowsy flying. I had to stay right on top of it and found myself concentrating to keep the ball

centered and the airspeed stable. It won't groove straight ahead for much longer than a few seconds.

One of the really horrible things about trying to evaluate the flying characteristics of a homebuilt is that every one is different. Because of building inaccuracies and personal preference, no two of the same type are truly identical. However, there is one shortcoming of Tailwinds that will be present in any of them: as you turn your head to clear for traffic, you find a wing right where you want to look. It's really blind to the sides. Once you drop the wing, you can stretch your neck and peek over it through the skylight.

What is most outstanding about the control feel is the immediate response even a sneeze brings. The stick pressures aren't particularly light, but the airplane responds immediately to any control movement on any axis. It's got a lot more rudder power than a handkerchief-size surface like this deserves to have, and the ailerons hang in right down to the stall. It definitely does have a stall, and you have to get on it immediately to keep the attitude change and altitude loss from edging into the terrifying zone on your fright meter. Almost all of its flight characteristics and responses are like an older Grumman American Yankee, but the Tailwind isn't as quick in roll, not as violent in stall, nor as sensitive in pitch.

I used to read pilot reports first by

skimming, looking for the cruise speed figure, then I'd go back and read the rest. Well, here it is: 135 mph. Unfortunately, I don't feel that's an indicative speed for either N3883 or Tailwinds in general. We got this number from two-way speed runs between known points on a day that was so rough bricks could have stayed up in the thermals. I was bobbing up and down, constantly hanging a surface out and generally not keeping it level. Also, the wheelpants weren't mounted, which Clyde says are worth 5 mph, and his airplane isn't as aerodynamically clean as he'd like it to be. In smoother air with the pants, Clyde's airplane should cruise at 150 mph. This is maybe 10 mph slower than Wittman says it should be, but when Wittman builds an airplane, he builds a little magic into it that's worth at least 10 mph. All of our speed runs were made at a cruise setting of 2800 rpm, which kicks out enough noise to crystallize the base of your skull.

I played with sink rates at various approach speeds and flap settings and made another mental note not to get below 80 mph, no matter what. At anything much below 85 mph, the bottom falls out and all motion is straight down. Ninety seemed like a happy number with just a little flap down. With that much load and those stubby wings, the airplane had every right to come down like a fire

hydrant, but it showed only about 800 fpm when holding a reasonable speed. Let it get slow, though, and the needle on the vertical speed indicator would try to bury itself in the big 2 on the bottom end of the scale.

While frolicking around, I found one thing that really surprised me about this little speedster: G loads would burn off gigantic amounts of speed. If we were ripping along, indicating 140 or so, and I sucked it into a fairly hard turn, the airspeed would start down and keep going until we were as low as 100 mph. This would definitely not be the airplane to be honking around tight on the base-to-final turn.

The landing was something to be remembered only because I made it that way. Except for feeling blind as an umpire, the entire pattern and approach were slick as can be, even with the wind batting us around. By all rights, I should have had a real greaser coming up, and probably would have, if I hadn't overrotated. I had completely forgotten about the flat landing attitude and got the nose too high. The tailwheel hit, then the mains came down, and Steve Wittman's marvelous round landing gear gave me a nice little bounce to play with. The wind was gusty, the airplane was leaping around, I was cursing, but still it went straight ahead. As it slowed down, and the wind went out of the rudder, it

needed a tad of brake to keep things squared away. It would gently start to turn, giving me all day to take care of it. It rolled out very much like a Frantic Cub, with everything speeded up like a Keystone Kops movie.

A few years ago, if you'd wanted to build a cross-country bullet for you and your sweetie, you wouldn't have had any choice—the Tailwind was it. It wasn't a bad choice either. Today the angular lines of the Tailwind look a little harsh next to a Midget Mustang II, a Sidewinder or a Thorp. The boxy Tailwind just doesn't have the sex appeal we have come to expect nowadays. At the same time, it has other qualities that definitely shouldn't be forgotten. Fabric, wood and tubing are materials that seem easier for some people to relate to. Dope, fabric and wood seem a little softer and easier to understand. To these builders, sheets of aluminum and rivets are cold, unfriendly products of technology.

As homebuilding grows and more airplane designs join the ranks, the Tailwind will always attract its share of the flying population. It may be an anachronism with its welded cluster joints and glue, but if anybody gets ready to hurl insults, let them first think how their two-place dream machine would perform with 90 or 100 hp in the nose. The name of the game is efficiency, and Steve Wittman is still mighty hard to beat. □

