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U.S. AIR FORCE



**NORTH AMERICAN T-28**

# TROJAN HORSEPOWER

*Once a lowly trainer,  
now a cherished warbird*

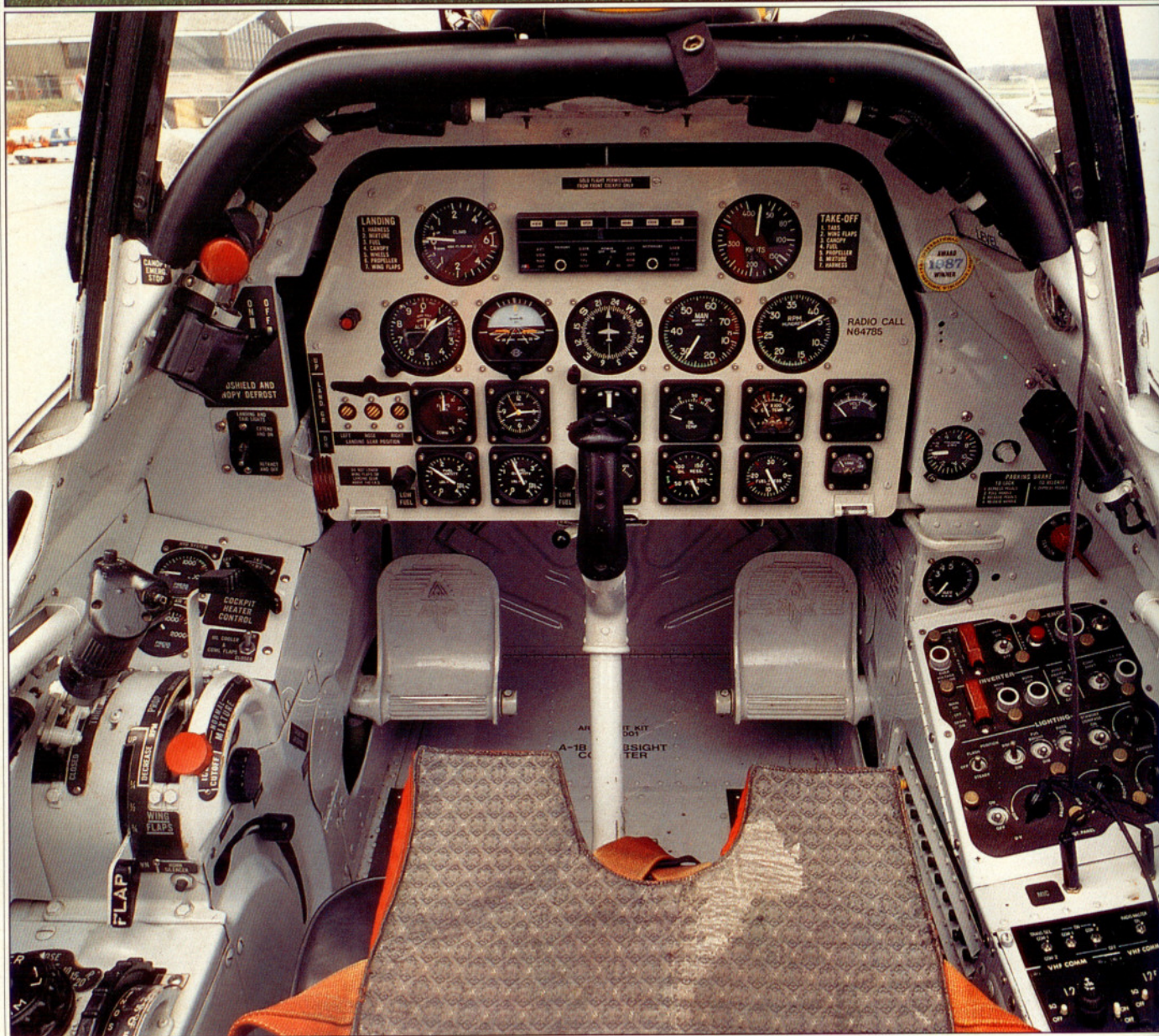
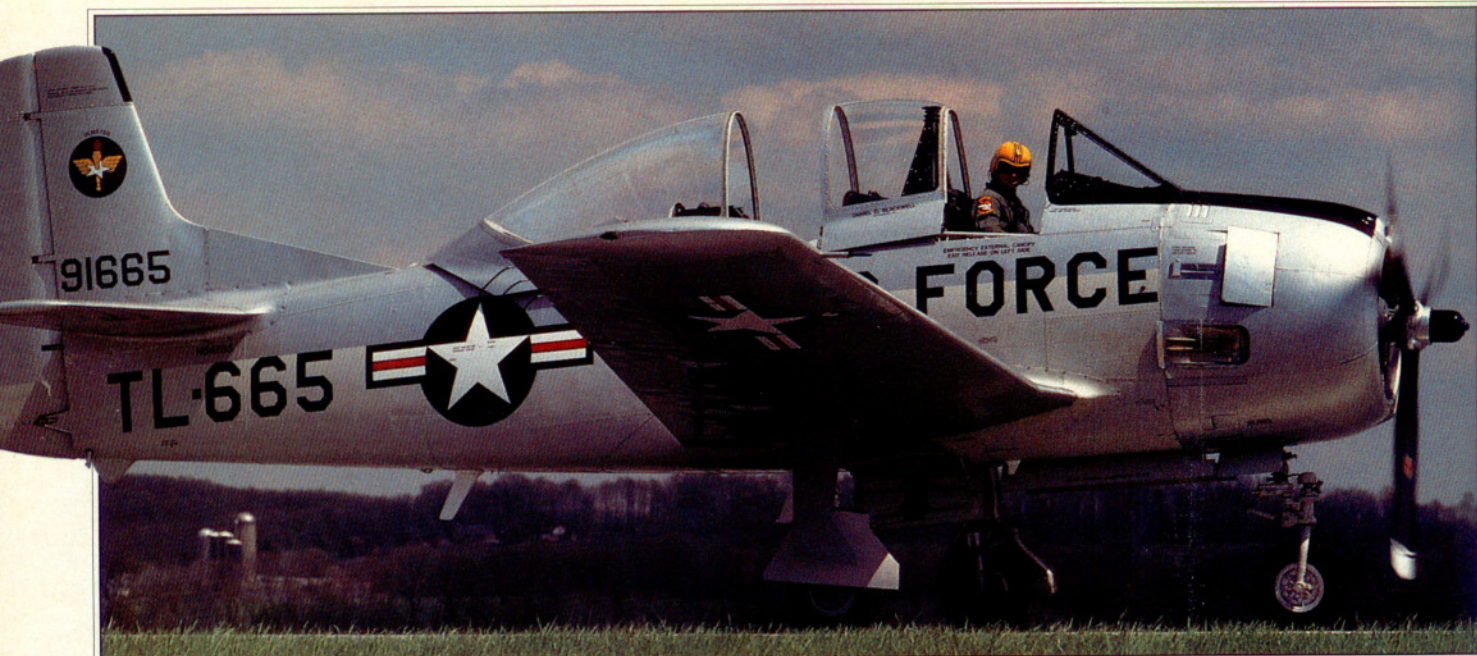
BY MARC E. COOK

**S**omewhere deep in the cowling, in front of the thick rudder pedals, the Wright R-1300 throbs through its seven cylinders. Its staccato rumble causes the huge canopy, slid back in its tracks, to shudder sympathetically; you can smell traces of burning oil and raw, unburned fuel in the propeller wash working its way over the airplane. The wings, from way up in the cockpit, look small—even though their area is greater than 270 square feet. Obviously conforming to the shape of the 800-horsepower radial up front, the fuselage bulges around both pilots' seats.

From a distance, the North American T-28 appears, if not as graceful as a Mustang or as menacing as a Corsair, at least well-proportioned. Viewed from the driver's seat, all sense of proportion is thrown out the window; indeed, the Trojan feels as though it could be the military trainer for a race of giants. A six-foot-tall pilot seated under the tall canopy looks the size of a 10-year-old driving the family Oldsmobile from his father's lap.

A nudge on the throttle, and the Wright picks up the cadence; the Trojan begins to lumber down the taxiway. The wing tip of a parked Skyhawk slides under the T-28's, clearing it by a good margin. Captains of 737s look the T-28 driver square in the eye. True to its

PHOTOGRAPHY BY MIKE FIZER



name, the Trojan stands tall, its chest puffed to outlandish size.

At the run-up pad, the loping radial increases more in volume than pitch when spun to 2,000 rpm. On the runway, with 40 inches of manifold pressure and 2,500 rpm applied, the supercharged engine feels more urgent but still amazingly relaxed, barking through short stacks high on each side of the cowling. The Trojan builds speed at what seems a lackluster pace, until you look down and see the airspeed needle working up past 70 knots. Visual references from the T-28's cockpit height make that speed appear lower by half. As the airplane rotates and begins a shallow climb, you pull the gear up by lifting a bagel-sized knob through a good eight inches of travel. The gear thunks into the wells as the airspeed passes through 120 knots, accompanied by the whine of hydraulics.

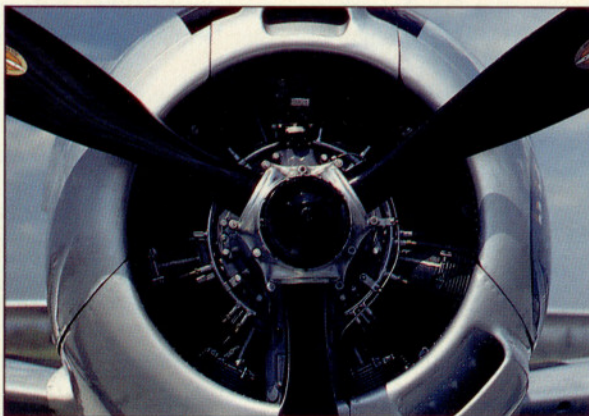
You look up to see this Trojan's owner, Dr. Daniel Blackwell, smiling broadly. On the ground at Westmoreland County Airport in Latrobe, Pennsylvania, people standing on the ramp stop and stare as the silver airplane climbs out of the traffic pattern, leaving in its trail a rich, metallic exhaust note.

While flying a giant like the North American T-28 is a rare, exhilarating experience for civilians, when it was in active service it was just another rung in the training ladder for many military pilots. From its induction to U.S. Air Force training duty in April 1950 until it was phased out in the late 1960s, the Trojan acted as a step-up and instrument trainer; the Navy began using the T-28 (in B and C model designations) in 1953, and the Trojan eventually got its feet wet providing aircraft carrier training. Though quite a departure from its immediate predecessors, the T-6 and SNJ, the T-28 shared space with them in military inventory for several years. According to contemporary journals, when the T-28 was introduced, it was the largest, heaviest, and most powerful trainer yet conceived, and the first trainer to use tricycle gear.

Although 800 hp sounds to most like plenty of power, this wasn't the case for the Navy. Anticipating carrier use, the Navy decided that the T-28's climb performance needed bolstering. By April 1953, the Navy had its answer: the T-28B, housing a nine-cylinder Wright R-

1820 of 1,425 hp turning a large three-blade prop (the A model used a two-blade prop). With the big-bore T-28 the Navy was happy, the airplane's rate of climb doubled, and all-out speed went up to 300 knots at 37,000 feet. The new engine required a larger, more blunt cowling; that's the easiest way to discern A-model Trojans, which have a tighter-fitting cowl, from later iterations.

Of course, to perform carrier training, the T-28 would need an arrestor hook—and a variety of modifications, as North American found out. The C model flew for the first time in 1955, outfitted with a tailhook, a shorter propeller (to provide extra deck clearance as the nose dipped after those brutal carrier landings), and a number of internal beef-ups to cope with the stress and strain of shipboard work. The Navy apparently was pleased



with the T-28's performance because the 1,425-hp engine remained, even though standard maximum gross weight rose by more than 20 percent.

Blackwell's A-model Trojan is, externally at least, faithful to USAF specification for the A-model T-28. A three-blade prop has replaced the original twin-paddle-blade prop, but the markings and polished metal and silver paint scheme are authentic. The attention to detail and like-new condition of Blackwell's airplane are the result of considerable effort and expense. According to Blackwell, "Two men worked 120 hours a week for seven months," plus an additional year of part-time work to complete the project. And this was starting with a sound airframe with almost unheard of low time for a military trainer—about 2,900 hours. As Blackwell pats the side of his Trojan's fuselage, he's adamant that "This is the last total restoration I'll ever do."

For the efforts of Blackwell and his crew, his T-28 won the Outstanding Warbird Award at the 1989 Sun 'n Fun

and took top T-28 honors at Oshkosh last year.

To appreciate the depth of this restoration, it helps to understand the complexity of both the aircraft and the restoration process itself. For one thing, Blackwell's T-28 is no spring chicken, having sprung from North American's assembly line in late 1949. That, and the fact that parts for a 40-year-old military airplane are a capricious find, make taking on a Trojan quite a task. "It was a labor of love, but... oh, the labor," Blackwell says.

Nor is the airplane particularly simple to maintain, much less rebuild. In the famous (or infamous, if you're charged with the maintenance chores) North American tradition, most of the T-28's systems are manipulated by hydraulics. The landing gear, nosewheel steering,

flaps, canopy—and speed brake and arrestor hook on B and C models—are all hydraulic; the brakes are, too, but they form a system discrete from the rest. An engine-driven pump pushes a total of 4.5 gallons of hydraulic fluid through the various systems. Not surprisingly, Blackwell replaced all the hydraulic lines during his Trojan's restoration. Even so, the airplane leaves drips and dribbles of hydraulic fluid on the ramp; after we landed, Blackwell hit the gear

doors with a towel to remove traces of the green fluid. Moreover, he has installed a "clean kit" from Darton International of Carlsbad, California, that suctions oil out of the bottom cylinders and helps keep the sides and bottom of the airplane relatively oil-free. (In Navy trim, the T-28 had a huge black stripe painted on the fuselage to help hide the oily tattoo.)

As with all military trainers, the T-28's cockpit bespeaks its no-nonsense mission. The seats are firm, with removable cushions to accommodate parachutes, and the four-point harness snugs you down tightly. Blackwell's airplane has new instrument panels with modern flight instruments and avionics front and rear, but many of the original switch panels remain; most interesting are the buttons for changing radio and electrical control—either the front or rear cockpit can be in command, but not both.

Because the T-28 was designed to take the slot right below the fighters and attack aircraft in an airman's education, it was given the kind of control re-



sponses and pressures typical of the fighters. Pitch, in particular, is quite light, especially so for such a large, heavy aircraft. The ailerons are responsive, too, but require more muscle to achieve steep banks. As you might expect from a large reciprocating-engine-powered aircraft, the T-28 is a rudder airplane. It responds immediately to fairly small movements on the pedals; a little pedal displacement goes a long way in the Trojan.

Although Blackwell's A-model Trojan doesn't have the Navy-spec speed brake, it can plummet faster than the value of junk bonds when asked to. Cut the power back, throw the wheels and huge flaps out, and with only minimal airspeed build-up, the Trojan will come

down with ear-popping swiftness. Clean configuration glide ratio is a brick-like 9:1. This characteristic, says Blackwell, has been troublesome for many pilots with low time in Trojans.

Equally troublesome, unless you've got a government's budget behind you, is keeping up with the Trojan's voracious appetite for fuel, oil, and tender loving care. At about 90 gph in climb configuration (and a still impressive 45 gph at 55-percent power and 180 knots), the T-28 will go through its 177 gallons of fuel in a hurry; a typical oil change will consume more than 12 gallons.

With the wallet-slaughtering costs of owning the T-28, it's commendable that warbird aficionados like Blackwell are willing to spend the money to preserve a

bit of our history. More than sheer altruism, though, Blackwell's Trojan is also a splendid investment. "I might never get out the money I've put into this airplane—much less the labor—but it's worth more every day. How many airplanes can you say that about?"

Indeed, how many mere trainers have the power to draw crowds on the ramp or make ex-military pilots' eyes glimmer with fond recollections? That the T-28 was not the most prolific or long-lived trainer is unimportant today. It was the last of a breed, recalling an era of broad-shouldered, radial-engine aircraft. Practical concerns and the coming of *ab initio* jet training made the T-28 obsolete, but it's unlikely that the Trojan will ever lose its emotional appeal. □

## T-28, FROM THE FLIGHT DECK

I first came face-to-face with the mighty T-28 in late January 1960. I was a 19-year-old naval aviation cadet winding my way through the Pensacola, Florida, naval air training command. I had just finished primary-phase flight training in the Beech T-34 Mentor, and I had never been close to a T-28 before. I was sent to Naval Air Station Whiting Field, Florida, for basic training, where, shortly after my arrival, I walked out to the flight line to examine the aircraft I would fly for the next 120 hours of my training. I still remember being awe-struck, standing next to an aircraft that more resembled a house in dimensions—quite a contrast to the Beech I'd been flying.

Reinforcing those first impressions was the fact that the very first step up to the cockpit, built into the lower portion of the flap, required a healthy stretch. Crawling into the cockpit, my awe with the behemoth grew. Looking down to the tarmac—way down—made me wonder if I could ever find the proper flare height for landing. The realization suddenly came that this was a big step

up, literally, from the Mentor.

Considering that the T-28's gross weight was nearly three times greater than the T-34's, and the C models I flew packed seven times the horsepower of the Beech trainer, I became convinced that this was not a transition to be taken lightly. The speeds, control pressures, and systems complexity were an order of magnitude above the smaller aircraft's. Perhaps the most complex and apprehensive procedure was the seemingly simple task of starting the engine. Priming alone was an art form. Use too little prime, and the big supercharged Wright could backfire so severely as to damage the carburetor and exhaust stacks. Too much priming could provide a thrilling exhaust-stack fire.

After basic transition, we T-28 students learned aerobatics, basic radio and instruments, formation and night flying, and air-to-air gunnery. If that wasn't enough, prior to initial carrier qualifications, we were sent to another field in Pensacola to spend hours practicing simulated carrier landings. They

were made to a rectangle painted on the runway; it was the same size as the tiny landing area we would find on the carriers.

Though the land-based training was thorough, nothing can quite prepare you for actually putting something as big as a T-28 onto something as small as a carrier deck. About 475 feet of the USS *Antietam's* deck was ours for the taking. Those first carrier landings remain vivid in my memory; in retrospect, though, the T-28 was one of the easiest airplanes to fly onto the pitching deck of a carrier. Its slow approach speeds and docile manners helped make it so.

Many years later, when I was flying the T-28 for proficiency purposes and as an escape from a boring desk job, I finally had a chance to enjoy the airplane. Before, I never slowed down long enough to enjoy its finer qualities. I look back on my several hundred hours of T-28 time with fondness. I learned some of the most important and enduring flying lessons in this aircraft, ones I use today.

—John J. Sheehan