



HARVARD LAW

*Teachings of the T-6,
continued*

BY STEVEN L. THOMPSON

When they named it the Harvard, they knew what they were doing. Even four decades after it was built, North American AT-6D serial number 41-34050, a/k/a Royal New Zealand Air Force NZ1079, a/k/a *Princess Anne* is still teaching people about flying. On a certain hot morning in August, one of them is me.

Even though I'm a certificated pilot, I dance the same ritual around the airplane that any other Harvard student pilot danced, doing the preflight by the book. Although this airplane was built in California early in 1944, it went to New Zealand, not Texas, where an RNZAF with British aviation traditions, not American, put it into service in June of that year. So whatever easygoing Yank ways you might find at Pecos or Pensacola were missing at Wigram Field, then and now.

Mt. Jackson Airport in Virginia is a mere grass strip, not Wigram, but my guide for things Harvard is a RNZAF Wing Commander, so we do things slowly and properly. "Wingco" Robert A. Keown, M.B.E., B.E., deputy air attache, Embassy of New Zealand, takes me through the walkaround with the practiced ease of a man who knows the subject. He should. During his years as maintenance officer for Wigram, he had to keep an airplane designed in the 1930s flyable in the 1960s—still an unprecedented service life. It wasn't until 1977 that the last of the 202 Harvards owned by the RNZAF was grounded and auctioned. The one we're slowly examining on the lush Virginia grass was the last to go; flown by Squadron Leader A.R. Mills in the famous Red Checkers RNZAF aerobatic team, NZ1079 was bought by Paul B. (Pete) Bryce, AOPA 108460, who graciously has agreed to let me sample the classroom character of the most famous trainer in history. A naval aviator and former naval flight



instructor himself with many hours in T-6s (to the Navy, it's an SNJ), Bryce flies *Princess Anne* not just for fun but for air shows and for showing prospective clients property at Bryce Mountain. It provides them a unique view of the beautiful mountains. Today, at Mt. Jackson, it will provide me a taste of another time.

Driving my interest is more than just curiosity about handling yet another airplane. Recent warbird accidents have pointed up the potential for serious problems in transitioning to these "beasts," as Bob Keown calls them, especially for pilots used to modern tricycle-gear lightplanes. Since I'm one of those pilots, I figure my reaction to the lessons of the Harvard will be useful to anyone with the same background who's thinking of investing in such hardware. Besides, like many other pilots, I've heard enough AT-6/SNJ/Harvard tales to last a lifetime; I'd like to find out for myself. Depending on

*Bryce's Harvard
looks brand new, but
its age still
demands respect—and
careful handling.*

who you listen to, the airplane was (choose one): the hardest warbird ever to fly, the hardest to fly *well*, a pussycat, or the most overrated airplane of all time. I figure that a hot August day is as good a time as any to discover the truth.

The truth starts with the structure, which for some military pilots is as familiar as a Cessna 152 is to many civilian-trained pilots. Pete Bryce's Harvard is a MkIII, a D-model AT-6 with a 550-hp Pratt & Whitney R-1340-AN-1 nine-cylinder radial air-cooled engine. The Wasp engine drives a Hamilton Standard constant-speed two-blade propeller adjustable from 11 degrees pitch to 27 degrees and, according to the book, drinks from 17 to 56 imperial gallons per hour. Those gallons of fuel are stored in two 50-gallon tanks in the center section of each mainplane, which in Bryce's Harvard now contain 100LL, but which, Bob Keown informs me as we check fuel levels, used to hold



93LL or 100/130 in New Zealand.

The preflight continues, and Wing Commander Keown carefully points out each salient feature of the Harvard; its steel-tube fuselage, with detachable aluminum skinning forward; its three-piece split flaps, which extend from aileron to aileron; its wide-based, drum-braked landing gear, hydraulically actuated and visually checked through small Plexiglas ports atop each wing; its tailwheel, steered and locked by the adjustable rudder pedals; its small lateral hole near the tailplane, designed to accommodate lead bars to fine-tune the center of gravity; and, of course, all its inspection points, including, grins Keown, the wing tips, which are to be checked for grass stains prior to each flight. No reason to let some other chap's indiscretions blot your own Form 700, after all.

Finally, it's time to climb aboard. I clamber into the front bucket seat, and Bryce settles into the aft, instructor's

cockpit, nicknamed by countless instructors in numberless air forces The Black Hole. It's an apt description of the view from the rear of this Harvard, which I have sampled on the flight from the airplane's homebase at Sky Bryce Airport. As we strap in, I don't envy Bryce his seat.

Interphones connected, Bryce leads me through the start-up. It's a procedure designed for a man with three arms. First, of course, you prime via the familiar manual primer pump on the panel. Two strokes. Lock and set throttle, prop and mixture; half-inch for throttle, full fine prop, full rich mixture. Carb heat off, oil cooler half open. Set parking brake. Feet on rudder brakes for insurance. Now the hard part. You hook the stick in the crook of your elbow with your right arm and reach across the panel to the far left, where two guarded switches live. The right one is the energizer, the left the starter. With your left arm you pump

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vigorously with the hand, or “wobble,” fuel pump set between the rudder and elevator trim wheels until about 4 psi shows on the fuel pressure gauge. There isn’t much resistance, but you must pump vigorously. After about eight pumps, while still holding the stick into your gut with your right arm, you switch the mags to Both, flip the guard up on the energizer switch, toggle the energizer and wait for its whine to steady, all the while keeping the fuel pressure up into the green. When the whine stabilizes and the pressure looks good, you flip the guard on the starter switch, toggle it and keep it on—again pumping to preserve pressure. If you’re lucky, and have done everything right—including “walking” the prop backward a few blades before attempting all this start-up in the first place—the Wasp coughs blue smoke out its enormous stack, and after a few blades, fires to life. Under Bryce’s tutelage, even my neophyte’s hands do the right thing, and on the third blade, NZ1079 wakes up.

The front cockpit’s panel is an example of what pilots faced before instrument standardization. Compared with such genuinely archaic machinery as the de Havilland Tiger Moth (“Meeting a Moth,” June *Pilot*, p. 28), the panel is relatively modern, but anyone used to the “T” flight instrument grouping must develop a new scan. In truth, as experience with the Harvard will demonstrate graphically to me over the next day, this matter of hardware familiarity is absolutely crucial to operating such a warbird safely and may have something to do with some of the accidents involving them; pilots used to a fairly high degree of control and instrument standardization must unlearn a career’s worth of training safely to fly something such as the T-6—a problem no fledgling military pilot sitting in this seat ever had.

Bryce has fitted his Harvard with a Narco Mk12 nav/com and a Narco AT150 transponder, which comes to stand-by as we discuss taxi technique. All the gauges are in the green on our cockpits as I adjust my Telex to keep out the wind noise. The throttle quadrant is, thank goodness, in the configuration of T-M-P, with fail-safe detents to keep dumb nuggets from burning up engines; so as I loosen the friction nut and cautiously inch the power knob

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forward, I don't have to get used to yet another bizarre arrangement.

On the freshly cut grass, the nearly two and a half tons of Harvard is surprisingly easy to taxi. Visibility forward is, of course, abysmal, so a slow weave is demanded. Bryce asks me to do a few taxi runs up and down the runway to demonstrate locked and unlocked tailwheel steering, and soon we are ready to go. We do a standard runup, and I line up for takeoff.

Although I haven't got much cockpit time yet, I've pored through the Harvard manual, so I know the key takeoff numbers; 36 inches manifold pressure, 2,250 rpm initial, tail off at 40 knots, liftoff at 70, gear up at 100 feet, then back to 32 inches, trim for climb-out at 95 knots. The big stick bucks and I do a swift cockpit check before we roll; trim is 11 o'clock elevator, three o'clock rudder. I squeeze on the power and recall Keown's words about a failure to trim the rudder properly and to coordinate the power delivery; "The

'beast'll turn smartly into the woods," he had noted cheerfully.

The stick shakes as the propwash churns muggy air into thrust, and I wait for the dreaded Killer Torque to ground-loop us beyond my ability to save. It doesn't happen. A few heartbeats after full power, the tail wants to lift, so I ease the stick forward. Rudder pressure is about like a Super Cub's. And suddenly we're flying.

Even down in the sluggish end of the envelope, the airplane responds lightly and quickly. My untrained hands grope for the "power" lever to activate the closed-loop hydraulics, and after I push it and pull the gear up, I get the power to its proper setting. In a second or two we have the target speed and I climb.

*The word for
a Harvard in the air?
Harmony.*

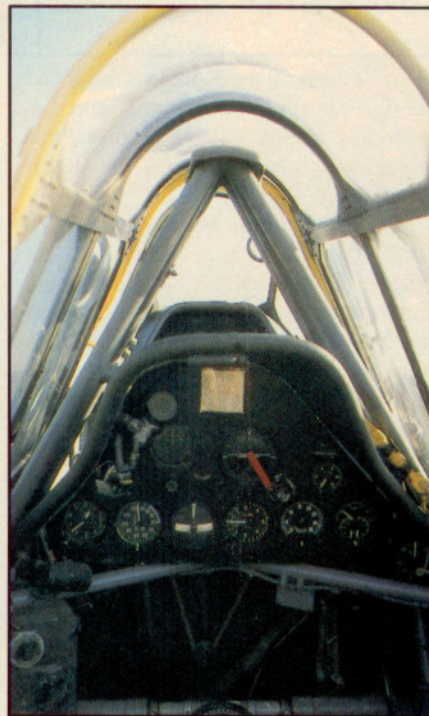
My first half hour is spent in basics, envelope exploration; slow flight in every configuration, shallow and steep turns, stalls, the basic check-out sequence. I'm so busy I don't have time to notice anything about the airplane except that it responds crisply and, when trimmed, easily. Harmony among all the flight controls seems flawless, no control requiring inordinately less or more effort than another. It isn't until I'm set up for the pattern that I notice, really notice, the view.

It's stunning. Admittedly, I'm a thousand feet over some of the most beautiful land in the world—the Shenandoah Valley—but the panoramic visibility from the front cockpit of the Harvard simply puts every other airplane I've ever flown to shame. Thanks to my noise-canceling headset, the engine and prop sound merely healthy, the wind present not as a roar but a whisper and an occasional tug at my flight suit. Stabilized at 80 knots on downwind, I can see why the "Mos-

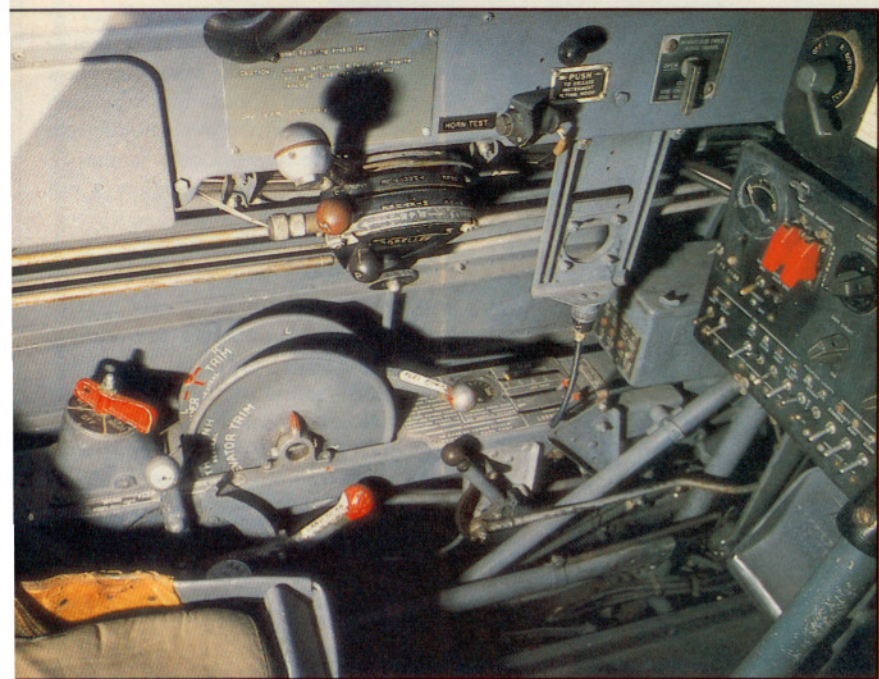
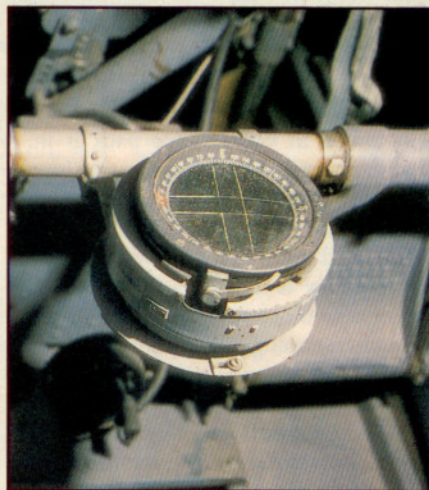




The Harvard's roomy cockpit matched wartime military "standardization" criteria, but even within the type, no two panels were necessarily the same. Bryce's MKIII has provision for a .30 cal machine gun, but not for a standard "civilian" panel.



The combination of archaic instruments, vintage control systems, a tailwheel some claim to have a mind of its own and special operational techniques means that a modern Harvard pilot has as much to unlearn as to learn.



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quito" pilots of the Korean War loved the T-6 for spotting missions, and I'm beginning to see why Bryce flies *Princess Anne* whenever he has the slightest excuse.

My first landing jars my peace of mind. Judging height from this tail-dragger is no easier than any other, and my clumsy attempts to compensate for what I knew would be difficulty in estimating the proper "hold-off" style only exacerbate the wallow when the left wing stalls first. Bryce helps me save the bounce and, snapping back to the days when he taught *ab initio* students in tailhooked SNJs, calls for me to keep the stick back, back, back!

And here we are at the crunch. Bryce has warned me that we will land Navy-style today; no wheel landings, just full-stall three-pointers. In this, he drifts from RNZAF style, says Keown, which taught both landings but preferred the safety of a wheel landing for neophytes. But then, the RNZAF had a few thousand feet more than the deck of the *Intrepid* to land on.

Mt. Jackson endures another batch of raggedy neophyte landings, and Bryce's instructor-sense tells him it's time to go home for the day. As the heat builds in earnest, we pack it in. That evening I spend two hours alone in the cockpit, exploring systems, doing homework.

The next morning, it pays off. My first landing is hard, but acceptable. The next two are spot-on. After all the manual-cramming, all the cockpit time, they're almost anticlimactic. But not quite; as Bryce allows me a high-performance takeoff to celebrate and hands *Princess Anne* off to me for some shamelessly aimless flying, I begin finally to understand the affection its graduates feel for the Harvard. Flown absolutely by the book, it is rock-steady and yet almost dainty in response. No spam can ever stapled together compares with the T-6's feel, and no flat engine can ever quite rumble your guts the way that big round Wasp can. In performance terms, the Harvard is, well, nothing special, except in Vne, which is 211 KIAS. It takes off, cruises and stalls at speeds familiar to Cherokee Six pilots, which ought not surprise anyone, since the Harvard's 550 hp must haul around more than 5,000 pounds of airplane.



NZ1079 is a familiar machine to Wing Commander Keown, who flew it as a student, then was responsible for keeping it flying at Wigram Air Station.



As I reluctantly give in to Bryce's request that we head back to Sky Bryce, I come to realize that a couple of hours in this superb aircraft can be not only seductive but also dangerously misleading. Being able to start, take off, cruise and land in ideal conditions does not begin to approach the real meaning of "proficiency" in a warbird, whether a T-6 or Corsair. On this second balmy day of fun, I have had an introductory course, but the real work still lies ahead, and I can suddenly see how many a modern pilot could mistake an overview like mine for the real thing.

Just exactly what "the real thing" is in warbird proficiency is a matter of continual debate among the cognoscenti. Some believe 10 Harvard hours is enough; others claim 50 is barely adequate to transition into "serious" hardware such as a Mustang or Corsair. This translates to a very stiff tuition no matter how you cut it, but the penalty for skipping the vital classes can be tragic, and not because the airplane possesses some inherently evil handling quirk. Frankly, I found the Harvard easy to fly, but that isn't the point. The point is that the airplane is literally an antique, venerable service life or no, a device demanding as much serious system knowledge as an Aerostar—maybe more.

This is where the truth of the Harvard Law lies, not in Cuban 8s, airshow heroics or cocktail party posturing. For the price of a used Mercedes 450SEL, you can buy yourself a T-6 and considerable status and, if you're not ruthlessly honest, miss the point entirely, a point thousands of young Harvard pilots learned over the lifetime of the airplane in service. It is, simply, this: The currency of proficiency is not money, but sweat.

As *Princess Anne's* prop slows to a halt after Bryce swings the Harvard into its customary parking spot next to his Lockheed 12, I unstrap and unplug, ready to clamber out. The hot valley wind blows across my back and I realize my Nomex is soaked with perspiration. It would be easy to imagine I really had accomplished something in the last two days, that the sweat had bought me some fantasy warbird wings. But despite the fun the Harvard has rewarded my ham-fisted flying with, I know the truth. It's just a down payment. □