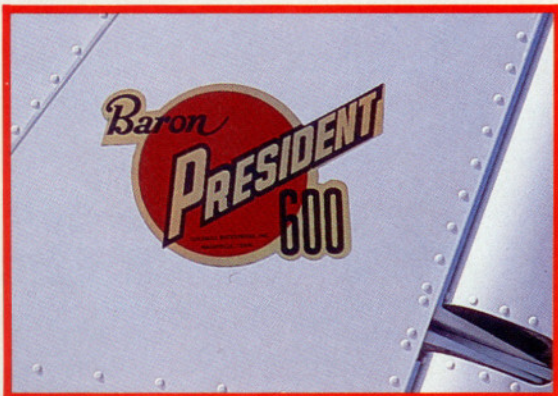
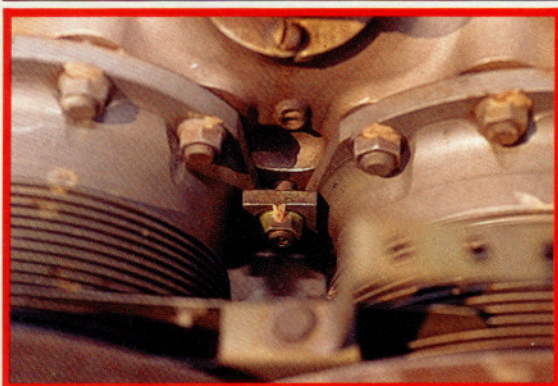


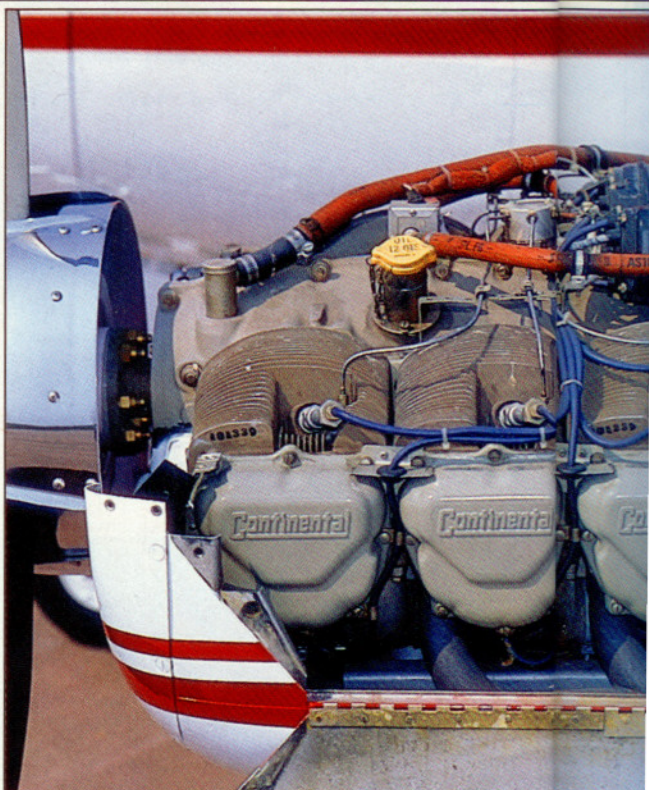
Colemill adds muscle to the 55.

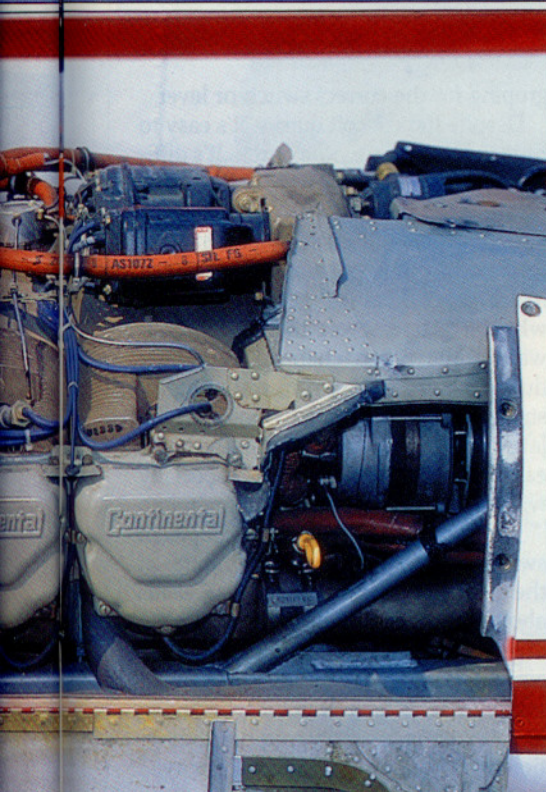
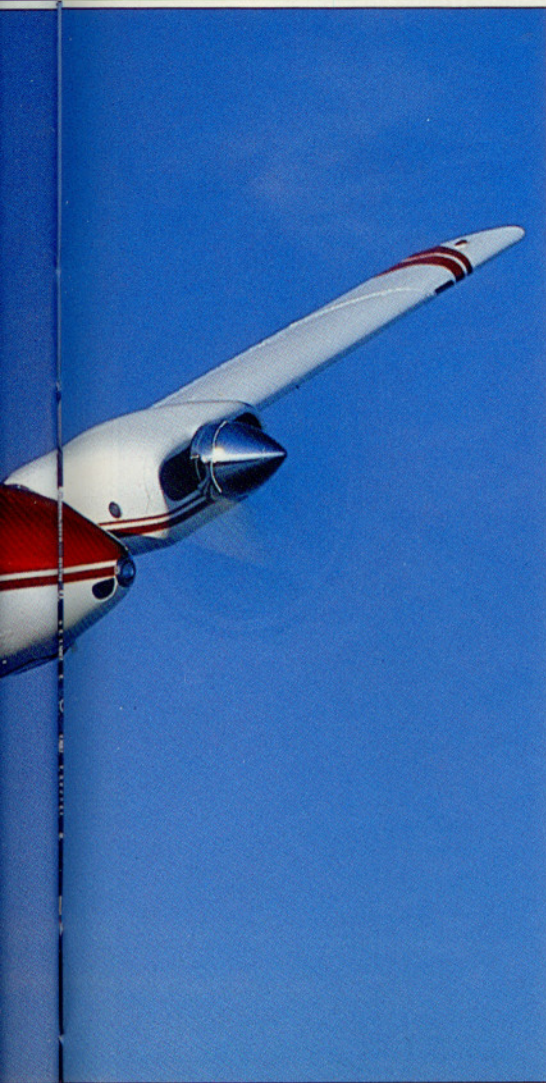
BY MARK R. TWOMBLY

Colemill Enterprises, Incorporated, has been doing performance conversions, mostly on multiengine airplanes, for more than a quarter-century. The Colemill shop, located at Cornelia Fort Airpark just north of Nashville, has been at it for so long that second-generation versions of some Colemill conversions now are available. The President 600, which is based on the A55 or B55 Baron and is one of Colemill's earliest conversions, has such a follow-on. It's called the President II. Whereas the President 600 features 300-horsepower (285-hp-continuous) IO-520 engines in place of the Baron's stock 260-hp IO-470s, the President II gets IO-550s rated at 300 hp continuous. Colemill's methodology for nearly 15 years was to exchange IO-470s



Colemill's President 600 conversion of the Baron A55 or B55 features Continental IO-520s rated at 285 hp maximum continuous power. The President II has a pair of 300-hp IO-550s. Colemill did not, however, certify the Baron to the higher power rating. A placard on the control yoke bar in the President II restricts power settings for the IO-550 to 260 hp. It's similar to flat-rating a turboprop engine. The President II's bigger engines provide a reserve of power to tap in high density altitude conditions, in climb and cruise, and for single-engine emergencies.





for IO-520s. The company's first project, in 1965, was the Super Commander 300, an Aero Commander 500A on which Colemill replaced 470s with the then-new 520-E, the first version of the 520 with a takeoff-power rating of 300 hp. The Super Commander defined Colemill owner Bill Colbert's conservative approach to performance modifications, which is to say his preference for a relatively modest infusion of cubic inches rather than such tricks as adding a turbocharging system to a naturally aspirated engine.

Colemill conversions are painless—no intricate structural changes to the airframe, little or no sheet-metal work on the cowls, and no elaborate new fuel, induction, or exhaust systems. Rather, it's a simple swap of stock engines and propellers for somewhat larger, factory standard powerplants and new props. Some conversions come with a dash of flash in the form of winglets and unusual narrow-chord, bent-tip four-blade props, but the meat and potatoes of a Colemill performance treatment is a bigger, more powerful engine.

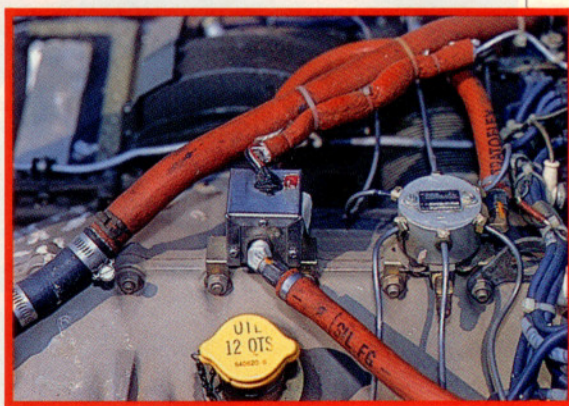
There is a catch, though. A Colemill conversion may not be certified for all of the power available in the larger engines. For example, the President II carries manifold pressure restrictions that effectively limit maximum continuous engine power to 260 hp a side, the same as on the stock airplane. To certify the Baron to 600 total horsepower would require an extensive and expensive flight test program, so Colemill settles for stock power. A placard on the Baron's control yoke bar notes that at sea level, maximum continuous power is limited to 25 inches manifold pressure and 2,700 rpm. At 4,500 feet, the limit is 23.5 inches. The restriction has no real practical consequence because the extra power from the bigger engine is there when you need it most—taking off in high density altitude conditions, climbing faster and to higher cruising altitudes, and single-engine operations.

After the Super Commander, Colemill certified the 520 in Cessna 310s (F through Q models). That conversion is called the Executive 600. Next up was another 470-to-520 upgrade, this time for the Beech Baron 55.

The Baron dates back to 1961, when it appeared alongside, and eventually replaced, the Travel Air as Beech's small-

est piston twin. The major differences between the two models were a swept tail on the Baron and power: 180-hp engines on the Travel Air, 260 hp on the Baron. The Baron 55 quickly gained a sweetheart reputation for light control feel, good performance, and sturdy construction. It enjoyed a 21-year production run, during which Beech tweaked the design by lengthening the nose for more baggage space, adding an optional sixth seat, and, on the B55, upping the gross weight to 5,100 pounds.

The Baron's popularity among pilots set the stage for a successful conversion program by Colemill. Indeed, the Presi-



Fuel flow gauge is replaced with precise Shadin unit.

dent 600 has been Colemill's most successful program to date.

When Continental introduced the IO-550 engine, Colemill switched to it from the 520. Continental pledges that the 550 will produce up to 315 hp but no less than 300. It has a heavier cast case than the 520, extra cylinder hold-down bolts, and an altitude-compensating fuel injection system that automatically leans in climb.

Colemill's first use of the 550 was in the Foxstar conversion for C-, D-, and E55 Barons (which Beech produced with 285-hp IO-520 engines) and the Baron 58. Next up was the Starfire, a conversion based on the Bonanza A36; C-, E-, and F33A; S- and V35; and the V35A and B.

At that point, things came full circle for Colemill. The company went back to the Cessna 310 and certified an IO-550 conversion called the Bearcat, then followed up with the President II conversion for the A- and B55 Barons.

In addition to factory-new or remanu-



factured 1,700-hour-TBO IO-550-E engines, the President II conversion includes new fuel and oil lines, vacuum pumps, 60-amp alternators, and lord mounts; Hartzell three-blade, 74-inch-diameter props, governors, and spinners; a Shadin digital-display fuel flow computer; and new tachometer with 2,700-rpm redlines. The conversion is priced at \$72,500 with new engines and \$62,500 with remans. The 550s cost about \$12,000 more than the cost of overhauling a pair of IO-470s, according to Colemill.

Colemill uses the original cowls, so there are no apparent physical differences between the President II and a stock Baron. The differences are in performance. Colemill tells customers its prototype President II picked up 17 knots in cruise and more than 200 feet per minute in two-engine climb after the conversion.

The prototype, N8939M, is a 1964

B55 that Colemill now uses as its demonstrator. Colemill Vice President Ralph Peeler brought the Baron, replete with sparkling new red and white paint, to Frederick, Maryland, for us to fly.

The airplane retains its original interior and the early, odd Baron panel and power quadrant. Anyone used to the ergonomics of a more modern airplane will find the cockpit of a Baron 55 to be a perplexing hodgepodge of incoherently placed switches, gauges, indicators, and power levers. For example, the pitch trim wheel and indicator are hidden on the subpanel behind the massive control yoke bar. Flap and gear switches are reversed. (The gear selector switch is to the right of the control yoke bar. The flap switch is to the left.) The throttles are in the middle of the power quadrant flanked by the prop levers to the left and mixture levers to the right. It all begins to make some sense after a few hours of flying, but initially, you find yourself

groping for the correct switch or lever.

Despite the cockpit quirks, it's easy to be instantly taken by the Baron. It's difficult to identify the precise qualities that set it apart, other than to resort to sweeping generalities such as it is comfortable, it offers great visibility, and it looks good, like it's going fast even when it's at rest on the ramp. Outwardly, the Baron changed very little during its production run, so the oldest straight 55 is as pleasing to look at as the latest B55. It also flies beautifully, lands easily, and performs well, especially with the Colemill President II treatment.

Our flying was done on a couple of sweltering afternoons (temperature at the surface was about 20 degrees Celsius above standard, while aloft, it was 10 degrees warmer than standard) with the airplane about 300 pounds under maximum gross weight. N8939M weighs in at 3,409 pounds empty and has the optional 136-gallon usable fuel capacity.



Colemill's performance claims appear to be valid. Initial full-power climb rate at the 99-knot blueline speed was 2,000 fpm. Cruise-climbing at 120 to 130 knots, we were able to maintain a minimum of 1,000 fpm on up to 10,500 feet. Fuel flow in the climb declined from an initial 22 gallons per hour to about 17 at level off.

No question the Presidential Baron is quick—170 knots indicated (201 knots true) at 10,500 feet, with the power set at 19 inches manifold pressure and 2,500 rpm on 15 gph per side. It's also cacophonous, so we backed off to a less offensive 2,300 rpm. Airspeed settled on 165 knots indicated and 195 true at 13.5 gallons per side. Those speeds are about 14 knots faster than book for a stock Baron, but the fuel flow is 2 to 3 gph per side higher as well.

Later, we ran cruise speed checks at 8,500 feet and, as before, found them to be well above book at equivalent power settings. For example, at 21 inches and 2,300 rpm, indicated airspeed settled on 169 knots indicated and 193 true, about 15 knots faster than stock. At 14.5 gallons per side, fuel flow was 3 gph per side higher than stock.

The IO-550's reserve of power is most

Instrumentation on the conversion includes a new tachometer and digital fuel flow gauges.



welcome in single-engine operations. At 4,500 feet, we feathered the left (critical) engine and established a 99-knot blueline-speed climb with the right engine at full power. The Baron ascended at about 550 fpm. At that altitude, temperature, and weight, a single-engine, IO-470-powered Baron would climb at about 300 fpm, according to the operating handbook. The increase in power with the IO-550 also should cause an

increase in single-engine minimum controllable airspeed (V_{mc}). We chose not to explore that theory given the Baron's reputation for difficult handling in that corner of the envelope. It would be prudent to follow up a Colemill conversion with the installation of a vortex generator kit, which has the effect of lowering V_{mc} and stall speeds by enhancing airflow over the wing and control surfaces (see "The Vortex Generation," April *Pilot*).

On the face of it, Colemill's President II conversion would seem to be an expensive luxury, perhaps costing nearly what the airplane is worth. But that ignores the very real practical performance advantages of the bigger engines. A good percentage of Colemill customers up the ante even further, opting for a thorough rejuvenation inside and out—new avionics, fresh paint, and a refurbished interior. One of the few alternatives to such lavish treatment for someone interested in flying a first-class, high-performance light piston twin is to buy new, and the only piston twin in production is the Baron 58, which costs more than \$600,000 equipped. That's why Baron 55 owners have been casting their Presidential votes for Colemill. □