

One of the Aero Commander 560As ordered for President Eisenhower and his staff. The military designation is L-26B.

Aero Commander Evolution

THE Aero Design and Engineering Company of Bethany, Oklahoma, claims to have been the first to break into the United States aircraft manufacturing field in fifteen years. Its first aircraft, the Aero Commander 520 [subject of a handling report in *Flight* of December 24th, 1954], was produced in 1952 by T. R. Smith, who had previously worked on the Douglas A-20 (R.A.F. Boston). There is, in fact, a distinct family likeness between the Boston and the Commander.

The new executive aircraft immediately proved popular and many orders were placed; but once it was established it had to take part in the race for more power and higher cruising speeds with competitors such as the Beech Twin Bonanza and, later, the Cessna 310. During last year, therefore, Aero Design brought out an improved model called the Commander 560, which made use of the increased power offered by the latest version of the Lycoming flat-six engine, the GO-480-B. The greater power required the sweeping back of the vertical tail—which the company exploited to the full as a publicity gambit.

Soon after the announcement of the Commander 560, the firm opened a research and development engineering division at Max Westheimer Field, next to the University of Oklahoma's School of Aeronautical Engineering, and T. R. Smith was appointed vice-president in charge of the new branch. Aero's new research division was deliberately set up near the University's aeronautical engineering section in order that the latter's complete reference library of all N.A.C.A. publications and a great deal of other data would be readily available. It was also thought that university students could work in the Aero offices during their spare time, thus gaining practical experience of aircraft design while also earning a little money to help them through their studies. The teaching staff could take similar advantage. It seemed, in fact, that the new division was intended to operate in fairly close contact with the university, which had research facilities that included a subsonic and supersonic wind tunnel, a jet-propulsion laboratory and a structures laboratory. The university, for its part, welcomed the new commercial concern and it was thought that other aeronautical enterprises might also be attracted to the locality, with similar possibilities of co-operation.

This was a very shrewd move on Aero's part, since in the not-too-distant future a radical change in executive-aircraft design had to be expected. The nature of this design depended to a very large extent on the requirements formulated by customers, but these even now are only just beginning to emerge after several years of extensive executive-aircraft operation.

No specific trend has yet, however, become predominant; the



first signs of the new order are apparent in such designs as the four-engined Cessna 620, the jet-propelled Fairchild M-225, and Beechcraft's possible construction under licence of the French Morane M.S.760 Paris. Whatever specification emerges, Aero Design are now well-placed for research.

Meanwhile, development of the basic Aero Commander continues and one of the features introduced in the 560 is a three-bladed airscrew developed jointly by Aero and the Hartzell Propeller Company. It was claimed that this is the first application of a three-bladed airscrew to an American light twin and it is offered as optional equipment for the 560. By reason of smaller diameter, and therefore lower tip speeds, and because of the better balance of three blades, the noise level in the cabin is reduced by some seven to ten decibels. The noise is also more uniformly distributed. The new airscrew, called 83x20-2A-8433, is constant-speed and fully feathering. A spring mechanism takes care of feathering, and unfeathering is accomplished by the use of engine oil pressure.

A standard fitment in the Commander—and in many American light civil aircraft—is a stall-warning indicator, which sounds a distinctive horn in the cabin when the angle of attack of the wing approaches the stalling point, usually some 10 m.p.h. above the stalling speed. But Aero, together with Cessna Aircraft, have approved a further device called the Speed Control System, manufactured by Safe Flight Instrument Corporation of White Plains, New York. This can be installed as an optional extra on the production line. The Speed Control is stated to enable the pilot to achieve the best speed for take-off, landing or low-speed flying in relation to a variety of flight variables. The principle involved is defined as "wing measurement." It is based on a simple computer which compensates for a number of variables such as power, gross weight, flap and undercarriage position, turning and longitudinal accelerations, ground effect and density altitude.

Another item of equipment has been developed for the Aero

(Left) The plastic nose-cone developed by Lear, Inc., for the Aero Commander. It contains an air intake, I.L.S. glide-path aerial and L.F. radio aerial.

(Below) The latest and fastest Aero Commander, the 680 Super Commander. It cruises at 230 m.p.h. and has an extreme range of 1,600 miles.

