

AERO COMMANDER EVOLUTION . . .

Commander by Lear. It is a plastic nose-cone which incorporates the air-conditioning intake and I.L.S. glide-path and L.F. radio aerials. The large horseshoe-shaped aerial, shown in the picture on p. 721, receives the I.L.S. glide-slope, while the L.F. aerial is embedded in the plastic itself at the periphery of the cone. Perforations at the apex admit air to the combustion-heater duct.

A real feather in Aero's cap is the fact that 15 ordinary production Aero Commanders of the advanced model 560A have been ordered for use by President Eisenhower and Government officials. The President thought it would be safer to travel by this means from Washington to his farm at Gettysburg, 80 miles away, than to go by road. The technical and security services made an exhaustive investigation of the Aero Commander and decided that the standard model was quite safe to carry so precious a cargo. The U.S. Army already has some Aero Commanders in service and the presidential aircraft have been designated L-26Bs.

The 560A was announced in July this year, immediately after certification of the first production model. It is bigger and faster than its predecessors, having a cabin length greater by 10in forward of the wing, and redesigned engine-nacelles. It has Lycoming flat-six dry-sump GO-480-D1A engines which, at 275 h.p., give a total increase of 10 h.p. over the model 560.

Streamlining of the nacelle, including covering of the exhaust augmentor pipes, has led to a cruising speed of 204 m.p.h. instead of 197 m.p.h., and a top speed of 211 m.p.h. Engine accessories are side-mounted for easier access and the change to dry sump has allowed an increase in oil capacity of three quarts per engine. The oil tanks are mounted behind the firewalls. New engine mountings, on the dynafocal principle, reduce vibration. Re-positioning of the augmentor tubes is stated to have increased the cooling efficiency by 15 per cent as well as effectively reducing noise. The whole nacelle is enlarged by some 3in in both directions, and its tail-cone is re-shaped. Optional long-range tanks can be installed in the outer wing, giving a total extra 80 gal so that maximum range is increased to over 1,650 miles.

The main undercarriage is redesigned and simplified and raked forward at an angle of 4 deg. Finally, the three-bladed airscrews, described as optional extras above, are standard on the 560A. Yet the price of the 560A, at \$74,500 (about £26,600), appears to have decreased since the previous quotation of some \$79,000 (about £28,200) for the 520. Meanwhile, Aero have put the 560A into production and are planning to increase their factory capacity.

Aero Commanders, and particularly the 560A, can be equipped with an impressive range of optional extra accommodation items designed to make the cabin seating layout as flexible as possible. The principal item in this scheme is the so-called hassock chair, a device which can be mounted on the standard seat-rails; it has back-rests fore and aft and seat-belts so that it can be turned into

a forward- or rearward-facing seat; and it is stressed for use during landing and take-off. The back-rests can be adjusted to any angle, or both of them can be set horizontal to form a full-length couch in conjunction with the rear bench seat. Thus the company claims that two large men can lie full-length to rest or sleep without inconveniencing the two pilots in front. The rear bench seat, too, can be moved fore and aft and its back-rest inclined up to 30 deg backwards. The hassock chairs can be further modified to accommodate either an ice-box or a chemical toilet, the latter being supplied in conjunction with a set of curtains. Folding tables are also supplied so that three or four people can "work, play cards or pass the time with lunch." Conversely, the whole cabin aft of the pilots' seats can be cleared in 15 min to make room for freight.

This latest model must make the Aero Commander a really attractive executive transport aircraft, with the advantages of flexibility, comfort, speed and range. But Aero, while keeping the 560A in production, have now offered the new model 680 Super Commander, which was first shown to the public at Philadelphia in September, and is to go into production next January. The "680 Super," to use the company's own abbreviation, is advertised as having a top speed of no less than 260 m.p.h. with a cruising speed of 230 m.p.h. at 10,000ft and at 70 per cent power. The fuselage and cabin are virtually unaltered from those of the 560A, and the new performance has been achieved by installing the latest Lycoming GSO-480-A1A engines which develop 340 h.p. for take-off and have a normal continuous rating of 320 h.p. Aero claim that the 680 Super is faster than any commercial aircraft priced at less than \$900,000 (about £321,000). The basic 680 Super sells for \$84,500 (£29,900).

The new Lycoming has been developed specifically for light twin-engined executive aircraft and is a geared-drive, flat-six, supercharged, dry-sump, air-cooled engine with side-mounted accessories. The normal range of the aircraft is now 1,400 miles with a maximum of 1,600 miles, so that the American continent can be crossed with only one stop. Gross weight has risen to 7,000 lb with a disposable load of 2,750 lb. Fuel capacity, at 230 gal, is unchanged. The main undercarriage has been suitably strengthened.

In the 680 Super version the Aero Commander is probably very near the final stage in its development. The flat six is approaching the upper limit of power increase, and a number of problems would arise in fitting larger engines. The installation of a radial engine, for example, would almost certainly raise insuperable dimensional difficulties and the Lycoming O-580 flat-eight, supercharged, 375 h.p. engine, at present used mainly in helicopters, might simply overpower the aircraft. It seems probable, therefore, that Aero—and, for that matter, the other light-twin manufacturers too—will have to produce a completely new design, possibly powered by small turboprops or turbojets. It is certain, however, that any radical new design would have to be shrewdly calculated to suit a fastidious executive aircraft clientele. Future developments will be watched with interest.

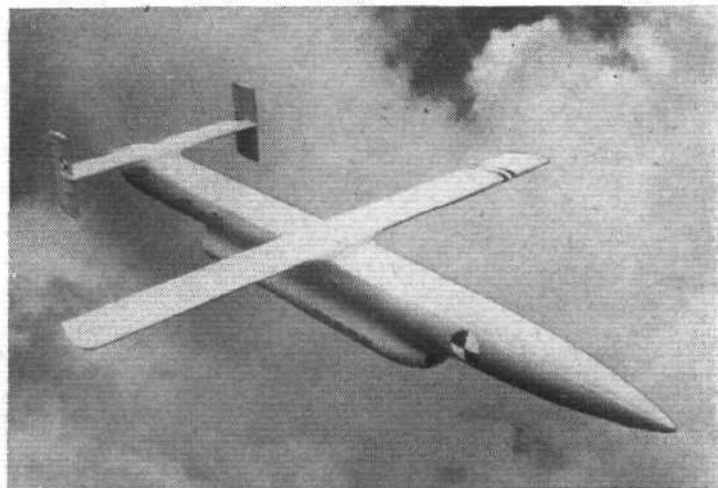
AVIOLANDA'S NEW TARGET DRONE

THE Dutch Aviolanda Company, which is at present extensively engaged with Hunter production, has now completed the first prototype of the AT-21 pilotless radio-controlled target aircraft. The first flights have been tentatively scheduled for the end of the year.

The machine consists of a pure cylindrical fuselage, on top of which are mounted a constant-chord wing and a tailplane with two end-plate, rectangular fins and rudders. The powerplant, in the form of a S.N.E.C.M.A. Ecrevisse pulsejet of 100-185 lb thrust, is attached beneath the fuselage and housed in a long plain fairing. Plastics are used extensively in construction and particularly in the nose- and tail-cones, which are of a sandwich material. The two fuselage centre-sections are in light metal and contain fuel (forward) and recovery parachutes (aft). The wing and tailplane are entirely of foam-filled plastic sheet, while the fins and rudders are metal.

The AT-21 can be launched vertically with the aid of booster rockets or horizontally from a mobile launching ramp, or flown off the runway from a take-off trolley. Flight control is by a human "beeper" pilot who sits in a special cabin near the launching site. Commands are transmitted to the aircraft over a radio link and initiated by pilot's movement of a set of simulated aircraft controls. The AT-21's position is indicated in the cabin on a radar screen, together with its height, speed and course. Should the machine fly out of radio range, its flight is automatically terminated by the deployment of the recovery parachutes. Conversely, parachute recovery can be initiated from the ground when desired.

Explosive bolts are arranged to break the wing and tail surfaces away from the fuselage as soon as the machine lands on ground or water, so that recovery is considerably simplified and risk of



A representation of the AT-21 in flight.

damage through difficult handling processes reduced. The foam filling will also ensure that the components float for a considerable time in water, even if heavily damaged by gunfire.

Both air-to-air and ground-to-air gunnery can be practised with the AT-21 and in each case the guns will be aimed to achieve a predetermined miss-distance, the passage of bullets or shells through the target area being recorded on a normal acoustic hit-recorder, which transmits its signal to the "beeper".