AERO MODELLER

A superb 54 inch control-line scale model developed by Aeromodeller staff from Doug McHard's f/f prototype

AERO Commander Six-Eighty Super

for 1·5 to 2·5cc engines

THE FIRST Aero Commander was produced by a group of engineers on a very limited purse. The design was originated by ex-Douglas Aircraft employee Ted Smith who, together with his small team, after three-and-a-half years in design and construction, saw their prototype take the air on April 28th, 1948.

The aircraft was a success from the start and much of this must be attributed to the determined way in which the designers set about keeping the airframe as light, yet robust, as possible. Other designers with the same aim in view have neglected the eye appeal of their brainchild, but not Smith, whose product must surely rank among the most elegant small aircraft flying today. The light airframe weight brought about by such features as one-piece wing and unit constructed tailplane allowed for the incorporation of a sturdy retractable undercarriage thus further increasing the performance and enhancing the appearance in the air.

The Aero Design and Engineering Company who now produce the Aero Commander, took over Smith's design in 1951 and, starting from scratch in an empty hangar at Tulakes Airport, Bethany, Oklahoma, commenced installation of equipment and machinery necessary for production. Finance was no problem, and work proceeded rapidly, the first production machine rolling from the assembly lines in late autumn.

On January 30th, 1952, the Aero Commander received the C.A.A. approved flight certificate, just after one year after tooling-up started in the deserted hangar! Such was the impact of the design that even before the plane was passed by the C.A.A. more than 50 firm orders had been placed.

This first version was known as the "520". Since then several variants have appeared, the two principal ones being the "560" and the "680 Super". These differ from the first type in many ways, but from a recognition point of view, the most noticeable difference is in the large fin and rudder which is now swept back. The latest version has a top speed of 260 m.p.h. and cruises at around 230 m.p.h., much of the power increase is the result of engine superchargers being fitted. The increased safety factor of a twin-engined aircraft over a single is much appreciated by business executives making lengthy flights, often over difficult terrain. Single engine performance of the machine is excellent, and has been demonstrated on several occasions. A model 560 has flown non-stop from Oklahoma City to Washington on one engine!

The internal arrangements of the Aero Commander are extremely flexible. Standard seating is for five persons, but seven can be carried without undue discomfort. Seats are of the reclining type and can be removed in a matter of minutes and the machine may then be used as a light freighter, carrying a payload in the neighbourhood of 2,500 lb.

The potentialities of the design have not escaped the American service chiefs and Aero Commanders are in service with both the U.S. Army and the U.S.A.F. The Army uses a version of the 680, the designation being L-26-C, and one of these is in use as a personal transport for President Eisenhower. The U.S.A.F. Aero Commanders are of the earlier 560-A type and known in the service as the L-26B.

Aero Commanders are in service all around the world, already the success of its configuration has been recognised by other companies, who have not been slow in adopting many of its original features. The price, by the way, is $84,500.

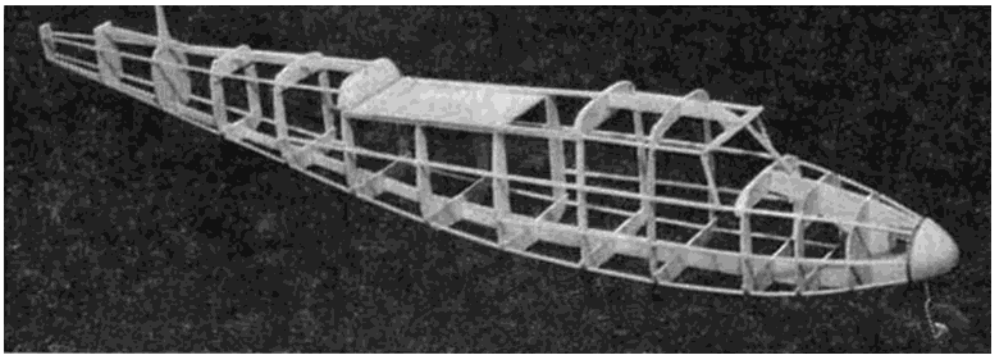
The original model, reduced size plans of which appear opposite, was first made as a free-flight experiment. The motors were Frog 80s and were fed from individual fuel tanks. A piece of Neoprene tubing was run from a point on the fuel feed just before the needle valve on the starboard engine and the other end connected to a similar point on the port engine. When starting the engines, a valve half-way along this tube was closed in order to preserve the fuel suction. When both motors were running this valve was opened. The air in this connecting tube remained static as long as both motors were running and producing the same suction at each end of the tube. When either motor stopped, the suction

Realism of Doug's free flight experiment in action compares most favourably with full-size aircraft in heading photographs. At right, free-flight airframe which has been modified for c/l operation

from the remaining one drew the air out of the connecting pipe into the fuel line and was thus itself stopped. The success of the system depends upon the fuel tanks being lower than the needle valve in order that the static air will prevent fuel being drawn in the event of the opposite engine failing. Also the air line must be kept free of fuel before starting. This system was moderately successful but messy.

Fitted beneath the centre section of the wing was a horizontal piece of wire, pivoted about its centre, and extending through the cabin windows. On each end of this wire was a clear acetate "plate" fitted vertically, flat face forward. When one motor only was running, the plate on this side was blown back by the increased slipstream and thus caused the wire to pivot. This movement was in turn transmitted to the large rudder which was then automatically thrown hard over to counter the single engine's asymmetric thrust. This device, which was a safeguard against the fuel system failing, worked well in the air, but the abandonment of the free flight project was brought about by the unforeseen problem of asymmetric lift, generated by the slipstream of the remaining live motor over the wing, thus causing a spectacular roll ! ! Ailerons were considered, but owing to the very large inboard area of mainplane swept by the slipstream and the viciousness of the single engine manoeuvres it was decided to convert this particular prototype into a control liner, where it performs most

beautifully. People who fly it say it almost flies itself! Which, of course, it should do! Free-flight twin engine experiments are not completely abandoned and an entirely new system promises complete success, but then, of course, it hasn't been built yet!



Above, the control-line version with J. M. Bodey who built the revised centre section, etc. Basic frame at left gives an idea of the keel construction. Wing is now integral with fuselage whereas original free-flight version was removable as seen here.