

CITY HELICOPTER TRAFFIC . . .

In high-density areas such as London, radar monitoring will undoubtedly be required. Specification for coverage has been stated as 500ft above ground level to a distance of beyond 30 miles. M.T.I. will be of advantage since, even when hovering, the helicopter produces a good echo from the rotating rotors.

One of the problems will be radio communication. The fact that the traffic will be confined to the lower flight levels and may be screened by buildings or other obstructions naturally hinders the use of V.H.F. or U.H.F. At the South Bank site, for example, County Hall effectively cuts down the efficiency of communications between A.T.C. and aircraft approaching from up river at 500ft until the aircraft reaches (approximately) Lambeth Bridge.

FOR ALPINE ATTACK

The P-16, by Switzerland's Fahr- und Flugzeugwerke A.G.

TEST flights of the first entirely Swiss jet aircraft, the F.F.A. P-16 attack fighter, powered with an Armstrong Siddeley Sapphire, have been interrupted by a slight accident. The brakes failed during a landing after a public demonstration on July 4th and the machine ran over a railway line, writing off the undercarriage. Repairs are expected to be completed shortly and flying will continue. A second prototype is scheduled for completion at the end of the year. The cause of the brake failure was the breaking of the hydraulic supply line close to the wheel by a stone thrown up from the runway.

Meanwhile some details of the P-16, specially designed for operations over Switzerland, are now available. First requirements were good climb and acceleration, coupled with the ability to lift heavy armament loads from the many small airfields tucked away in the narrow valleys of the Alps. This meant that exceptional slow-speed characteristics were needed, leading to some form of compromise between very high performance and tractability at low speeds. For this reason a thin, low aspect ratio (4.5) wing form with moderate leading-edge sweep-back (about 15 deg) was combined with drooping ailerons and high-lift devices which have been under development in Switzerland since 1947. Part of the considerably increased lift available for slow flying is provided by special flaps which extend over the whole span between the ailerons and under the fuselage. The tip-tanks act as end plates as well as having a structural function and are therefore not jettisonable.

Particular care has been taken over wing stiffness, and for this reason a special sandwich-type skin is used. The tip-tanks are divided into three compartments; they have a very thick skin and form part of the wing torsion box. While the flaps are of normal construction the ailerons are foam-filled in order to give the maximum stiffness with minimum weight.

The Dowty undercarriage has a reserve of strength in order to allow for possible increases in the all-up weight of later models. Each leg carries a pair of wheels with medium-pressure tyres for operation from grass fields. Brakes are hydraulic, with a pneumatic emergency standby. The main-unit legs retract inwards.

The fuselage is covered with fairly light-gauge skin, equivalent to the American 75 ST alloy, and the many cut-outs are heavily reinforced. Power is at present provided by a Sapphire ASSa.6, giving 7,900 lb thrust and weighing 2,640 lb. A fuselage break aft of the wing allows quick removal of the engine. Later versions

An arrangement on the lines of the existing multi-carrier system is likely to be required, not so much for extending the range as for filling in awkward gaps in the coverage which may become evident close to the terminal.

Lateral separation will be the rule. It will be the aim to guarantee a clearance provided that the schedule is maintained. Although holding should only arise in an emergency, it may eventually be necessary to establish temporary alighting points at strategic locations beneath airways which lead into the larger cities.

By its contribution to safety, expedition and regularity, the Air Traffic Control Service, if organized in the right way, will play a vital part in the development of helicopter traffic on a large scale.



The P-16 first flew on May 8th and is seen here being wheeled out onto the F.F.A. airfield at Altenrhein.

of the aircraft may have reheat or a turbojet of higher power, but whichever unit is selected for production aircraft will probably be manufactured under licence by Sulzer Frères of Winterthur, who already produce the D.H. Ghost for Swiss Venoms.

Horizontal tail surfaces have parallel chord and are more highly swept than the wing to give good control at the higher Mach numbers. The tailplane is variable in incidence through a hydraulic motor, with a mechanical standby, and is noteworthy because of the use (for the first time in Switzerland) of tapered-thickness skin over a multi-spar frame. All other flight controls are French Leduc-Jacottet units, specially designed to be accommodated in thin surfaces.

Hydraulic power is used for all services in addition to flight controls and a Dowty high-pressure system charged by an engine-driven pump is supplemented by accumulators which provide for emergency operation of undercarriage, air-brakes and flaps. A second standby is provided by a pneumatic system which can be used for wheel brakes, as stated above, undercarriage lowering and emergency hood-jettisoning. A compressor bleed, expansion turbine, thermostats and filters are used for cockpit pressurization and air-conditioning. Since no hydraulic lines may be led into the cockpit, for safety reasons, all hydraulic services are electrically controlled, and this is the primary function of the electrical system. The 24 V.D.C. engine-driven generator in addition provides current for operation of engine starter, fuel pumps, wind-screen heating, radio and radar. The latest U.H.F. equipment and an unspecified radar installation are catered for.

The P-16 is remarkable in its class for having a weapons bay in the fuselage centre-section, designed to accommodate rockets, fragmentation or napalm bombs or, for ferry purposes, a large extra fuel tank. This armament is supplemented by two 30 mm guns permanently mounted in the nose, and further armament may be carried under the wings. There are five fuel tanks, including those at the wing-tips, all of which can be rapidly replenished through a single nozzle.

No performance figures for the P-16 have yet been released. The main emphasis has evidently been on relatively high performance at low levels over a wide speed range, combined with good manoeuvrability and the ability to fly very slowly. If the company has been successful in achieving this, the P-16 should be an excellent machine for ground attack in the mountainous regions of Switzerland.

