

## HELICOPTERS OF THE WORLD . . .

### BRAZIL

#### Centro Tecnico de Aeronautica

*Sao Jose dos Campos, Sao Paulo*

**Beija-Flor** This two-seat helicopter (Humming Bird) was designed and built to the initial design of Professor Heinrich Focke. A forward-located Continental E225 engine drives main and tail rotors through a centrifugal clutch and a David Brown lorry worm and wheel. The makers state: "For economic reasons the material used in the construction of the helicopter is almost entirely of national origin, and due to the relatively undeveloped state of the aircraft and accessory industry in Brazil this has unavoidably led to an excessive weight. This situation will, however, be improved with subsequent prototypes now being planned. The first flights have concentrated on a preliminary assessment of control and stability and have been remarkably free of prototype 'snags'."

● Rotor diam, 29ft 6in; overall length, 27ft 8in; gross weight, 2,090lb; max speed, 93 m.p.h.; economical cruising speed, 81 m.p.h.; max rate of climb, 1,220ft/min; hovering ceiling (free air), 4,600ft; range, 169 miles.

### CANADA

#### Avian Industries Ltd

*Georgetown, Ontario*

**Model 2/180** Although the first prototype has been destroyed in an accident (stated in no way to reflect deficiencies in the design), work is now going ahead on a second Model 2/180. The aircraft is intended to be flown by relatively inexperienced fixed-wing pilots. A tandem two-seater, it is based on a steel keel and rotor pylon forming the entire primary structure and supporting seats, controls, undercarriage and a rear-mounted Lycoming 180 h.p. flat-four engine. The three spring-steel undercarriage legs are each held to the keel by a single bolt. Propulsion in autorotative flight at cruising speeds of 150 m.p.h. is by a ducted fan propeller at the tail, with a small aerodynamic rudder mounted in the ring. Additional kinetic energy required for vertical take-off and landing to and from 200ft is provided by cold tip-jets supplied from a compressed-air container continuously charged by an engine-driven pump. The three-bladed rotor is controlled by aerodynamic tabs at the trailing-edge near the tip. Power-off approaches without tip thrust can be made at 20-25 m.p.h. with touchdown at 15 m.p.h.

● Rotor diam, 26ft; overall length, 14ft 7in; weight empty, 1,000lb; gross weight, 1,600lb; max cruising speed, 150 m.p.h.; max rate of climb, 1,500ft/min; normal range, 450 miles.

### CZECHOSLOVAKIA

#### Omnipol Ltd

*Washingtonova 11, Prague III*

**HC-2 Heli-Baby** The first examples of this tiny two-seater have been flying with the 83 h.p. Praga DH flat-four engine but production models may have an engine of 105 h.p. The data at the end of this paragraph relate to the 83 h.p. version.

The makers claim particularly low

operating costs, sturdy construction and sensitive and responsive control, and these characteristics are considered to render the aircraft suitable for training as well as for a wide range of utility applications. The standard undercarriage consists of main- and nosewheels and the engine is mounted behind the cabin, with its crankshaft inclined to the vertical. A metal mono-coque boom carries the tail-rotor transmission, tail rotor, trimming surface and tail bumper. In one hour the Heli-Baby can carry a pilot and 220lb of payload over 62 miles, using only 4.85 gal of fuel.

● Rotor diam, 28ft 11in; length, 34ft 5in; empty weight, 840lb; gross weight, 1,280lb; hovering ceiling, with ground effect, 3,600ft; rate of climb, 710ft/min; max speed, 78 m.p.h.; cruising speed, 62 m.p.h.; range, 93 miles.

### FRANCE

#### Helicop-Air

*8 Rue Bellini, Paris 16e*

**Girhel** This "combination" aircraft is powered in the first instance by a Continental 90 h.p. engine, but a more powerful unit will be fitted in a version intended for the French Air Force. The first example should fly at about this time. A low-set wing has end-plates and ailerons and carries the mainwheels of the nosewheel undercarriage. An autogyro rotor provides for low-speed flight and is speeded-up for take-off by a drive from the engine. It is claimed that a fixed-wing pilot can fly this aircraft without conversion.

● Rotor diam, 32ft 9½in; fuselage length, 20ft; weight empty, 840lb; gross weight, 1,380lb; max speed, 103 m.p.h. (Figures apply to 90 h.p. Continental engine.)

#### Sud Aviation

*37 Bd de Montmorency, Paris 16e*

**Djinn** Powered with a Turboméca Palouste 4 turbine air-generator, the two-seat Djinn continues in quantity production for the French Army and for foreign customers. The air-generator supplies compressed air for blade-tip ejection and, due to the high inertia of the rotor, it is claimed that the Djinn is "the most lenient of helicopters where flying faults are concerned." To this reason is attributed its success as a trainer. It is a short range aircraft, easily maintained and transported. Optional equipment includes a cargo sling, two stretchers (external), and spray equipment consisting of two spray booms with 54 nozzles fed by two 26 US gal tanks pressurized by air from the Palouste.

● Rotor diam, 36ft; fuselage length, 17ft 5in; gross weight, 1,676lb; cruising speed, 62 m.p.h.; max range, 110 miles; hovering ceiling in ground effect, 3,000ft; service ceiling, 10,000ft.

**Alouette II** A five-seater, the Alouette has mechanical transmission from its Turboméca Artouste 2 turbine of 400 h.p. A notable feature introduced on this aircraft is the automatic engine r.p.m. governing system designed to simplify piloting. Of this feature the makers state: "Relieved of the need to keep permanent watch on his instrument panel for the purpose of pitch and throttle co-ordination, the pilot can concentrate entirely on the assigned mission (surveillance or observation, for instance)." An exceptional centre of gravity range is claimed, all loading configurations being possible without ballasting. The Alouette has already been operated in every role suited to an aircraft of its class, including anti-submarine operations. Carrying two torpedoes, and based on the fantail of a destroyer, it is claimed to double the efficiency of the vessel by delivering the weapons close to



Beija-Flor



Avian Model 2/180



HC-2 Heli-Baby

Helicop-Air Girhel

