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Kellett XR-8 Helicopter

Intermeshing Rotors : Balanced Torque Reaction : No Tail Rotor

AMERICAN interest in helicopters continues unabated. Information has recently been released regarding a new two-seater built for the American Army Air Force by the Kellett Aircraft Corporation, of Philadelphia. Termed the XR-8, it is a genuine helicopter having the characteristics of vertical ascent and descent, the ability to fly backwards and sideways as well as forward, and also to hover motionless. It is claimed to possess good manœuvring capabilities.

The outstanding feature of the design is the arrangement of the two three-bladed rotors. These are closely pitched at a slightly divergent angle and overlap as they rotate in opposite direction. The torque reaction from the rotors balances out and thus the need for the familiar transverse tail rotor is eliminated. The two rotors have a combined blade area of 84.5 sq. ft. with an overall span of 40ft. As the gross weight of the craft is 2,975 lb. the blade loading is 35.2 lb./sq. ft.

Power is supplied by an air-cooled engine developing 245 h.p., thus giving a power loading of 12.1 lb. per h.p. For short trips 34 gallons of fuel are carried, but tankage is available for a maximum of 81 gallons. This is sufficient for more than four hours' operation. Fuselage length is 22ft. 7in., and the total height is 11ft. The track of the tricycle undercarriage is 10ft. No particulars are as yet available of the specific need for the vertical and horizontal stabiliser surfaces at the tail. At this stage it is difficult to assess relative merits. The advantage gained by eliminating the tail rotor and its transmission is offset by the provision of a second rotor and its driving gear. Aerodynamic drag may be somewhat reduced but controls will not be markedly simplified.

The XR-8 helicopter was first flown on August 7th,



The XR-8 flying within the confines of the small field used for testing the prototype. It first flew in August last year.

1944, and since then continued tests have been undertaken to develop and co-ordinate performance data of the intermeshing rotor type. A large number of flying hours have been accumulated and a number of cross-country flights have been made. The entire test programme has been carried out from a small field, approximately 220ft. by 450ft., adjacent to the Kellett plant. It is pointed out that the XR-8 is a military experimental type and the firm is not contemplating going into production on this design, although later models are expected to incorporate the intermeshing rotor arrangement. All experi-



Rotor head of the XR-8 showing the two intermeshing three-bladed rotors.



Vertical and horizontal stabilisers occupy the place of the more usual tail rotor.

mental work has been undertaken in co-operation with the U.S.A.A.F. Air Technical Service Command at Wright Field.

The Kellett Aircraft Corporation is currently engaged on other helicopter projects but, whilst specialised applications are immediately possible, is of opinion that a substantial amount of additional engineering and flight experience is still required before the helicopter can be established for general use. The rather exuberant statements and pictures in the non-technical Press are deprecated. No disclosure is made of the company's post-war plans for helicopters in the private and commercial fields.