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Helicopter Requirements

“WHEN are we going to have family helicopters to land in the back garden?” “Why don’t we have helicopter buses from London Airport to Charing Cross?” Such questions are asked frequently, but to provide convincing, non-technical, one-sentence answers is almost impossible. The second, certainly, relates to something capable of realization within a few years; but the first postulates an objective that may never be attained.

It is forty-three years since a man—Louis Bréguet—lifted himself with a helicopter, but during most of the intervening period comparatively little effort or money has been expended upon rotary-wing developments; thus machines of this class have fallen far behind those of the orthodox, fixed-wing type. Only recently has the usefulness of the helicopter been appreciated by military authorities or, perhaps more correctly, has the helicopter reached a stage of practicality which permits its particular qualities to be used to advantage. Helicopters cannot yet be described as being in general use in any country, although the Americans and ourselves are exploiting their unique flying characteristics to an ever-increasing extent, for mail, rescue and agricultural purposes.

Knowledge of the design, construction and controls of helicopters is very incomplete, even among those in the aircraft industry and flying Services, and it is for this reason that we print this week (pages 17-20) the first of a series of articles by a pioneer and leading authority on these aircraft. An understanding of his explanations will provide a firm foundation and background for studying the much-accelerated development programmes for rotating-wing machines, and enable the reader better to assess the probable importance of such aircraft in the next decade. Undoubtedly the helicopter is on the verge of becoming a powerful factor in both military and commercial aviation. But first the right machines must be produced, and it is upon this task that the American and—to a lesser extent—the British industries are engaged.

In simple terms, the right machine for commercial passenger services is in the first instance a twin-engined two-rotor design capable of carrying in safety, over built-up areas, a dozen or twenty people on short inter-city and metropolitan routes. Were such a helicopter available now, plans for introducing services would certainly be more advanced. In opposition to British—particularly B.E.A.—views, are those of America’s experts, Messrs. Sikorsky and Piasecki, who have stated that “certification of passenger helicopter services should not be delayed until twin-engined ships are available.”

For military duties the requirements—and there are several—are not quite so clear-cut. Two distinguished officers, Maj.-Gen. R. H. Bower, Director of Land/Air Warfare, speaking before the Helicopter Association of Great Britain (see *Flight*, September 28th) and Vice-Admiral M. J. Mansergh, Fifth Sea Lord and Deputy Chief of Naval Staff (Air), lecturing before the R.U.S.I. (*Flight*, November 16th), have given a good overall picture of the probable requirements. The Army needs a jungle, arctic and sea-rescue helicopter—probably a four-seater; a load carrier to the duties of which might be added, on occasions, special assault; a small A.O.P. machine; and probably a medium-sized general-purpose type as well. The Navy might also head the list with a rescue helicopter, but additionally they need one for close-in anti-submarine duties, while either of these machines might double in a communications (ship-to-ship and ship-to-shore) and general-purpose role.

Of the future, *Flight* had something to say in October: “Chiefly we lack experimental machines with jet-driven rotors. In the jet drive lie the solutions to major problems—those of torque reaction on single-rotor helicopters, drive transmission, and power-plant weight and complication. . . . News of definite British jet-rotor developments is awaited with some impatience, particularly as gearing problems may delay, if not debar, existing gas turbines in their application to helicopters.”

In addition to the tendency towards increased size of prototypes the past year has seen notable advances in omniphibious landing-gear, stability for hands-off flight, and automatic-pilot control for all flying conditions, including hovering.