Helicopters of the World . . .

the laying of telephone cable; and the transporting and automatic unloading of cargo in inaccessible areas. Still and cine cameras can also be installed to make permanent records of battle situations. These tactical applications are obviously attractive, but still further developments are possible. The robot helicopter could be used in conjunction with television to seek out target areas and drop smoke-bombs as visual markers for artillery fire. The machines could be made to lay smoke-screens to obscure troop movements, or lay and detonate lines of explosives through mine fields, thus clearing a path for troops and vehicles; and yet another adaptation, the company claims, might be the use of robot helicopters for hunting and destroying enemy tanks and vehicles.

● Rotor diam., 47ft; overall length, 47ft; empty weight, 4,290 lb; gross weight, 5,482 lb (5,934 lb overload); max. speed at 8,000ft, 115 m.p.h.; hovering ceiling in ground effect, 13,700ft; normal still-air range, 290 miles.

HOK-1 (with XT53 gas turbine) First flight tests of the Lycoming XT53 free-turbine for helicopter use will be made with a HOK-1. The turbine is mounted above the fuselage, thus increasing the internal space. (In 1951 Kaman flew the world's first turbine-powered helicopter, and during 1954 a twin-turbine HTK was being flown.)

KELLETT AIRCRAFT CORP.

P.O. Box 468, Camden 1, New Jersey. (Merchantville 8-4800)

KH-15 Known as Stable Mabel, the KH-15 is described as a variable-stability helicopter test-bed, "in which significant rotor parameters can be modified." It is powered by two Reaction Motors XLR32 hydrogen peroxide rocket motors, mounted at the tips of the two-blade rotor. Its principal function, however, is to flight-test a new gyro stabilizing system and to demonstrate positive dynamic stability without loss of control throughout the speed range. "Of prime importance," state the makers, "is the fact that the principles of the stabilizer are not peculiar to the KH-15 but are applicable to any type helicopter, whether it be single rotor, tandem, side-by-side, co-axial, or synchropter and the system is entirely independent of the type of propulsion system. Although the ultimate in helicopter stability and control has never been realized, these flight tests indicate that the goal is being approached and the new gyro stabilizer is evidently a key to the problem."

KH-17A Another flying test-bed, developed under the auspices of the U.S. Navy for flight investigation of a partially loaded rotor system, the KH-17A is a modified Kellett KD-1B autogyro originally built in 1939. In the nose is a 275 h.p. Jacobs engine and on each wing a 140 h.p. Lycoming.

McDONNELL AIRCRAFT CORP.

St. Louis 3, Missouri (Pershing 1-2121)

XV-1 A speed of 200 m.p.h. is claimed to have been attained by one of these convertiplanes. Two examples are flying, and development is sponsored by the Department of the Army under the direction of the U.S.A.F. Air Research and Development Command. The development programme provides "both a prototype aircraft for Army liaison/reconnaissance type missions as well as research aircraft to explore this principle for possible use in larger troop and cargo carrying aircraft." The rotor is driven by McDonnell-developed pressure-jets at the tip of each of the three blades. The pusher propeller is powered by a Continental R-975-19 piston engine, which also drives compressors for the supply of air to the pressure jets during "helicopter" flight. The machine carries three passengers or two stretcher patients and a medical attendant in addition to the pilot. The pilot and co-pilot/observer sit in tandem and dual controls can be fitted. The exit doors are jettisonable. A tailplane carrying tabs is mounted between the two tail booms. Two non-retracting skids comprise the landing gear, and the installation is unusual in that energy is absorbed during a hard landing by yielding, replaceable, stainless-steel straps. (A similar arrangement is used on the Cessna CH-1.)

● Span, 26ft; overall length, 30ft.

NAGLER HELICOPTER COMPANY

Westchester County Airport, White Plains, N.Y.

NH-160 This ultra-light, single-seat helicopter, with co-axial rotors, is under development. An unorthodox feature is the wide—6ft—separation of the two rotors. Power is supplied by a 72 h.p. McCulloch engine, as developed for drone aircraft.

NH-161 A proposed development of the NH-160, with a McCulloch engine of 150 h.p., this machine would have a gross weight of 1,200 lb and a maximum speed of 120 h.p. at sea level. The lower rotor would be of high-speed type, fully shrouded, and would have three blades, whereas the upper would have two.

OMEGA AIRCRAFT CORPORATION

Municipal Airport, New Bedford, Massachusetts. (Wyman 3-4270)

SB-12 The design of this unusual helicopter is the work of Bernard W. Sznycer, who, in 1951, obtained a Canadian certificate of airworthiness for his model SGV1. Mr. Sznycer has departed from the trend towards higher cruising speed and expensive streamlined monocoque structures, concentrating instead on achievement of reliability coupled with satisfactory payload; low initial price and low cost of maintenance; sufficient power reserve to hover at 5,000ft; quick loading and unloading, and rapid conversions from passenger version to a cargo carrier or ambulance; and reduced vulnerability of expensive components in case of crash landings. A maker's statement runs: " . . . an 800 lb payload dictated a powerplant of 400 h.p., which, to achieve reliability, was broken in two 200 h.p. units; but at the same time, the price of two small engines even with the addition of extra clutches, pinions, etc., is still much below a single unit of corresponding power. . . . Another consideration of greater reliability was striven for while reducing development costs . . . This paradoxical statement is due to designing all parts subjected to oscillatory loading for infinite life, thereby avoiding very expensive and time-consuming fatigue bench-testing, wherever the weight or space consideration permitted. True, the very low permissible oscillatory stress

Kellett KH-15.

(Left and below) McDonnell XV-1.