(Left) Gyrodyne XRON-1.

Helicopters of the World . . .

max. speed at s.l., 122 m.p.h.; cruising speed, 100-120 m.p.h.; rate of climb at s.l., 1,000ft/min; max. C.A.A.-certified operating altitude at max. weight, 11,000ft; hovering ceiling at max. weight at 95 deg F, 8,600ft; hovering ceiling out of ground effect at max. weight, 6,000ft; range, 290 miles.

CH-1 (Boundary Layer Control) A CH-1 has been adapted for boundary-layer control and was the first helicopter so equipped. The BLC system is intended to delay the onset of retreating-blade stall—at present a serious factor militating against the attainment of higher speeds by helicopters.

DE LACKNER HELICOPTERS, INC.

14 N. Bleeker Street, Mount Vernon, N.Y.

Aerocycle This platform lifting device has been ordered, to the extent of twelve experimental models, by the U.S. Army. A one-man affair, it has a 44 h.p. outboard engine and its salient features can be studied in the photograph. Control resembles that of a motor-cycle, the machine being guided by the passenger leaning in the desired direction. The U.S. Army has announced that the Aerocycles will be put through tests to ascertain their potentiality on an atomic battlefield. Initial tests have shown that soldiers without previous flying experience become proficient operators of the Aerocycle in twenty minutes. All that is required is a sense of balance and good reflex action.

DOMAN HELICOPTERS, INC.

Danbury, Connecticut. (Pioneer 3-5521)

LZ5-2 The foregoing is the designation of the present standard civil model of the Doman helicopter; in the U.S. Army it is known as the YH-31. The rotor system is unconventional in that inclination of the rotor tip-path plane with respect to the fuselage is accomplished by gimbal-mounting the rotor hub and rotating it with a constant-velocity driving system. The rotor retains dynamic balance in all flight attitudes, ensuring low vibration. There are no blade-flapping hinges, drag hinges or hinge dampers, and bearings subject to centrifugal loads with oscillating motion are reduced to a minimum. The rotor incorporates reduction gearing as an integral part of the assembly. All moving parts are contained in a common housing which precludes contamination from weather and foreign matter. The blades are of plastic-bonded birch wood and resistance to abrasion from sand, rain or hail is provided by a sheath of solid nylon over the leading edge. The tail rotor is a miniature copy of the main rotor.

An eight-seater, the LZ5-2 is powered with a supercharged Lycoming SO-580-A1A engine delivering 400 h.p. for take-off. The cabin is unusually spacious and large doors open to the full cabin width of 7ft. The standard undercarriage is of quadricycle type, but either skids or floats can be fitted.

● Rotor diam., 48ft; fuselage length, 38ft; empty weight (standard), 3,250 lb; empty weight (stripped), 2,950 lb; gross weight, 5,200 lb; max. cruising speed, 99 m.p.h.; speed for best range, 80 m.p.h.; hovering ceiling in ground effect, 4,000ft; service ceiling at 5,200 lb, 10,500ft; range with 73 gal of fuel (10 per cent reserve), 230 miles; range with 115 gal (10 per cent reserve), 379 miles; rate of climb at s.l., 850ft/min.

GOODYEAR AIRCRAFT CORP.

Akron 15, Ohio.

GA-400R Gizmo The Gizmo has been developed primarily "for any purpose requiring transportation of one man up to 60 knots. The airframe is of welded tubing and carries parallel aluminium skids. Power is supplied by a 2-cylinder Marine and Manufacturing Big Twin engine of 31 h.p. (this is of the outboard type), and the rotor is driven through a belt and pulley system with a 10:1 reduction from the engine. A centrifugal clutch is claimed to provide smooth starting and immediate free-wheeling upon loss of power. The rotor blades are of laminated wood mounted in a steel hub underslung from a "teetering" hinge. The two-bladed tail rotor is of formed aluminium sheet and provides directional control through rudder cables operating its collective pitch mechanism. The makers state: "The GA-400R is capable of hovering manoeuvres, pattern flight, steep turns, high speed, forward flight, rolling pull-outs, and other similar functions." Employment of the Gizmo as a trainer is foreseen by the manufacturers.

● Rotor diam., 18ft; fuselage length, 15ft; empty weight, 235 lb; gross weight, 435 lb; fuel capacity, 3.2 gal; estimated max. speed at s.l., 69 m.p.h.; cruising speed, 46 m.p.h.; endurance at cruising speed, 45 min; vertical rate of climb, 500ft/min; hovering ceiling, 6,000ft; service ceiling, 12,000ft. (Performance figures are estimated.)

GYRODYNE CO. OF AMERICA, INC.

Flowerfield, St. James, L.I., N.Y. (St. James 2-6366)

XRON-1 Rotorcycle Another American ultra-light one-man helicopter is the Rotorcycle, weighing less than 500 lb fully loaded. Intended applications are observation, liaison and "small unit tactical manoeuvres." Outcome of a U.S. Navy design competition of 1953, the Rotorcycle has co-axial rotors and can be folded into a small package for transport. The basic design will accommodate engines in the 40-75 h.p. range. The present engine is a Nelson H-59 of 40 h.p. A design feature of special interest is the use of small drag brakes on the rotor tips which turn the fuselage by unbalancing the torques of the rotors.

● Rotor diam., 15ft; fuselage length, 10ft 5in; gross weight, under 500 lb.

HILLER HELICOPTERS

1350 Willow Road, Palo Alto, Calif. (Davenport 5-3241)

Model 12-C Known in the U.S. Army as the H-23C, the Model 12-C is now being offered for civilian use at a price of $47,750. Essentially it resembles the familiar 12-B but incorporates a number of improvements. "The Hiller Rotormatic control system," the makers state, "now incorporates two outstanding improvements contributing to greater safety and ease of control. The Hiller 12-C has a redesigned main rotor hub incorporating

(Below and right) Hiller Model 12-C.