

THE AMERICAN INDUSTRY...

receipt of a contract to construct a 110-ton hydrofoil patrol craft, powered by Bristol Siddeley turbines, for the US Navy at a cost of over \$2m.

Brantly Helicopter Corp., 24 Maplewood Ave, Philadelphia 44, Pennsylvania. After 17 years of development, Brantly are beginning to reap a modest success with their little Model B-2 two-seat helicopter, of which 27 had been delivered by February of this year. A twin-engine helicopter, using two B-2 transmission-rotor systems in tandem, is reported to be under development as the B-3. They have an associate company in Wales.

Callair Inc., Afton, Wyoming. Major Callair products are the A-5 (150 b.h.p. Lycoming) and A-6 (180 b.h.p. Lycoming) agricultural aircraft, combining high performance with special design features for protection of the pilot. Also available is the basic Callair A-4 two/three-seat cabin monoplane from which the A-5 and A-6 were evolved.

Capitol Copter Corp., 909 Johnson Parkway, St Paul 6, Minnesota. The prototype of Capitol's Model 3CWM300 single-seat ultra-light cabin autogyro flew in September 1959 and the first production machine is nearing completion. Features include an extruded aluminium alloy frame, 72 b.h.p. McCulloch engine driving a pusher propeller, two-blade rotor with metal spar and glass-fibre skin, and glass-fibre and Plexiglas cabin. Wheeled and floatplane versions are offered in "do-it-yourself" kit form.

Cessna Aircraft Co., Wichita, Kansas. Cessna is organized in four divisions, of which the Commercial Aircraft, Military Aircraft and Marketing Divisions are in Wichita and the Industrial Products Division, specializing in industrial and agricultural hydraulic equipment, at Hutchinson, Kansas. Commercial aircraft sales totalled 3,564 in 1959, representing 50.6 per cent of the combined sales of the four leading US lightplane manufacturers.

Nine all-metal commercial models, all with Continental engines, are in production, including the Model 210 high-wing four-seater with retractable undercarriage, which has outsold all other light aircraft since deliveries began last December. Other types include seven single-engine high-wing monoplanes, ranging from the two-seat 100 b.h.p. Model 150 to the four-seat 230 b.h.p. de luxe Skylane, and the five-seat low-wing Model 310D with two 260 b.h.p. engines. The four-seat Cessna CH-1C helicopter now has its FAA type certificate, and the prototype of an ultra-light twin-engine aircraft "of completely different design" is due to fly early in 1961.

Military production is concentrated on the U-3B version of the Model 310 and the T-37B intermediate jet trainer, of which 450 have been delivered, with sufficient orders in hand to extend manufacture to July 1961. No contract has yet been received for the four-seat Model 407 utility aircraft evolved from the T-37B. Subcontract work includes production of Boeing B-52G tailplanes, fins and rudders for the Republic F-105 and the transporter/erector container for the Minuteman ICBM.

Cessna subsidiaries include the McCauley propeller company and the Aircraft Radio Corp. The company also holds a 49 per cent interest in Avions Max Holste of Rheims, France.

Champion Aircraft Corp., Osceola, Wisconsin. Champion is producing five improved versions of the high-wing Aeronca Champion lightplane, of which it acquired manufacturing rights in 1954. Basic models, with tailwheel undercarriage, are the two-seat Traveler (95 b.h.p. Continental) and three-seat Sky-Trac (140 b.h.p. Lycoming). Variants with tricycle undercarriage are the Tri-Traveler and DX'er respectively, and the new Tri-Con is a Traveler with reversed tricycle gear. Agricultural spray-gear and floats are available for the Sky-Trac. Sales of all models totalled 274 in 1959.

Chance Vought Aircraft Inc., Dallas, Texas. Chance Vought has made a remarkable, if desperate, recovery since the double shock of the cancellation of both the F8U-3 fighter and Regulus II missile in December 1958. Diversification is reflected in the company's present organization into five divisions with separate responsibility for Aeronautics, Astronautics, Electronics, Range Systems and Research.

Production of the Crusader single-seat fighter for the US Navy continues. The latest F8U-2N all-weather version, with near-M2 performance and armament of four Sidewinder missiles and four 20mm cannon, is scheduled to enter service this year. Deliveries of Scout four-stage solid-propellant research rockets to NASA have begun and Chance Vought has completed design studies for the nuclear-ramjet SLAM (Supersonic Low Altitude Missile) for the USAF. Other activities range from production of the highly advanced actuator system for the controls of the Minuteman ICBM to studies in the field of anti-submarine warfare for the US Navy, development of an electronic finger-printing system and—by buying three companies in this field—the manufacture of mobile homes.

Chrysler Corporation, Defense Operations Division, 7000 East Eleven Mile Road, Centerline, Michigan. Chrysler is responsible for production of the Redstone and Jupiter ballistic missiles which were designed by the US Army Ballistic Missile Agency team, under von Braun, at Redstone Arsenal, Alabama. Some 4,000 subcontractors are involved in this work and final assembly is done in the former US Navy plant at Warren, near Detroit. Modified Redstones are being delivered as boosters to launch America's astronauts on 14-15 minute suborbital flights over the Atlantic in Mercury capsules.

The Continental Motors Corp., Aircraft Engine Division, 205 Market St, Muskegon, Michigan. It is now 29 years since this leading manufacturer of automobile engines marketed its first horizontally opposed aero-engine, the 38 h.p. A40 flat-four. Continental engines have played a major part in the build-up of US private and business flying, including especially the amateur construction and midget racing movements. A very extensive range of engines is in current production, from the 65 b.h.p. four-cylinder A65-8F to the 340 b.h.p. supercharged six-



Primarily an electronics firm of vast magnitude, Hughes Aircraft also makes missiles and these small 269A helicopters, priced at \$22,500

cylinder GSO-526-A. Some are used as helicopter power plants, notably the special FSO-526-A helicopter engine fitted in the Cessna CH-1C. A few models feature fuel injection.

Continental Aviation & Engineering Corp (Subsidiary of Continental Motors Corp), 12700 Kercheval Ave, Detroit 15, Michigan. This company was formed as a research and development division of Continental Motors in 1940. Its Gas Turbine Division is licensed to manufacture the French Turboméca series of small gas-turbines and has in current production the Model 141 (Palouste) air-compressor and two versions of the J69 turbojet, based on the Turboméca Marboré. The 1,025lb-thrust J69-T-25 powers the Cessna T-37B trainer, and the 1,700lb-thrust J69-T-29 is fitted in the Ryan Firebee target drone.

Convair (Division of General Dynamics Corp), San Diego 12, California. Indicative of the scale of Convair's missile and space commitments is that Astronautics, the youngest of its operating divisions, has the greatest payroll, with more than 20,000 employees. The work of this division, based north of San Diego, is devoted to development and production of the Atlas ICBM, the Big Joe (Mercury), Atlas-Able, Atlas-Agena and Atlas-Centaur satellite and space probe launching vehicles, and the third stage of the huge Saturn space vehicle.

Second largest, with 19,060 employees, is San Diego division, engaged primarily on production of F-106 Delta Dart all-weather interceptors for the USAF and the 48 Model 880 and 37 Model 600 or 990 commercial transports ordered to date. Other projects at this division include development of the Lobber ballistic cargo missile, pilotless aircraft and supersonic ejection seats, one design of which is now being installed in all F-106s.

Fort Worth, Texas, operating division (17,921 employees) handles production of the B-58 Hustler supersonic bomber, of which 116 are currently on order for SAC (about half have flown), plus front fuselage assemblies for the two-seat F-106B. The NX-2 experimental nuclear-powered canard bomber is being developed at Fort Worth.

Research and manufacture of Advanced Terrier and Tartar ship-to-air missiles for the US Navy are the responsibility of Pomona, California, Division (6,315 employees). Also under development here are the Army Marine Corps Redeye bazooka-type infra-red missile for front-line defence against low-flying aircraft and the Army's vehicle-borne Mauler, intended to intercept short-range ballistic missiles and supersonic aircraft.

All that we know about the Ordnance Aerophysics Laboratory at Daingerfield, Texas, division (259 employees) is that it is working on ramjet engines and ramjet-powered missiles for the US Navy Bureau of Ordnance. Much research work and equipment development is also undertaken at other Convair divisions.

Curtiss-Wright Corp., Wood-Ridge, New Jersey. The trend towards diversification in the face of a contracting aviation market is reflected again in the case of Curtiss-Wright. The Santa Barbara Division is developing its four-rotor Artouste-powered VZ-7AP "flying jeep" under contract from the US Army Transportation Corps, and the South Bend, Indiana, Division is putting into production the four-passenger Model 2500 Air-Car ground-effect vehicle. First air-cushion craft in the world to be built in quantity, the Model 2500 is offered at present for off-highway use only and is to be followed by prototypes of an Air-Bus and Air-Truck.

Another Santa Barbara product is the Skydart 1 rocket-powered target which can be launched from standard Sidewinder missile rails on aircraft like the F-100 and F-104 at speeds between M0.8 and M2.

The Wright Aeronautical Division at Wood-Ridge has delivered approx. 13,000 J65 turbojets, derived from the Bristol Siddeley Sapphire, and is still engaged on some piston-engine work. Research projects include the development of storable liquid-propellant rocket engines and of the Wankel rotating-combustion engine, in association with the NSU Werke of Germany.

One project application for the Wankel engine is the Curtiss-Wright Model 200, a six-seat VTOL executive aircraft which will feature tilting "radial lift force propellers." Initial flight testing of this propeller system, which could be used on much larger aircraft, is being done with a simple turbine-powered test-bed aircraft designated the X-100. This has completed successful transitions from vertical to horizontal flight.