



AUTOGIROS AT WAR

HOW AN UNLIKELY
AIRCRAFT HELPED WIN
THE BATTLE OF BRITAIN

BY BRUCE H. CHARNOV

ROTARY THINKING

RAF Coastal Command officers examine an Avro Rota I—a license-built version of the Cierva C.30A—used in British army cooperation work.

PRESSED INTO SERVICE

Reginald Brie (in rear cockpit) flies a passenger in a privately owned C.30A. Attached to the RAF late in 1939, this autogiro had to be scrapped after it fell into the sea in October 1943.



"NEVER IN THE FIELD OF HUMAN CONFLICT HAS SO MUCH BEEN OWED BY SO MANY TO SO FEW," DECLARED WINSTON CHURCHILL ON AUGUST 16, 1940,

while leaving a bunker at the Royal Air Force base at Uxbridge. That sentiment would form the basis of a memorable speech to Parliament four days later, praising RAF Fighter Command's efforts in the Battle of Britain. The prime minister's words rallied Britons at a time when the fate of their nation—and of Europe as a whole—hung in the balance. Almost forgotten since then is that the "few" actually owed a great deal to the even fewer: the Autogiro pilots who had calibrated the Chain Home system, a string of radar stations that warned the RAF of approaching enemy aircraft.

The British military became interested in the Autogiro, invented by Spanish engineer Juan de la Cierva, as early as 1925. After evaluations, however, the RAF found the performance of the Cierva C.19 Mk. III unacceptable due to its poor control at low airspeeds. In 1933, when the Cierva Autogiro Company's chief pilot and flying manager, Reginald A.C. Brie, demonstrated the improved C.19 Mk. IV during annual army maneuvers at Salisbury, authorities began to envision a possible military role for rotorcraft.

"Reggie" Brie had joined the army in 1914, and by 1915 was serving as a gunner on the Somme. Transferring to the Royal Flying Corps in 1917, he gained a commission as an observer with No. 104 Squadron, flying de Havilland D.H.9s. After being shot down over Germany in 1918, he became a prisoner until he was repatriated at Christmas. Leaving active military service in 1922, Brie was recalled to duty in the fall of 1939, largely due to his Autogiro experience with Cierva.

By then the British had adopted the Cierva C.30A, which featured a tilting rotor operated by the pilot via a long control arm, greatly enhancing low-speed performance. The RAF envisioned two distinct roles for the C.30A: army cooperation (liaison) and naval functions. The Air Ministry had ordered 10 C.30As, designated as the

Rota I, for the former task on July 9, 1934, later ordering two naval models with floats, designated Rota IIs.

The first 10 Rotas were built under license by Avro and given the type number 761. In September 1934, Flight Lts. W. Humble and R.H. Haworth-Booth trained on the C.30A, then were assigned as instructors at the RAF School of Army Cooperation at Old Sarum. By November 22, six Rotas had been accepted for service. The new Autogiro's obvious potential for reconnaissance and observation prompted the War Office to stop using tethered observation balloons.

By September 1935, Britain's six Rotas—now with trained pilots—assumed a military role in the combined RAF/army war games, but with limited success. While the authorities had originally assigned the Autogiros inter-unit communications, artillery observation and reconnaissance duties, the C.30A's performance under actual battlefield conditions left much to be desired. The two-seater aircraft, powered by a 140-hp Armstrong-Siddeley Genet Major IA engine, required a takeoff run of 450 feet and suffered from ground resonance when landing on rough terrain, sometimes re-

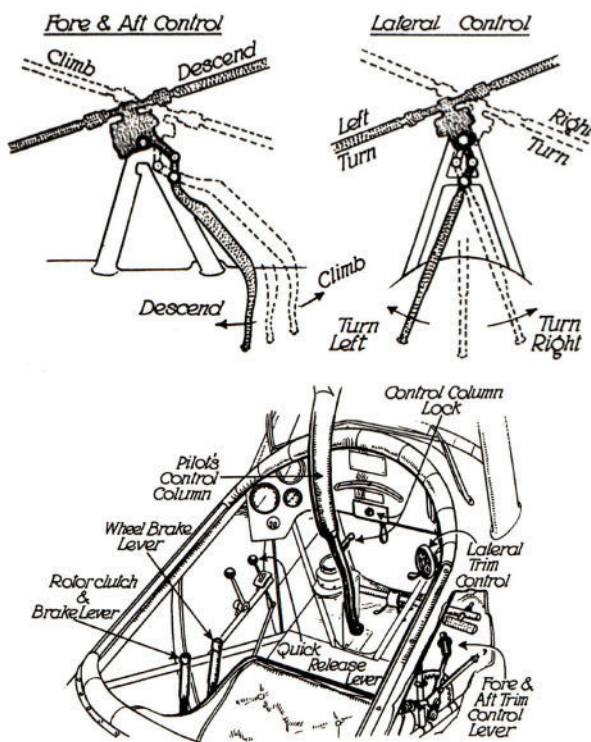
sulting in rotor damage. Those problems led to additional research, including wind-tunnel testing of a model at the National Physical Laboratory and, in 1937, at Chalais-Meudon outside Paris.

The RAF made no further efforts to acquire additional Rota Is, relying instead on light aircraft for observation, communication and reconnaissance. But the Rota I remained in the RAF inventory at Old Sarum, seemingly without a defined role. That would change in 1939 with the onset of war.

Reggie Brie, flying a C.30A under contract with Cierva, played a key role while attached to No. 24 Communications Squadron in calibrating Britain's new Chain Home radar. The Autogiro had a special aerial attached to a calibrating radio transmitter, installed under the direction of Bernhard B. Kinsey of Cambridge University. Brie's initial assignment was to calibrate a main high-level radar station in the Dover area by flying in tight circles over known points while the station took readings. His success led to the creation in July 1940 of specialized units dedicated primarily to radar calibration.

Having finally found a vital role for the Autogiro, the British military also requi-

TECH NOTES



KEY TO CONTROL The C.30A/Rota I (shown at top being rolled out for a radar calibration mission) featured a long control arm attached to a tilting rotor mount (illustrated above) that gave pilots direct control over the Autogiro's movements and greatly improved low-speed handling.



AUTOGIRO EXPERT Brie with the C.19 Mark IVP, the first Cierva fitted with mechanical rotor spin-up drive, in 1933.

SILENT SENTINELS

Radar receiver towers, part of the Chain Home system that the Rotas calibrated, stand watch at Woody Bay on the Isle of Wight.



sitioned civilian C.30As. Along with the Rota Is, these were assigned to eight radio servicing units as part of No. 74 (Signals) Wing, administratively attached to No. 19 Fighter Squadron at Duxford. Those units were later consolidated into No. 1448 Rota Calibration Flight, based at RAF Hendon, Odiham and Duxford. This mixed squadron of Autogiros and Bristol Blenheim Mk. IVs was initially commanded by Flight Lt. M.J.B. Stoker and later by Brie, who was subsequently promoted to wing commander. Pilot strength was slowly increased by adding experienced civilian Autogiro pilots. In June 1943, the Autogiros were ordered to No. 529 Squadron, the RAF's first operational rotary-wing unit, flying from Halton and Crazies Hill near Henley-on-Thames.

Flight Officer Norman Hill's mission on July 14, 1943, was to calibrate CHF (Chain Height Find) Rye3 Coastal Radar. His task included orbiting about a dozen marks on land and sea. Special markers were dropped beforehand for the sea runs, and the pilots were required to maintain the smallest possible orbit around those markers for a period of three to six minutes at altitudes of 2,000, 3,000 and 4,000 feet, while a "squegger" transmitted signals to the radar stations.

The sun was setting late that afternoon as Hill was completing his final calibration exercise. He passed through some disturbed air, then realized there were other aircraft nearby. Spotting a plane flying below him, he recognized it as a Focke Wulf Fw-190. Hill knew the German fighter was capable of flying more than three times faster than the Rota's theoretical maximum speed of 110 mph (in reality closer to 90 mph). All that stood between him and certain shootdown were the Autogiro's unusual capabilities.

By this time the German had looped upward from below the Rota, preparing for a strafing run. Sweating profusely, Hill waited until the last moment before tilting the rotorhead backward,

ALL THAT STOOD BETWEEN NORMAN HILL AND CERTAIN SHOOTDOWN WERE THE AUTOGIRO'S CAPABILITIES.

causing the Rota to slow and flare upward. The German passed harmlessly overhead. Hill then pushed the stick hard to port, and the Rota turned and dived toward the ground, a maneuver the German pilot declined to follow.

But as Hill struggled to regain control of the rotorcraft, now locked in a steep dive, a second Fw-190 appeared. Again Hill's skills and the Rota's maneuvering capability saved the day: This time he turned directly toward the fighter, presenting the smallest possible profile to the attacking aircraft—and likely surprising its pilot. The German broke off at the last instant, passing just below the Rota.

The entire encounter had taken just three minutes. The Rota was low on fuel, though it was considerably inland from where the confrontation had started, and Hill continued in a steep but controlled descent to a safe landing.

Brie, meanwhile, had been ordered to the British Purchasing Commission in Washington, D.C., where he played a role in the attempted acquisition of additional rotorcraft from the Pitcairn-Larsen Autogiro Company. He later par-

ticipated in evaluating and buying Sikorsky helicopters.

With Brie unavailable, 529 Squadron was commanded by another Cierva veteran, Sqd. Ldr. Alan Marsh, whom Brie had gotten transferred from Farnborough as his successor. The squadron was disbanded on October 20, 1945, with the Rota pilots having accumulated a total of 9,141 flying hours. At its peak, 529 had 17 C.30s in service.

Brie would be awarded British Helicopter License No. 1. A founding member of the Helicopter Society of Britain and American Helicopter Society, he received the Royal Aeronautical Society Silver Medal for Aeronautics while leading the Helicopter Experimental Unit of British European Airways in 1947. He later joined Westland, where he planned and oversaw the commissioning of the Battersea Heliport.

When Brie died in 1988, few realized the contribution he and his fellow Autogiro pilots had made during some of WWII's darkest days. In a life marked by achievement, those were surely Reggie Brie's finest hours. ✚

Bruce H. Charnov, an associate professor emeritus at Hofstra University, is the author of From Autogiro to Gyroplane: The Amazing Survival of an Aviation Technology. He is a founding member and serves on the board of directors of the Vertical Flight History Division of the American Helicopter Society. For further reading, he recommends: Juan De La Cierva and His Autogiros, by Arthur W.J.D. Ord-Hume; and Cierva Autogiros: The Development of Rotary-Wing Flight, by Peter W. Brooks.