

The Grumman Goose

No time for show, it's still a workhorse today.

BY PETER M. BOWERS

The Grumman G-21 Goose is a remarkable example of a production airplane that stubbornly refuses to accept the fact that it is a genuine antique. The first one was built in 1937 and the last in 1944, but they continue to serve in workhorse roles throughout the world and are too busy to participate in organized antique activities. As proof, there are 72 G-21s on the U.S. civil register today compared to 50 in 1948.

LeRoy Grumman, founder of the 1929 firm that still bears his name, became well versed in amphibian design through association with Grover Loening and his companies beginning

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in 1921. Grumman is credited with the development of the retractable landing gear that was such a notable feature of the Loening amphibians.

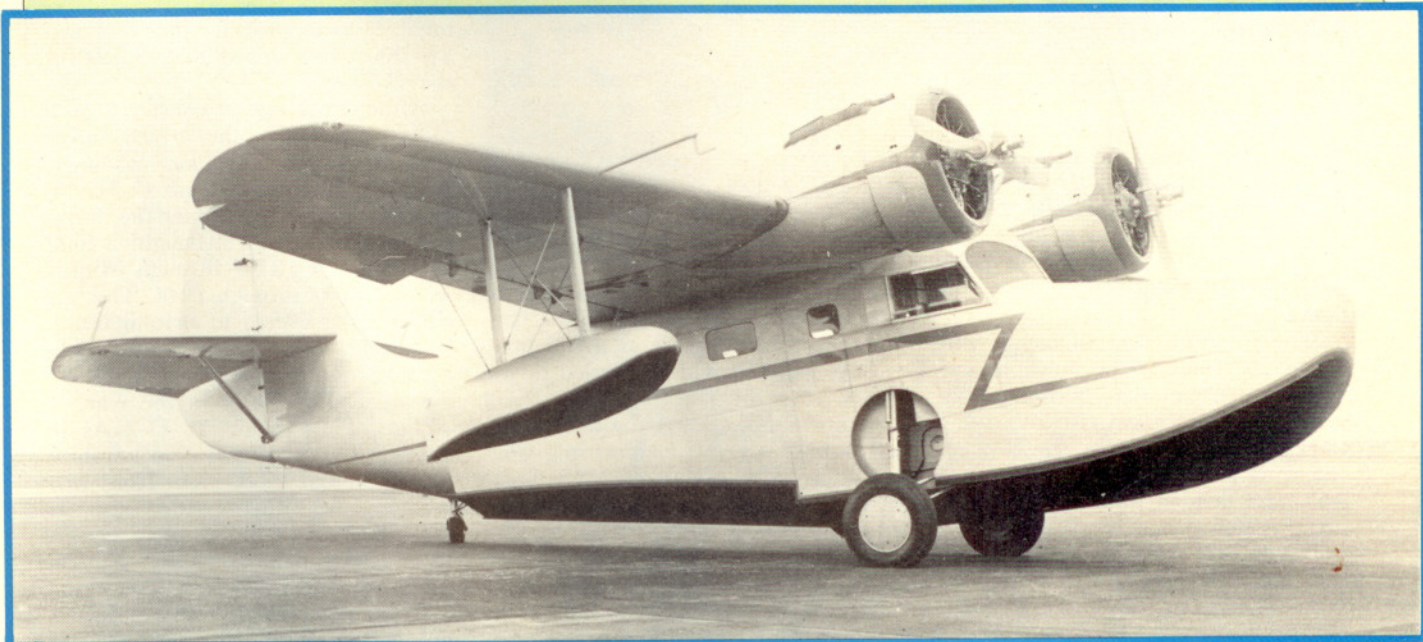
Grumman left Loening in 1929 after the Keystone-Loening merger was followed by Curtiss-Wright's acquisition of Keystone. He cofounded the industry by forming his own company (Grumman Engineering Corporation) and prospering in the opening year of the Depression, when many well-established firms were cutting back or shutting down completely. His first product was not an airplane; he started small with a U.S. Navy contract for amphibious pontoons for other manufacturers' two-seat scout and observation seaplanes. The advantage of the Grumman float over others was that the wheels retracted flush into the sides instead of hinging upward above the

water line and contributing drag.

Grumman went on to adapt his unique gear to conventional land- and carrier-based biplane fighters and became a leading supplier of fighters to the Navy, a position that Grumman Aerospace Corporation still holds today.

The Goose was Grumman's first effort at a civil design. Again using the flush-retracting wheels, it was a flying-boat amphibian powered by two 450-hp Pratt & Whitney Wasp Jr. (R-985) engines in nacelles faired into the leading edge of the wing. This detail does not seem significant now, it was a major refinement for the middle-weight amphibian.

Traditionally, amphibians have been hampered by being compromise designs saddled with major weight and aerodynamic handicaps. Earlier twins in the same size/weight class



A major breakthrough for the amphibian design, the Grumman G-21 Goose still refuses to accept the fact that it is an antique. Today there are 72 G-21s on the U.S. civil register, while in 1948 there were only 50. The wing-mounted engines and retractable wheels put it in competition with landplanes of the same power.

had their engines in high-drag nacelles above the wing, in order to get the necessary clearance between the propellers and the water with the relatively shallow hulls of the day. The use of a hull that was notably deeper relative to its width permitted the clean wing installation on the Goose. The weight handicap of the rugged hull construction was offset by a more modern airfoil and more efficient flaps than previously were available.

These features, combined with the clean wheel installation, combined to make the Goose the first really modern and high-performance amphibian in its class. Except for the necessary wire-braced wingtip floats used for stability on the water, the Goose was almost as clean aerodynamically as the contemporary Lockheed 12 and Beech 18 twin-engine landplanes in the same size/weight/power class.

Actually, the Goose could be as clean. When placarded for operation as a landplane only, the wingtip floats could be removed for a major drag reduction. For operation as a



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pure flying boat, the main wheels and tailwheels and their retracting mechanisms could be removed for a weight savings of 300 pounds. For further versatility, the wheels could be replaced by skis for snow and ice operations.

The structure was all metal, with fabric covering on the movable control surface and that portion of the wing aft of the main spar. Vacuum-operated flaps were installed between the wing and the hull. The two-step hull was divided into six watertight compartments, and entry for the pilot, co-pilot and five or six passengers was through a two-section door on the left side behind the wing. There was an emergency hatch on the opposite side of the hull and a mooring hatch in the bow compartment. A separate compartment at the rear of

the cabin could be used for a lavatory and for baggage; but the normal 400-pound baggage allowance for that compartment was reduced by 176 pounds when the lavatory was installed. An additional 300 pounds of baggage could be carried in the bow compartment. For use as a freighter, 1,700 pounds could be carried in the cabin with the seats removed.

Since the company—by then called Grumman Aircraft Engineering Corporation—had plenty of Navy business at the time, the Goose initially was built on a custom basis for the executive and business market, which put it in a class with the Lockheed 12 and the Beech 18 landplanes. As an amphibian, however, it was in a class by itself. As such, it had no direct competition then, and its present popularity largely is due to the fact

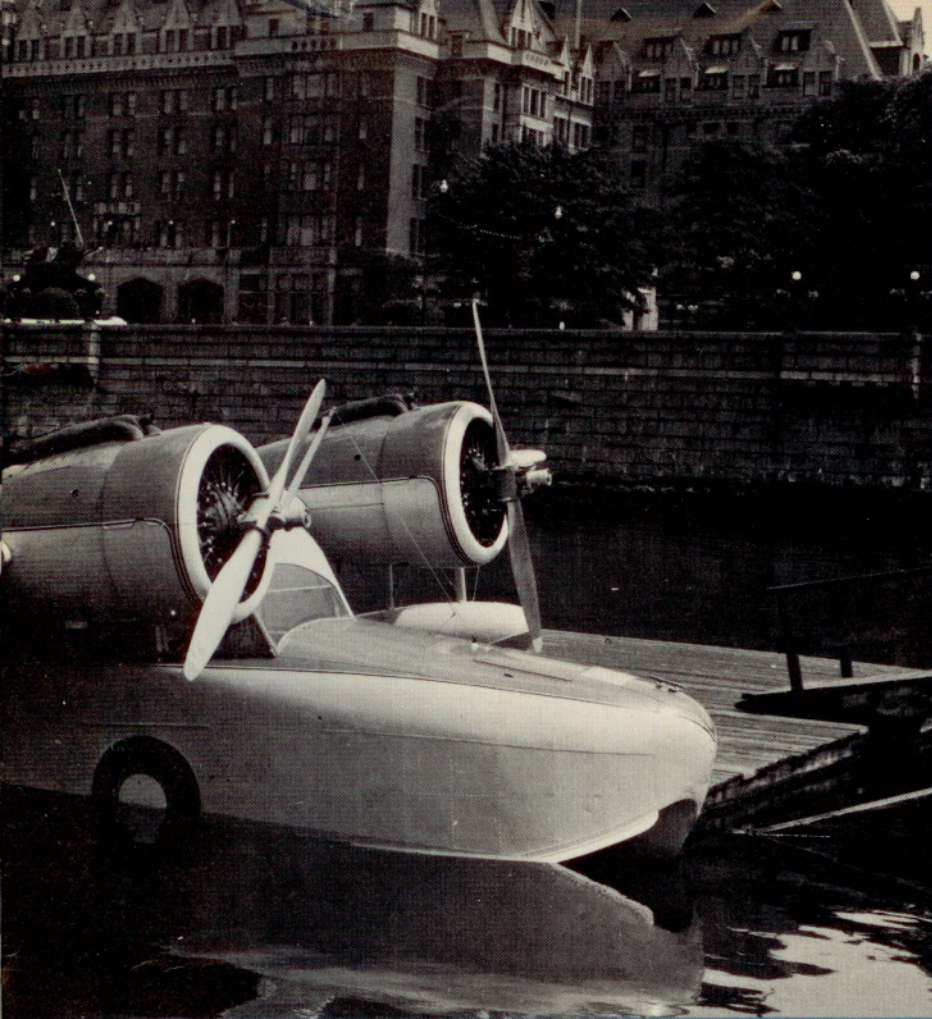
The two-step hull was divided into six watertight compartments. Entry for pilots and passengers was through a two-section door on the left, behind the wing.

that there still is no suitable replacement. Starting price for the G-21 was \$50,000, soon upped to \$68,000 for the G-21A.

Although it wasn't conceived as a military airplane, the armed forces soon became the major customer. After the Navy bought one G-21A in 1938 for evaluation (under the designation of XJ3F-1), it bought a total of 219 model JRF-1 through -6 utility transports through 1944. This included 37 delivered to Britain under lend-lease. Many JRFs carried depth bombs on antisubmarine patrol off the U.S. coasts early in the war.

The Army bought 26 G-21As in 1938 as OA-9s (observation amphibian), acquired three more from private owners during the war as OA-13s and bought five more OA-9s from Grumman Aircraft. A few JRFs were transferred to the Army from the Navy to meet area needs. A militarized, pure flying-boat variant, the G-21B was built in small quantity for Portugal in 1939.

While it served mainly in the ex-



GRUMMAN G-21A GOOSE SPECIFICATIONS

Powerplant	Pratt & Whitney R-985 Twin Wasp Jr. 400 hp @ 2,200 rpm 450 hp @ 2,300 rpm
Wing span	49 ft
Length	38 ft 4 in
Height (on wheels)	12 ft
Wing loading	216 lb/sq ft
Power loading	20 lb/hp (400 hp) 17.7 lb/hp (450 hp)
Empty weight	5,425 lb
Gross weight	8,000 lb

PERFORMANCE

High speed	201 mph
Cruising speed	191 mph
Initial climb	1,300 fpm
Service ceiling	22,000 ft
1-engine ceiling	6,000 ft
Range	800 sm

The advantage of the Grumman float was that the wheel retracted into the sides of the airplane, instead of hinging above the water line and contributing to drag.

The majority of the G-21s flying today are still in their original configuration with 450-hp engines and wingtip floats. The two G-21s below are conversions. The top photo shows the aircraft with 340-hp Lycoming GSO-480s. The bottom one shows it with 680-hp P&W PT6A turboprops.

ecutive role before the war, the civil Goose became a real workhorse afterward. The surplus military models could operate under the original type certificate and were available at attractive prices. The total absence of competing amphibians left the Goose with a virtual worldwide monopoly on passenger and freight operations when amphibious capability, rather than speed and capacity, was the major requirement. Although in recent years several specialty firms have introduced such refinements as retractable wingtip floats and a variety of powerplant options, these features have not sold well.

The majority of G-21s flying throughout the world are still in their original configuration with R-985 engines and fixed wingtip floats, albeit with updated avionics. As examples of their continuing utility, Antilles Airboats currently operates a fleet of 17 in the Virgin Islands; Catalina Airlines operates seven; and several small Canadian airlines have five or six each. There is probably no better yardstick for the worth of the 43-year-old design than the current asking price for a stock model in good condition—\$147,000.

That's for a workhorse, not a museum piece. □

