

THE BELLANCA AIRBUS

Last stop—Canada.

BY PETER M. BOWERS

Back in the late 1920s, the performance and load capacity of the standard Bellanca CH line of high-wing, single-engine monoplanes made them very popular with the transoceanic and endurance fliers of the time. In fact, the prototype of the series, named *Columbia*, raised the world's endurance record to 51 hours in April 1927 and was also the first to cross the Atlantic after Lindbergh. Another boosted the endurance record to 59 hours. Bellancas were by far the most popular brand for adventurers from then on into the early 1930s.

In addition to modifying standard models for such purposes, the Bellanca Aircraft Company of Newcastle, Delaware, also designed and built custom models. One, designated Model K, was built for a famous Italian pilot, Cesare Sabelli, who intended to fly nonstop from Old Orchard, Maine, to Rome. An American, Roger Q. Williams, was to be his copilot. During the tests in Maine just before the flight, Williams had trouble with the airplane, which had been named *Roma*. Dissatisfied with its performance, he and an Italian member of the crew, Piero Bonelli, quit to set up a transatlantic

project of their own. By the time Sabelli could round up a new crew, Bellanca repossessed the *Roma* for delinquent payments.

With aviation riding a wave in 1929, Bellanca saw commercial potential in the big K design, so it developed a 12 to 14 passenger civil model, the P-100, from it.

The P-100 retained the principal features of the K, mainly its size and the unique wing struts and landing gear supports, which were expanded into airfoils that added 200 square feet of lifting area to the wing. The major departures from the K were a 600-hp, water-cooled Curtiss "Conqueror" engine, in place of the 525-hp, air-cooled Pratt & Whitney "Hornet," and replacement of the K's retractable landing gear with fixed wheels faired into the stub wing. This was before wheel pants became popular on conventional designs.

The use of retractable wheels on the K was a real pioneering effort for a civil design that was not a racer or an amphibian. The reduction in drag from the inward-retracting wheels was not so much to increase the speed as it was to extend the range. The cost and the complexity were not justified for the shorter-range P-100.

Other than its odd appearance, the P-100, which was marketed as the Bellanca "Airbus," was conventional. The fuselage, tail,

and stub-wing and strut structure were welded-steel tubing. The wings used wood-spars and ribs and a Bellanca-developed airfoil, plus the unique wingtip shape that had become a Bellanca trademark. Fuel capacity was 200 gallons in wing tanks.

The fuselage contours followed previous Bellanca design by having the top contoured like an airfoil, supposedly to contribute additional lift. However, under critical analysis, this "lifting fuselage" theory does not hold up. If the fuselage were indeed an airfoil, it would have an enormously inefficient fractional aspect ratio, plus tip losses, and a center of pressure travel that seriously would affect longitudinal trim, if such a long-chord airfoil really were working. It was, however, a good sales gimmick.

Actually, Bellanca's performance edge came from the wing. It had a little more span and a higher aspect ratio than its contemporaries, plus Bellanca's own airfoil, all of which increased efficiency on the K, the P-series and later designs.

The 12 to 14 passenger capacity in two rows of seats matched that of the much larger Ford and Fokker trimotors that were then the airline standards. There was also a lavatory, plus seating and furnishings options. The passengers entered through a single door at the rear of the cabin, but the two

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Arrivederci, Roma. Two Italians and an American, who bought this custom Model K, had to abandon their planned 1928 U.S.-to-Rome trip when performance problems on the retractable-gear Bellanca caused the American and one Italian to quit to pursue their own transatlantic adventure.

The commercial version of the Model K materialized in 1929 as the P-100. Bellanca expanded the distinctive landing gear supports on the Airbus into airfoils that added 200 square feet of lifting area to the wing. The only other remarkable change was from retractable landing gear to fixed landing gear.



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pilots had separate doors on each side of the nose. The passenger seats were on raised platforms on each side of the cabin, which permitted storage of baggage and light cargo in the cabin. Each stub wing contained an additional 30 cubic feet of storage space.

The 1931 price was steep—\$38,500 (later dropped to \$37,500). A Ford Trimotor with the same passenger capacity and three 300-hp engines was only \$40,000.

The P-100 received Approved Type Certificate (ATC) A-360 on August 27, 1930, but it did not sell. The Airbus concept was good; but the timing, through no one's fault, was disastrous. In spite of a very extensive sales tour made early in 1931, sales still were zero. Mainly, this could be blamed on the economic depression that had killed most of the market, but also on the choice of powerplant. The big water-cooled V-12s that had replaced the World War I Liberty engine never were very popular in civil aviation and clearly were on their way out when the Airbus appeared.

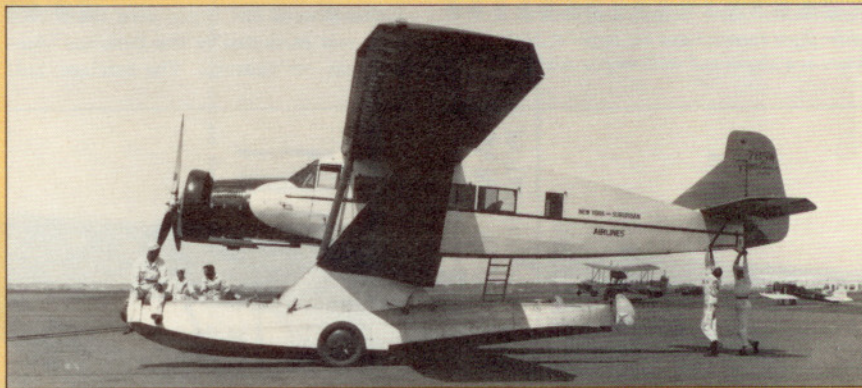
Recognizing the engine problem, Bellanca followed the P-100 with the P-200, which was identical except for the powerplant. The P-200 received ATC A-391 on January 26, 1931. This covered the use of two engines, the 575-hp Pratt & Whitney Hornet and the 575-hp Wright Cyclone. At the time, different engines in similar airframes called for separate ATCs.

The P-200 Airbus did little better than the P-100, in spite of its more acceptable powerplant and a whole raft of options. A seaplane version was the P-200A; one with a pioneering nine-passenger executive interior was the P-200 DeLuxe; and a high-density 15 seater was the P-300. However, not counting the one-only P-100 that was converted to a P-200 by a change to an air-cooled radial engine, only five were built. Of the six, only four found civilian customers. With no civil takers, Bellanca went after the last available U.S. market. It succeeded in selling the last two P-200s, which had 550-hp Hornet engines, to the U.S. Army as

An air-cooled radial engine changed the P-100 into the P-200 in 1931. Five were built—six, if you count the P-100 that was converted. But the design still had a hard time finding a place in the civil market.



The unique landing gear on the P-200 permitted a neat pontoon installation. The wheels do not mean this P-200A was amphibious; they were installed after landing for beaching and ground handling.



cargo airplanes. The Army also ordered two more. In Service Test status the four were designated Y1C-27, which was changed to C-27 at the completion of testing.

The Army was pleased enough with the Airbus to order 10 more as C-27As with 650-hp Hornets. One of these was converted to a C-27B by a change to a 675-hp Cyclone. The remaining C-27As and the four C-27s were converted to C-27Cs by a change to 750-hp Cyclones.

Meanwhile, the old *Roma* got back into

the headlines. A race was shaping up between two Norwegian groups to be first to fly from the U.S. to Norway. Thor Solberg, with Carl Petersen as radioman, acquired the *Roma* and renamed it *Enna Jettick* for the shoe company that was one of his sponsors. They left New York for Oslo via Newfoundland on August 23, 1932, but crashed at sea short of Harbour Grace. The crew was rescued, but the airplane was a total loss.

The competition, flying a Stinson "Destroyer" named *Green Mountain Boy* left

GORDON S. WILLIAMS

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The Aircruiser was the last of the line that started with the Roma. The landing-gear fairings and the tail shape were the obvious changes; the significant ones were wing flaps and a controllable-pitch propeller.

Barre, Vermont, the same day. They made it to Harbour Grace, but later were lost without a trace somewhere short of Oslo.

With the financial situation improving by 1934, Bellanca decided to give the old Airbus concept another try; but this time it was called the "Aircruiser." It soon received an unexpected legal setback. As a result of several crashes of single-engine airliners, the Bureau of Air Commerce banned single-engine types from airline use at night and over terrain where safe power-off landings could not be made. The Aircruiser was being offered as both an 11 to 14 passenger model and a freighter; but the ruling made it a freighter only—the "Cargo Aircruiser."

The only notable outward differences from the P-200 were a lower vertical tail and replacement of the long row of rectangular cabin windows with five widely spaced portholes. A wider, double-hinged cargo door was provided, and the floor was reinforced. Flaps were just coming into vogue for the heavier commercial aircraft and the new Aircruiser took advantage of them. Fuel capacity was still 200 gallons

and the price was dropped to \$31,600.

The Aircruiser was not identified as just another model in the P-series. By this time, Bellanca had come up with a new numerical designating system, using two sets of numbers separated by a dash. The first set represented 10 percent of the wing area, which in the case of the Aircruiser was 664 square feet. (Actually, this figure was erroneous; the wing area was only 465 square feet, but Bellanca counted the lifting strut area as wing, too.) The numbers after the dash represented 10 percent of the horsepower. Options of the 670-hp, the 700-hp or the 750-hp Wright Cyclone were designated 66-67, 66-70 and so forth. There even was a 66-85.

The Aircruiser received ATC A-563 on March 16, 1935, but air freight had not caught on yet in the States. Again, Bellanca's big offering seemed to be a loser. Only five civil models were built, and they ended up where good heavy cargo airplanes really were appreciated—in Canada. One other small sale was to the Cuban Air Force. Only one of the unique Airbus/Aircruisers survives today, a restored 66-75 in Canada. □

BELLANCA AIRBUS P-100

Curtiss Conqueror GV-1570
600 hp @ 2,400 rpm, geared
down 2:1
65 ft
40 ft 8 in
652 sq ft
14.5 lb/sq ft
15.8 lb/hp
5,490 lb
9,500 lb

145 mph @ sea level
122 mph
55 mph
750 fpm
16,000 ft
700 mi. @ 33 gph

Specifications

Powerplant

Wingspan
Length
Wing area
Wing loading
Power loading
Empty weight
Gross weight

Performance

High speed
Cruising speed
Landing speed
Initial climb
Service ceiling
Range

BELLANCA AIRCRUISER 66-75

Wright Cyclone SGR-1820-F53
750 hp @ 2,100 rpm
@ 5,800 ft
65 ft
43 ft 4 in
664.2 sq ft
17.16 lb/sq ft
15.2 lb/hp
6,348 lb
11,400 lb

172 mph @ 5,800 ft
162 mph @ 85%
60 mph
850 fpm
20,000 ft
540 mi*

* Range on the 66-75 was a trade-off with payload. To carry a 4,000-pound payload, fuel was limited to 125 gallons and only one pilot was used.

Based on manufacturer's figures.