



THE BURNELLI-CARISI BIPLANE 1915
at Hempstead Plains Aviation Field

An earlier successful airplane designed by the author was this Burnelli-Carisi biplane, shown at Hempstead Plains, N.Y., Aviation Field in 1915

flight damage for the hundred Lincoln Standards operating was small. The main causes of damage, as with the doctor's plane, were frequent Midwestern twisters, which because of the light wing-loading of that period, made the problem of tiedown an important safety consideration.

Because of this problem, the hospital plane made an unscheduled takeoff and landed upside down in a corn field, with almost total airframe damage.

With second plane prepared on the double, the hospital tours continued with most satisfactory results.

Following Dr. Outland, other special planes were prepared and sold to ranch owners, oil companies, sportsmen. This brought beneficial income to the post-World War I aviation industry, which had been almost abandoned due to military airplane curtailment.

Executive aircraft designs were, of course, confined to small single-engine

types and for short-range operation.

It was with the aviation stimulation of the Lindbergh boom that the private airplane paved the way for more advanced commercial design requirements.

A review of the record will indicate that the first multi-engine airplane specifically designed and built for executive ownership and operation was the Burnelli CB-16, as designed and built during 1928 on order from banker Paul W. Chapman. It set an advanced trend for multi-engine airplane performance and appointments.

Ordered by contract after obtaining preliminary design proposals and cost estimates from the few builders of that time, the Burnelli design was selected because it incorporated certain advanced features that appealed to the progressive thinking of Mr. Chapman. Among these was the first all-metal twin-engine monoplane of "lifting body" design, providing inherent structural

and safety advantages.

This was combined with the first retractable landing gear to be installed on a multi-engine airplane for drag reduction, particularly to improve single-engine flight performance. The gear was accessible in flight for minor adjustments or emergency release.

The order was obtained during May 1928. Design and construction were completed in December of that year at the Aeromarine plant at Keyport, N.J., where space and tools had been rented.

As delivered for test flight, the airplane provided for the following dimensions and performance: span 90 feet; length 56 feet; height 12 feet, 6 inches; lifting surface 920 square feet; weight, empty, 11,400 pounds; gross weight, 17,400 pounds; power, two Curtiss Conqueror engines, 625 h.p. each; cruising speed, 140 m.p.h.; rate of climb, 800 f.p.m.; single-engine climb (landing gear retracted), 300 f.p.m.;

First multi-engine plane built specifically for executive use was the Burnelli CB-16, completed in December 1928 for a prominent banker. Revolutionary new features offered in this aircraft were retractable landing gear, high lift wing flaps, and single-engine capability



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landing speed, 62 m.p.h.; ceiling, 20,000 feet; duration, 12 hours.

Aside from demonstrating advanced performance qualities, the CB-16 pioneered advanced cabin accommodations for that period. The floor area, 12 feet by 18 feet, provided space for installation of 10 swivel chairs and a large center lounge. Sound-proofing was accomplished through the cooperation of the Sperry Company with special quality tapestry and upholstery installed by Sloan & Company.

Air conditioning means, in advance of modern pressurization, were developed for ventilation and cabin heating control, and a large center searchlight was installed for night flying—a rarity at that time. The alcove entrance section was of Circassian walnut plywood finish. Special washroom facilities had running water. A kitchenette of stainless steel with hot plate and refrigerator was installed, with a radio compartment in the center.

With our luxury bird completed on a progress-payment basis, the cost at that point totalled \$230,000. About \$90,000 was for the design and engineering work, and the balance for shop construction. It was accepted for delivery, and tests were to be made at the purchaser's risk.

We were instructed to move the plane by barge to Newark Airport, which was just being built. A two-way cinder runway was available. Our airplane was to be the first new design tested from that pioneer commercial airport.

With assembly completed, arrangements were made for the flight-test program, with Lt. Leigh Wade, of Army 'round-the-world flight fame, at the controls. Jimmy Doolittle, who was based at Mitchel Field, Long Island was a test collaborator with Wade.

The test flight was made on a cold morning during Christmas week. Doolittle had flown from Mitchel Field with a parachute for Wade, but Wade did not use it. Instead, he took along an assistant for the emergency release of the retractable landing gear in the event the retracting apparatus of sprockets and cable did not work going down.

After about 40 minutes of checkout, Wade came down. He was ready to start performance tests the following day.

On Christmas Eve, Mr. Chapman chartered a bus to bring friends to see his new and unique airplane. Some wanted a ride in the plane, and Wade, who was a most accommodating pilot, took a group around the Statue of Liberty. Then a rush for the cabin began. A line formed for more rides. Wade was kept flying until dusk. He made four trips, carrying over 50 holiday passengers.

The new Civil Aeronautics Administration was of no restraining influence at that time. As a precaution, however, the emergency man was kept on a standby basis to release the landing gear in case of an emergency.

After some months of completing