

MID-CONTINENT AIRCRAFT CORPORATION

Planegram

AIRCRAFT YEAR BOOK 1929 - Part 1

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"What is routine today is uncommon history making in 1929." Dick Reade

Chapter XIV TECHNICAL DEVELOPMENT

The engineering and design branches of the American aircraft industry in 1928 based their work on a firm foundation of technical standards. Broadly, the trend was toward the evolution of types rather than revolution in design.

The efficient operations of the Department of Commerce in examining and approving planes and engines and their success in making such equipment encouraged the constructors to start quantity production on a number of orthodox types. At the same time experimentation in engineering and design was carried on throughout the industry, with the result that it was in a healthy, vigorous state at the end of the year.

The commercial plane manufacturers had produced a group of well-developed types for all uses, and they had attained improved performance through both increased power and aerodynamic refinement.

The engine builders, while conducting experiments with new designs, were producing a variety of motors sufficient to cover the entire field, thus giving the plane designers more latitude than formerly in the selection of a power plant.

The 3-place, open cockpit biplane maintained its leadership in point of numbers produced. Continuous refinement has brought these general purpose planes to a fair degree of efficiency; They represent a marked improvement over the war machines from which they were developed. Reasons for their popularity may be found in their low cost and simplicity.

All the 3-place open planes were of the single bay tractor type, designed originally for the Curtiss OX-5 engine, and weighing, fully loaded, between 2,000 and 2,650 pounds. However, the large production of this type in 1928 and the limited supply of OX-5 engines resulted in some confusion, and several manufacturers began offering such machines with other power plants.

While the substitution of more powerful motors served to increase the performance,

it also placed those planes in a higher price class. That in turn created a market for the new light plane with modern engines replacing the low-priced OX-5 motors out of the war surplus.

The light sport plane had been undergoing a rather belated development in the United States and the fact that it made progress during the year may be attributed to the production of proper motors. Still, the demand for such a type was growing with the increased number of persons taking pilot instruction and the organization of light plane clubs for the purpose of teaching their members to fly. While few of the light machines reached the production stage in 1928, several models were scheduled to be manufactured in quantity.

They range between 1,000 to 2,000 pounds in weight and have motors of 40 to 110 horse power. They are about evenly divided between single and double wing types. The biplanes are principally of the 2-plane tandem type. The monoplanes are mostly of semi-cantilever construction.

While a number of the designers seemed to favor the open cockpit type for training, the production of Curtiss "Robin" with OX-5 engine, and enclosed cabin monoplane, demonstrated by its performance that such types might be as efficient as the open ship.

The "Robin" has also attracted attention to the advantages of an enclosed cabin plane even in the low-priced class. Another cabin monoplane produced during the year is the Aerial Service Corporation's "Mercury Kitten" with all-metal wing structure. Among the biplanes within that light weight range are the Consolidated "Husky Junior" with Warner "Scarab" engine, and the Swallow T-P with OX-5 or any other engine between 80 and 100 horsepower.

The low wing monoplane for sport or training is also found in the above weight range, and the type promises to meet with favor. Representative of the group is the Fairchild-21, with tail structure of alclad aluminum alloy, and the Aeromarine-Klemm, an adaptation of an original German design.

Relatively large members of the Wright "Whirlwind" powered cabin monoplanes popularized by the Atlantic flights, including the Ryan and Stinson types, were produced without fundamental changes. They weighed between 3,000 to 4,000 pounds, with wings of uniform thickness, braced externally with struts and with the section attached to the top of the fuselage.

The large transport planes were attracting more attention at the end of the year than ever before, interest being caused by the rapid development of the passenger carrying lines and the growing volume of air mail and express. Several new types were in production and many others were being planned. The big planes were distinguished for increased payload capacity and improved performance, among them being the Boeing Model 80, Fokker F-10 and F-10-A and the Keystone "Patrician," all tri-engined, the first a biplane and the others monoplanes.

The Fokker planes follow the practice of laminated plywood wing and welded steel tubing and fabric for the fuselage, and are powered with three Pratt & Whitney "Wasp" engines. The Keystone "Patrician" is powered with three Wright "Cyclone" engines and has a welded steel tube wing and fuselage structure. The Boeing transport plane, with three "Wasps" or "Hornets," is of conventional construction.

Prior to 1928 the trend appeared to lie in the direction of cabin monoplanes, with the open machines of the biplane type. There were at that time few open monoplanes. During the year however, several cabin biplanes were developed.

In the multi-motored group the cabin biplane was represented by the previously mentioned Boeing Model 80. In the single engine lower weight class there were several cabin biplanes of recent design.

The light tri-engined plane represented another new development and several models were scheduled for production in 1929. Meanwhile, a number of American designers were convinced that the day of the six or

continued inside

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ten engine plane is not far distant, and the experiments of the European designers along that line were being watched with considerable interest.

There was more activity in the amphibian field that ever before. Several successful amphibians were either developed or existing types improved and put in production during the year, notably the Loening "Air Yacht," the Fairchild, Fokker, Ireland and Sikorsky, and in the lighter class the Vought pontoon "Corsair."

The Fokker amphibian, which was introduced late in 1928, is a monoplane; a feature of the design is the mounting of the engine in a streamlined nacelle above the wing. The installation is of the pusher type. The retractable landing gear is mounted in two wing stubs hinged to the side of the all-metal hull and the stubs provide lateral stability while the craft is on the water.

Flying boats received more attention in 1928 than in several years. Consolidated built the XPY-1 for Navy, a twin-engine monoplane with boat hull 62 feet long and convertible into a commercial transport carrying 32 persons. Boeing built several B-IE flying boats, a single engine commercial type with enclosed cabin seating 5 passengers and a pilot.

Interest in the Cierva autogiro was not confined to Europe where its inventor made improvements in the machine in 1928 and flew it from London to Paris. In the United States, Pitcairn was conducting experiments with the Cierva model. At the same time the Curtiss company was continuing its experiments with a new helicopter design.

The principal of employing a central airfoil body to replace the conventional fuselage and contribute to the lift was applied during the year by both Bellanca and Burnelli. The Burnelli plane is a 20-passenger twin-engine metal monoplane powered with two Curtiss geared "Conqueror" engines aggregating 1,200 horsepower.

While not as numerous as in the commercial field, several new types of military

and naval machines were developed. Largely, however, both services took production on types which had passed through their experimental tests in 1927.

The Army Air Corps made tests with a new model amphibian incorporating a new vee-type aircooled power plant and a single landing wheel in the center of the hull. Two biplane types of bombers, the XB-2 and XLB-6, were placed in production. The Air Corps also procured for high altitude work pursuit planes powered with Curtiss D-12-F engines with side-type superchargers.

A new fighting plane developed for the Navy Bureau of Aeronautics showed superiority over previous types, while two types of training planes were produced for the Navy during the year. In general, however, both services were using standard equipment: among the planes were the Boeing F4B single seater ship fighter, Curtiss "Hawk" and "Sea Hawk," Loening Amphibian, and Keystone Amphibian, and Keystone "Panther," a bomber, and the Vought "Corsair."

The Vought "Corsair" was equipped with automatic wing slots which in flight tests proved effective and permitted the plane to be brought out of a spin almost instantly. There was very little loss in aerodynamic efficiency.

The Vought "Corsair" pontoon amphibian was adopted by the Navy, principally for carrier use. The Vought gear is one of the simplest devices yet developed. It permits the "Corsair" amphibious to be quickly converted back to a landplane of maximum performance, when desired, with no penalties for the amphibious feature. This conversion feature had not previously been incorporated in any other military amphibian, and is of great value in emergencies since it makes immediately available, for aircraft carrier use, stripped fighting and observation planes with extraordinary altitude and maneuverability characteristics and speed.

continued next month



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