

FORTY YEARS YOUNG

It's no coincidence many of today's airplanes closely resemble their 1939 forebears

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In spite of the great advance in aircraft design in 40 years, some of the old-timers that were the mainstays of the industry in 1939 are still with us; they have never been completely replaced in their original roles. Some, long out of production, survive by filling different roles—a fact that is a tribute to their adaptability, structural integrity, and to tender loving care on the part of their appreciative owners. Others, with design origins dating more than halfway back to the Wright Brothers and Kitty Hawk, are still in production.

To cite some examples:

The ubiquitous Cub originated in 1931 and became the most widely used general aviation trainer and

For our 20th Anniversary issue in May 1959, Peter M. Bowers, an AOPA member since 1948, made up a photo presentation of eight general aviation airplanes that were among the most popular during our founding year. Still a regular contributor ("Yesterday's Wings" started in November 1959), for our 40th Anniversary he has compiled a broader list of aircraft designs that were significant in 1939, and discusses their status at the time and their eventual place in history.

private-owner type of the pre-Pearl Harbor years. Production of the basic 1937 J-3 model ended with the collapse of the postwar boom in 1947, but a heavier and more powerful version, the PA-18 Super Cub, is still being built to the unique requirements of the utility market. The old J-3, meanwhile, is now the most popular model in the antique aircraft movement and still gives many hours of low-cost pleasure flying to those who fly purely for the fun of it. Because of their status and the devoted care they receive, the attrition rate is almost nil.

In 1939, Bellanca pioneered the medium-power low-wing 3- to 4-seat monoplane, which achieved high performance through clean cantilever design and a retractable landing gear. This pointed the way for the postwar Bonanza and Navion, the later Mooney four-seaters and the current Rockwell Commander. In spite of such competition, the old wood-wing, tube-and-rag fuselage model of the Bellanca—now called the Viking—is still in production, updated mainly by higher power, tricycle landing gear and a swept vertical tail. There have been some corporate reshuffles along the way, and later type certificates, but underneath

it all is the old 1939 airframe.

Similarly, the 1940 Aeronca tandem-seater that evolved from the side-by-side Chief is still with us. Produced during the war years as the L-3 for the Army, it became the postwar Champion, a close competitor of the Cub. After a period of dormancy, it reappeared as the aerobatic Citabria. This, plus the even more lively De-cathalon, is still in production.

The immortal Douglas DC-3 is a second-generation "modern" airliner that followed the revolutionary Boeing 247 of 1933. Introduced late in 1935, the DC-3 was the first airliner to really make money for the operators. It quickly became the world standard, with over 800 in service by the time of Pearl Harbor. Many of the wartime military cargo versions were easily converted to postwar airline use and the preeminence of the DC-3 continued for a few more years. Long ago legislated out of U.S. trunk airline fleets, over 500 DC-3's are still in scheduled airline service elsewhere in the world. Many more still function in charter, nonscheduled and bush operations. None are less than 33 years old.

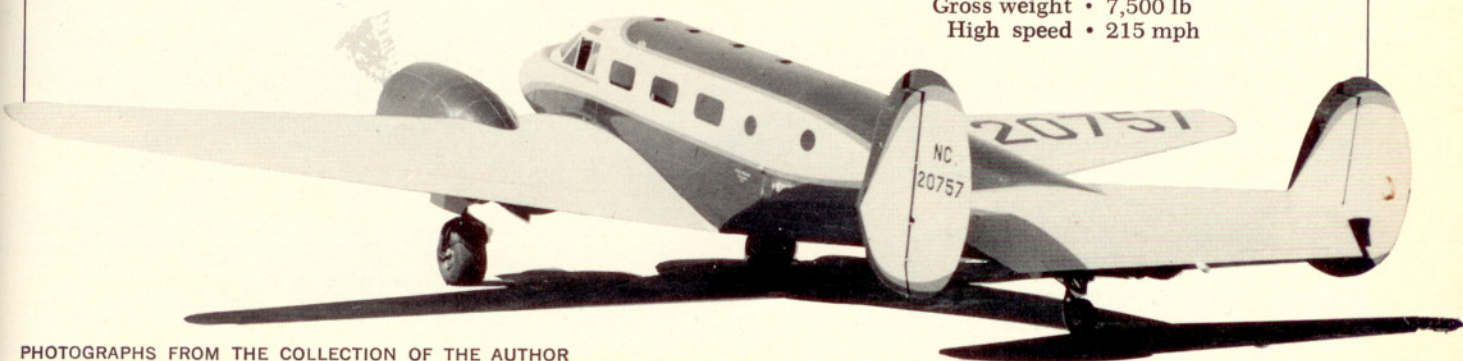
While it does feature some truly ad-

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Beech 18

The Beech Model 18, a medium, all-metal twin was introduced in 1937. It found a ready market in business and feeder airline roles and was adapted to military light transport and training uses during WW II. Civilian production resumed in 1945 and continued until the last of 9,388 Model 18's was delivered in 1970.

Powerplant • Pratt & Whitney
Wasp Jr., 450 hp
Span • 47 ft 8 in
Length • 34 ft 3 in
Wing area • 347 sq ft
Gross weight • 7,500 lb
High speed • 215 mph



PHOTOGRAPHS FROM THE COLLECTION OF THE AUTHOR

vanced concepts, the now-legal homebuilt movement is dominated by traditional designs that go back a long way to achieve structural and aerodynamic simplicity and economic and docile performance on low power. A major surprise, even to traditionalists in the movement, is the present popularity of the old 1928 Pietyenpol Air Camper, a design whose virtues manage to outweigh its many prominent shortcomings. More have been built in the new era of homebuilding than were in the 1929-1941 period.

There was no officially recognized homebuilt movement in 1939. In fact, the things were actually illegal because they could not meet the strict licensing requirements tailored to commercial designs. An "Amateur-Built" category was established in 1947, and there are now over 7,000 homebuilts flying in the country.

These have had a significant effect on some general aviation designs. No longer the neighborhood nut that he used to be, the typical homebuilder proves to be a highly respected member of the community—maybe an airline pilot, a doctor or the local butcher. By convincing other pilots that aerobatics in lively little airplanes can be great fun, they created customer demand for similar capability in standard models, which resulted in the adaptive Citabria and Decathlon models and the beefing-up of the Cessna 150 and Beech Musketeer for aerobatics.

Some homebuilts proved to be so desirable that they were put into factory production under full Approved Type Certificates (ATC's). The Maule M-4, Pitts S-1, and Thurston/Schweizer Teal all originated as homebuilts.

Since we still seem to be building basic 1930's designs—some call them "latter-day antiques"—what changes have actually taken place? Other than the obvious ones of more reliable and higher-powered engines and the use of megabuck nav-com electronics and instrumentation that allows what was formerly a piece of fair-weather sporting goods to become dependable all-weather transportation, there have been many really basic changes.

In 1939, the lowest-powered planes were really marginal performers that got by on engines of 40 to 50 horsepower. Introduction of the 65-hp Continental A-65 and its contemporaries into the same airframes resulted in a

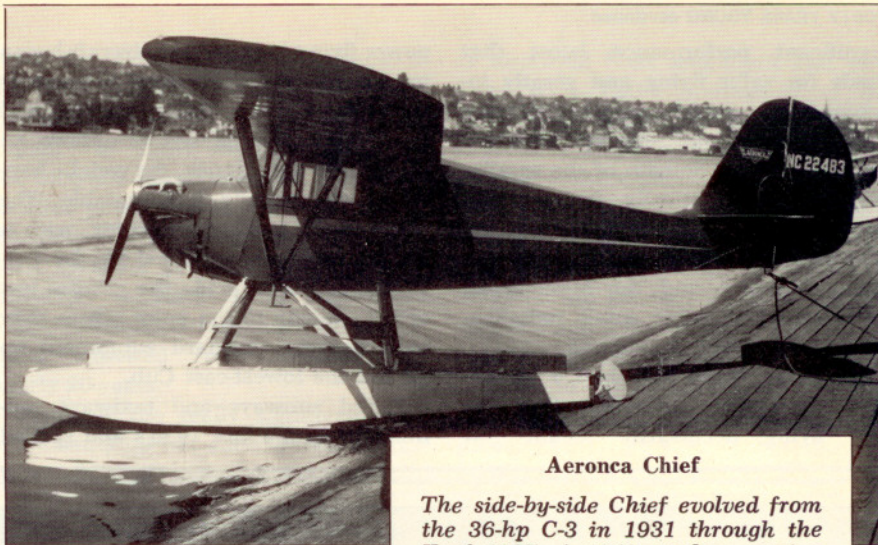
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Bellanca Cruisair

The Bellanca 14-9 Cruisair combined traditional tube-and-rag fuselage construction with a plywood-covered wing to produce a fast 3-seater (eventually 4), which achieved high performance through extremely clean design that capitalized on retractable landing gear. With larger, opposed engines, tricycle landing gear and a swept vertical tail, this basic 1939 design is still in production.

- Powerplant • Le Blond 5F, 90 hp
- Span • 34 ft 3½ in
- Length • 21 ft 3 in
- Wing area • 140.2 sq ft
- Gross weight • 1,650 lb
- High speed • 137 mph



Aeronca Chief

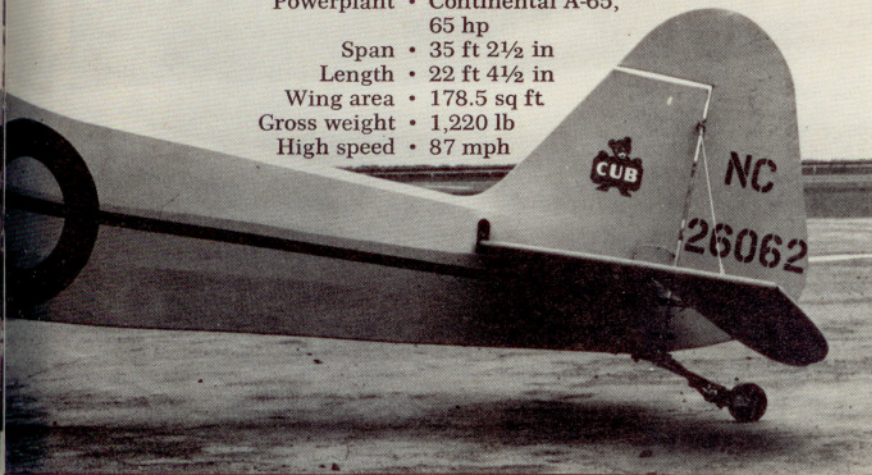
The side-by-side Chief evolved from the 36-hp C-3 in 1931 through the K of 1937. A 1940 tandem version served in the Army for liaison and training, becoming the postwar Champion and today's Citabria and Decathlon. A civilian Chief was phased out shortly after the war.

- Powerplant • Continental A-50,
50 hp
- Span • 36 ft
- Length • 20 ft 10 in
- Wing area • 169 sq ft
- Gross weight • 1,130 lb
- High speed • 100 mph

Piper Cub

The J-3 Cub became one of the most popular lightplanes ever built after the firm name changed from Taylor to Piper in 1937. It was the first true mass-produced lightplane, with 1,806 built in 1939, 3,016 in 1940 and 6,320 in 1946. Total civil production was 14,125 when production ended in 1947. The beefed-up 150-hp Super Cub is still in production while restored J-3's are popular with the antiquers.

- Powerplant • Continental A-65,
65 hp
- Span • 35 ft 2½ in
- Length • 22 ft 4½ in
- Wing area • 178.5 sq ft
- Gross weight • 1,220 lb
- High speed • 87 mph



Waco UPF-7

Waco's F line survived long after equivalent 200-hp biplanes were killed off by the depression and lightplanes took over the civil training role. The 1938 UPF-7 became popular in the prewar Civilian Pilot Training Program (CPTP) because of its similarity to military biplane trainers.

- Powerplant • Continental R-670,
220 hp
- Span • 30 ft
- Length • 23 ft 1 in
- Wing area • 244 sq ft
- Gross weight • 2,650 lb
- High speed • 138 mph

Cessna C-145 Airmaster

The tube-and-fabric Cessna Airmaster series was the product of a firm founded in 1927, one of the few that was able to resume production under the same identity after being shut down by the depression. The four-place Airmaster, introduced in 1935, evolved into the all-metal 190 and 195 after the war and Cessna went on to become top producer in the general aviation field.

- Powerplant • Warner Scarab,
145 hp
- Span • 34 ft 2 in
- Length • 24 ft 8 in
- Wing area • 181 sq ft
- Gross weight • 2,350 lb
- High speed • 162 mph



significant performance boost that made for safer flying and greatly increased pilot confidence. Slightly more powerful "flat-four" engines soon encroached on the domain of the smaller radials and practically forced them out of business by 1941. The designs that could convert easily, like the Belanca Cruisair and the Monocoupe, survived when other small radial-engine models were phased out.

Changing times also had a significant effect. The philosophy that low cost flying necessarily meant low

power flying in marginal aircraft began to change. While electrical accessories such as batteries, lights, starters and generators were offered as options on some 1939 lightplanes, the weight handicap was usually unacceptable. The jump to 65 to 85 horsepower, with a weight increase permitted by the performance boost, made the goodies less of a handicap to the point where they soon became standard equipment on all but the lowest-cost Cub.

Paved runways and taxiways proliferated in the late 1930's and spelled

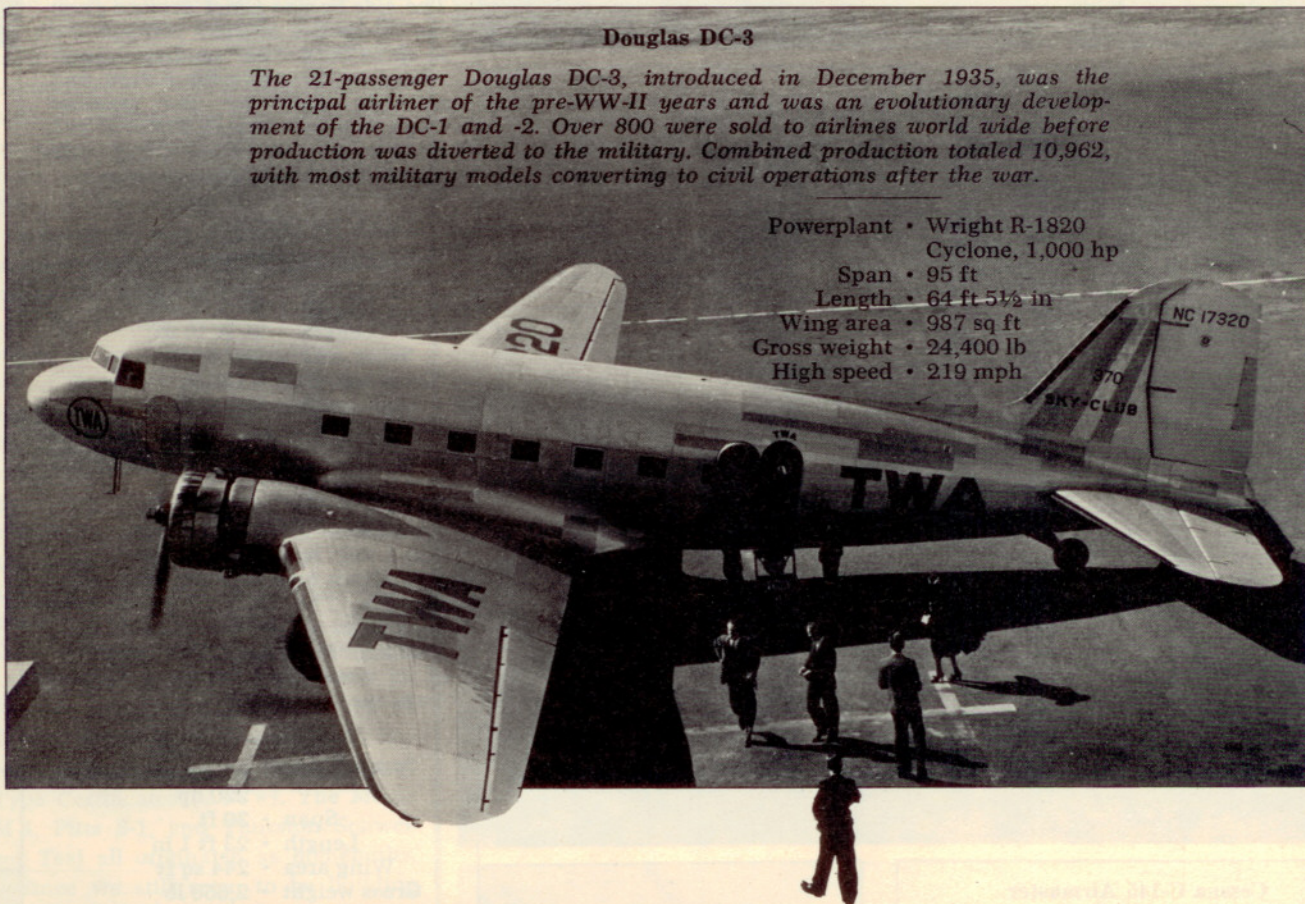
the end of the traditional tailskid for lightplanes. Steerable tailwheels combined with wheel brakes came on strong just before the war and greatly improved controllability on the ground. A secondary benefit was to increase airframe longevity by eliminating the stresses imposed on the fuselage by the old "ground loop" turn technique.

Common before World War I, but forced out of the scene by military performance requirements, the tricycle landing gear began to make a comeback in general aviation in the late

Douglas DC-3

The 21-passenger Douglas DC-3, introduced in December 1935, was the principal airliner of the pre-WW-II years and was an evolutionary development of the DC-1 and -2. Over 800 were sold to airlines world wide before production was diverted to the military. Combined production totaled 10,962, with most military models converting to civil operations after the war.

- Powerplant • Wright R-1820 Cyclone, 1,000 hp
- Span • 95 ft
- Length • 64 ft 5½ in
- Wing area • 987 sq ft
- Gross weight • 24,400 lb
- High speed • 219 mph



Pietenpol Air Camper

This airplane was designed in 1928 for homebuilding; it used a modified Ford Model A automobile engine to keep costs down. This survivor of private flying's Stone Age is still being built by amateurs, although usually with aircraft engines.

- Powerplant • Ford Model A, 40 hp
- Span • 29 ft
- Length • 18 ft 4 in
- Wing area • 150 sq ft
- Gross weight • 1,100 lb
- High speed • 75 mph



1930's and is now so universal that pilots wanting to check out in tail-draggers often have a problem lining up a qualified instructor and a suitable airplane.

All-aluminum structures became standard for transports and high-performance military types in the early 1930's and soon filtered down to the lightplanes in a greatly simplified form that reduced production costs and maintenance. The 1934 Ryan S-T adopted the aluminum frame, but this construction did not come on strong

until the Ercoupe and Luscombe 8 appeared in 1939. It is now the industry standard and has overcome the "Spam can" label originally given by the tube-and-fabric devotees. The long-awaited plastic airplane has yet to see production, even though fiberglass has been used for primary structure and extremely accurate airfoil profiles on high-performance sailplanes (most of them imported from Europe) for nearly 20 years.

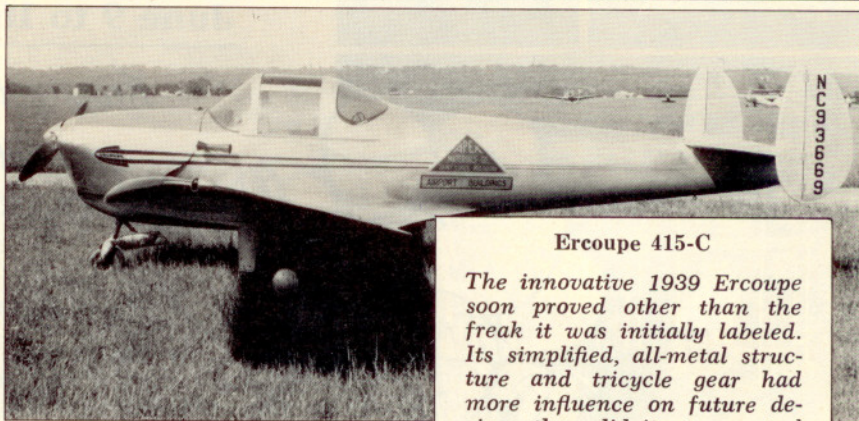
Many of the really significant improvements do not show—such things

as improved fuels and lubricants, engines with TBO's undreamed of in 1939, more reliable accessories, more effective control surfaces and flaps, greater consideration given to accessibility for maintenance, improved metals and protective finishes that reduce corrosion problems, fire-retardant interiors and efficient personal oxygen systems, and a host of other structural, aerodynamic and support details, which combine to enable an antique exterior to enclose a completely modern airplane. □

Akron-Funk B

This was the last serious attempt to reduce cost by using automobile engines. Modifications to boost the Model B engine to 62-hp proved too costly and production, with a flat-four, continued for awhile after WW II.

- Powerplant • Ford B (Funk E), 62 hp
- Span • 35 ft
- Length • 20 ft
- Wing area • 169 sq ft
- Gross weight • 1,350 lb
- High speed • 112 mph



Ercoupe 415-C

The innovative 1939 Ercoupe soon proved other than the freak it was initially labeled. Its simplified, all-metal structure and tricycle gear had more influence on future designs than did its two-control and nonspinnable features. The "safety plane" was produced under a variety of names into 1969.

- Powerplant • Continental A-75, 75 hp
- Span • 30 ft
- Length • 20 ft 9 in
- Wing area • 142.6 sq ft
- Gross weight • 1,760 lb
- High speed • 117 mph



Bowlus Baby Albatross

The sport of soaring in the U.S. was limited to a relative handful of enthusiasts in the 1930's, due mainly to a shortage of reasonably priced production sailplanes. Old-time expert Hawley Bowlus resolved the problem with the Baby Albatross of 1939, which could be built from an extensively prefabricated \$400 kit. The war halted production before Baby production had a significant effect on the movement.

- Span • 44 ft 4 in
- Length • 19 ft 2 in
- Wing area • 150 sq ft
- Gross weight • 505 lb
- Glide ratio • 20 to 1
- Red line speed • 50 mph

