

Airships. bag containing a gas such as helium

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Airships. In the early years of War, these beasts were known for their majestic presence in the sky and were icons of a country's power and prestige. They reigned mostly as reconnaissance and transport utility aircraft but there was something about this "lighter-than-air" ship that made it far more than a mere utility workhorse. In this essay, I will discuss the ever-popular and ever-living king of the sky; the Airship. Airships, or dirigibles, were developed from the free balloon. Three classes of airships are recognized: the non-rigid, commonly called blimp, in which the form of the bag is maintained by pressure of the gas; the semi-rigid airship, in which, to maintain the form, gas pressure acts in conjunction with a longitudinal keel; and the rigid airship, or zeppelin, in which the form is determined by a rigid structure.

Technically all three classes may be called dirigible (Latin *dirigere*, "to direct, to steer") balloons. Equipped with a bag containing a gas such as helium or hydrogen which is elongated or streamlined to enable easy passage through the air, these Airships could reach speeds up to 10 mph with a 5 hp steam engine propeller. The first successful airship was that of the French engineer and inventor Henri Giffard, who constructed in 1852 a cigar-shaped, non-rigid gas bag 44 m (143 ft) long, driven by a screw propeller rotated by a 2.2-kw (3-hp) steam engine.

He flew over Paris at a speed of about 10 km/hr (about 6 mph). Giffard's airship could be steered only in calm or nearly calm weather. The first airship to demonstrate its ability to return to its starting place in a light wind was the *La France*, developed in 1884 by the French inventors Charles Renard and Arthur Krebs. It was driven by an electrically rotated propeller.

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The Brazilian aeronaut Alberto Santos-Dumont developed a series of 14 airships in France. In his No. 6, in 1901, he circled the Eiffel Tower. Count Ferdinand von Zeppelin, the German inventor, completed his first airship in 1900; this ship had a rigid frame and served as the prototype of many subsequent models. The first zeppelin airship consisted of a row of 17 gas cells individually covered in rubberized cloth; the whole was confined in a cylindrical framework covered with smooth-surfaced cotton cloth.

It was about 128 m (about 420 ft) long and 12 m (38 ft) in diameter; the hydrogen-gas capacity totaled 1, 129, 842 liters (399, 000 cu ft). The ship was steered by forward and aft rudders and was driven by two 11-kw (15-hp) Daimler internal-combustion engines, each rotating two propellers. Passengers, crew, and engine were carried in two aluminum gondolas suspended forward and aft.

At its first trial, on July 2, 1900, the airship carried five persons; it attained an altitude of 396 m (1300 ft) and flew a distance of 6 km (3.75 mi) in 17 min. The first commercial means of regular passenger air travel was supplied by the zeppelin airships Deutschland in 1910 and Sachsen in 1913. At the beginning of World War I, 10 zeppelins were in service in Germany, and others were built for the military services. By 1918 the total number of zeppelins constructed was 67, of which 16 survived the war. Those not captured were surrendered to the Allies by the terms of the Treaty of Versailles in 1919. At the outbreak of the war, France had a fleet of semi-rigid airships, developed by officers of the French army. The experience of

the war, however, in disclosing the vulnerability of airships to airplane attack, caused the abandonment of the dirigible for offensive military purposes.

Non-rigid airships became useful for aerial observation, coastal patrol, convoying, and locating enemy submarines and mines, because of their abilities to hover over a given location and to remain in the air for longer periods than the airplane. Toward the end of World War I, the British began intensive development of rigid airships, stimulated by the prospect that nonflammable helium gas would soon be available in quantities sufficient to inflate large ships. The R34, with a length of 196 m (643 ft) and a gas capacity of 56,067,355 liters (1,980,000 cu ft), was commissioned in 1919. It made the first transatlantic flight of an airship, flying by way of Newfoundland, Canada, from East Fortune, Scotland, to Mineola, New York, and returning to Pulham, England. The total flying time for the round trip was 183 hr and 15 min and the aggregate distance traveled about 11,200 km (about 7000 mi). In 1921 the R38, some 25 percent larger than the R34, was completed; both were wrecked that same year. The famous German-built Hindenburg had a length of 245 m (804 ft) and a gas capacity of 190,006,030 liters (6,710,000 cu ft). After making ten transatlantic crossings in regular commercial service in 1936, it was destroyed by fire in 1937 when it was landing at Lakehurst, New Jersey; 36 of its 92 passengers and crew were killed.

Since the destruction of the Hindenburg, airship activity has been confined to the non-rigid type of craft. In 1938 all military blimps in the U. S. were placed under navy jurisdiction, with the Naval Air Station at Lakehurst as center of

operations. During World War II, blimps were employed for patrol, scouting, convoy, and antisubmarine work.

A private commercial firm in the U. S. developed several small, non-rigid airships that have been used to provide aerial television views of sports events, to take people on rides, and for advertising purposes. After World War II the U. S. Navy continued to develop the airship for such purposes as antisubmarine warfare, intermediate search missions, and early-warning missions. The largest of navy airships, the ZPG-2 type, was 99 m (324 ft) long and had a capacity of 24, 777, 240 liters (875, 000 cuft) of helium.

An airship of this type stayed aloft without refueling for more than 200 hr. The navy discontinued the use of airships in 1961; however, during the later-1980s there was a renewal of military interest in airships, and both the U. S.

Coast Guard and Navy began to study the feasibility of using airships for airborne early warning and electronic warfare as well as antisubmarine warfare. Some countries were also showing an equal interest in airships for civil aviation and advertising purposes. In present day, airships may be observed at any given football game as the " Goodyear Blimp" hovers high above the stadium and transfers live video feed to the viewers at home. In conclusion, ever since man has learned to fly, there have been airships. These seemingly harmless giants can pack an enormous punch now-a-days either with heavy weaponry (not common) or through data transfer and electronic warfare.

These masters of the sky may always be valuable to the human race as they deliver an advantage that no other aircraft can deliver: a walk in the clouds with a giant chunk of world history.