Wheelchair Encyclopedia Article

Wheelchair

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No one knows where or when the first wheelchair was invented, but a few one-of-a-kind wheeled chairs apparently were built during the 1600s. Wooden wheelchairs were in use in the United States by the l860s, and the first modern wheelchair--a lightweight folding model--was designed and marketed in 1932 simultaneously by Sam Duke and by the team of Harry C. Jennings, a mechanical engineer, and Herbert Everest, an injured mining engineer.

Although the electrically powered wheelchair first appeared around the time of World War I, manually powered wheelchairs remained the norm until the rising number of quadriplegics in the 1960s created sufficient demand for wheelchairs propelled by other means. Electric wheelchairs can now be activated by hand, head movement, tongue, and breath. In 1982, astronomy student Martine Kempf, a native of France, developed a computer program that responded to voice commands--the *Katalavox*--which is now used to power both wheelchairs and microscopes.

The growing interest in wheelchair sports has benefited from improvements in wheelchair durability and maneuverability. Tom Houston, a pipefitter paralyzed by a fall in 1979, designed the *HiRider* with the help of fellow pipefitter Ray Metzger. This revolutionary wheelchair, which went on the market in 1989, allows the user to maintain a standing position while moving about. Wheelchairs capable of climbing stairs and curbs also are manufactured now. In 1987, West Germany issued the *Rollsteiger*, and in 1992 in the United States a high-priced computer-and-sonar-equipped *ACCESS Mobility System* was offered in 1992. On flat surfaces, both models utilize the standard four wheels, but convert to tank-like treads to climb over obstacles.

The stair-climbing ACCESS chair uses its track mode to adapt to curbs and even misaligned sidewalk slabs. Controlled by an armrest-mounted joystick, ACCESS can maintain a 6 mph pace for 12 miles or ascend and descend staircases as steep as 36 degrees. Also in the early 1990s, the first compact, elevating, powered wheelchair was produced. Called the *Mangar Freestyle*, it is able to raise its seat using pressurized air like a bellows. This allows the user to reach objects above the normal range of ordinary wheelchairs. Many of the newest chairs use the same "ultralight" materials that go into aircraft. For races and wheelchair competition of all sorts, tough stainless steel chairs are designed that offer both speed and endurance.