



Happy Meals® in Kitty Hawk: How the Wright Brothers Spawned a Burger Nation

by **Selby Cull, Hampshire College**

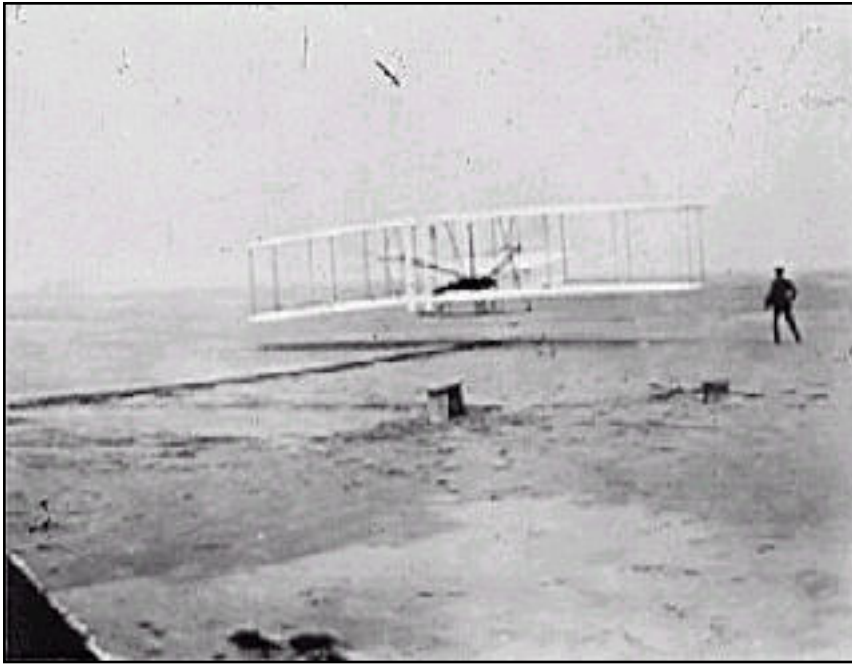
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On Dec. 17, 1903, Orville and Wilbur Wright launched two very important things: the first controllable, powered aircraft, and the chain of events that would lead to the invention of the Big Mac®. The first of these two breakthroughs is well known - every schoolchild in America knows about the bicycle repairmen who flew at Kitty Hawk. Their connection to the McDonald's fast food chain, however, is utterly unheard of.

The events leading to the creation of the McDonald's fast-food phenomenon began - unbeknownst to them - in the minds of two brothers at the turn of the last century. Orville and Wilbur Wright were an imaginative pair who built rubber-band-powered paper helicopters during their childhood in Ohio and never went to college. During the 1890s, they ran a printing press and small newspaper in Dayton, Ohio, before getting swept up in the bicycling craze of the late 1800s. Bicycles could not hold their interests for long, and, by 1896, the brothers were busy designing gliders and kites.

The road to the first flight

Gliders were large, awkward structures that vaguely resembled modern day hang-gliders. They were fairly common then; however, all gliders lacked two critical elements that separated them from actual aircraft: They could not be steered and they were not propelled. This was what perked the Wrights' interests. By 1899, Wilbur had designed a system that allowed a glider to be steered left and right. The Wrights built two such gliders, testing them at Kitty Hawk, N.C., during 1900 and 1901. However, they found them to be less than satisfactory. Frustrated with their first attempts, the brothers built their own wind tunnel and used it to perfect their steering problems. Soon their glider was fully controllable, and the Wrights designed and built a small gasoline engine and the first true propellers. Outfitted with their new method of propulsion, the Wrights had built the first true airplane, which they flew from a hill at Kitty Hawk Dec. 17, 1903.



First flight - Orville Wright leaves the ground in the first manned, fully steerable, propelled aircraft Dec. 17, 1903. He is watched by his brother Wilbur and their friend, John Daniels, who took the photograph. Image courtesy of the [Wright Brothers Aeroplane Company and Museum of Pioneer Aviation](#).

The first flight was less than a minute long; however, by 1905, the Wrights were able to fly freely until their fuel ran out. Airplane fuel, as it turned out, was to become a problem.

The U.S. Army was the first to purchase one of the Wright's new fliers, followed soon after by France. The Wrights continued developing their aircraft, demonstrating and selling their invention all over the world. Other companies began to manufacture airplanes as well, and before long, the Wrights were no longer the leaders in aircraft development. By the outbreak of World War I, the U.S. government had a small fleet of aircraft, most of which had not been designed by the Wrights - and all of which were still lacking an effective fuel.

Chemical challenges to fuel and refrigeration

Back in the Wright brothers' hometown of Dayton, Ohio, Charles Kettering and Thomas Midgley, of Dayton Engineering Laboratory Company (Delco), were tackling the army's fuel problem. At the time, all fuels used in airplane engines knocked violently when the airplane flew. Midgley and Kettering tried and discarded several anti-knock compounds: benzene froze too quickly, olefins turned to gum over time, ethyl alcohol ate up too much of the fuel. Frustrated by years of unsuccessful experiments, Midgley went all the way back to the periodic table, and began a systematic search of chemicals and chemical combinations. By 1926, he had combined ethyl alcohol with gasoline to produce ethyl gasoline, now known as leaded gasoline - an effective anti-knock compound, and a revolutionary fuel for aircraft and automobiles alike.



Thrilled with his success, Midgley marched straight back to the periodic table to tackle another problem that had been bothering him. In the early 1900s, mechanized refrigeration was emerging, and home refrigeration units were beginning to appear on the market. Refrigerators of those days used ammonia, sulfur dioxide, methyl chloride,

By 1930, Freon-cooled refrigerators were changing the way America froze food - most notably, ice cream.

and hydrocarbons as coolants - all of which are highly toxic. A number of refrigerator-related deaths during the early 1920s had propelled companies such as General Motors and Frigidaire into a search for a clean, non-toxic, non-flammable coolant for refrigerators. Just three days after he discovered ethyl gasoline, Thomas Midgley found just such a coolant - Freon.

Thomas Midgley was a chemist who discovered leaded gasoline and Freon - both of which have had profound effects on our lives today.

Drawing courtesy of University of Pennsylvania Library.

A non-toxic, non-flammable, non-corrosive, non-odorous chemical, Freon was the perfect coolant - just what refrigerator producers had been searching for. By 1930, Freon-cooled refrigerators were changing the way America froze food - most notably, ice cream.

Freon - convenient, cheap, and safe



Frigidaire refrigerators from the 1920s

Household refrigerators were just entering the market in the 1920s. These refrigerators used poisonous gases as coolants, and caused several deaths. Their dangers led to the discovery of Freon, a nontoxic coolant. Image from the Association of Home Appliance Manufacturers.

Since there were no automatic controls, ice cream freezers had to be operated constantly by a technician in order to produce anything. Realizing that automation was the way of the future, most ice cream manufacturers dispensing freezers focused all their efforts on making the freezers fully automatic. By the late 1930s, ice cream freezers not only made the ice cream automatically, but dispensed it at the pull of a lever right into an awaiting cone.

With a convenient, cheap, and safe coolant like Freon available, several companies began putting out specialty freezers designed to make large batches of ice cream at once. Operating such freezers was very time-consuming.

Ice cream automation did not stop there. In 1936, an inventor named Earl Prince took the idea of automated ice cream production and expanded it to milkshakes. He invented the Multimixer - a five-spindled mixer that could produce five milkshakes at once, all automatically, and dispense them at the pull of a lever into awaiting paper cups. Prince's invention was a hit, and soon he was selling more milkshakes than he had ever thought possible - and buying more paper cups than he ever thought necessary.

Fortuitously, Prince bought the paper cups to hold all his milkshakes from a middle-aged salesman named Ray Kroc. Witnessing the speed and efficiency of the Multimixer, Kroc was convinced he had found the next revolution in food service. He immediately mortgaged his home and sold everything he owned in order to purchase exclusive rights to the Multimixer milkshake maker from Prince.

Kroc quit his job selling paper cups and, for 17 years, traveled across America selling the Multimixer to milkshake-dispensing restaurants. Business was sparse, which is perhaps what made Kroc notice a large order from Southern California. Interested in what kind of business would need eight Multimixers - or 40 milkshakes at one time - Kroc packed his bags and headed for California.

A fortuitous encounter with the McDonald brothers



Ray Kroc, once a paper cup salesman, founded the McDonald's fast-food empire in the 1950s. Photo courtesy www.mcdonalds.com.

In 1954, Kroc found the McDonald brothers in a hamburger stand in San Bernadino, Calif., where they were producing 40 milkshakes at a time and selling hamburgers just as fast. Dick and Mac McDonald ran an unusual kind of hamburger stand - the menu was small and inexpensive, and people had to get out of their cars to be served, unlike the traditional drive-in. Kroc, excited by the efficiency of the McDonald's stand, suggested the brothers open a franchise. Dick and Mac, already overworked at their single stand, asked him, "Who would we get to run them for us, though?" to which Kroc replied, "Well, what about me?"

In 1955, Kroc, already 54 years old, opened the second McDonald's restaurant. By 1959, Kroc and the McDonald's Corporation had opened 100 restaurants; by 1963, there were 500 restaurants, and more than one billion hamburgers had been sold. The Big Mac® was introduced five years later. By the time Kroc died in 1984, he had opened more than 7,000 McDonald's restaurants worldwide and sold more than 50 billion hamburgers. Today, there are more than 15,000 McDonald's restaurants in 80 countries on six continents.

From first flight to billions and billions served

The events following the Wright brothers' 1903 flight changed the world in more ways than we usually consider. The first flight opened up new avenues for the military and new fuel problems. The fuel problems led to the invention of leaded gasoline, a double-edged sword that has allowed the development of modern motors and major pollution problems. Leaded

gasoline fueled the discovery of Freon - a compound that has made air conditioning and refrigeration possible, and has ripped a hole in the ozone layer. From Freon, we also gained ice cream dispensers, and the milkshake makers that made Ray Kroc and the McDonalds brothers rich.

Today, you can easily fly to North Carolina in an airplane - an airplane made possible by two inventive bicycle repairmen, powered by an engine that evolved from the use of leaded gasoline, in an air conditioned cabin cooled by non-toxic Freon. You can drive out to Kitty Hawk in a car whose engine doesn't knock violently. And, once there, you can eat ice cream from an automated ice cream dispenser and a Big Mac® at the McDonald's that overlooks the hill where the Wright brothers launched the first airplane almost 100 years ago.

By the time Kroc died in 1984, he had opened more than 7,000 McDonald's restaurants worldwide and sold more than 50 billion hamburgers.

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