

First astronauts' spacesuits were a marvel in their day

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John Glenn is shown in his spacesuit in this NASA photo taken in 1962. Photo: NASA

If it hadn't been for Akron ingenuity, astronaut John Glenn might have had to circle the planet in his skivvies.

The B.F. Goodrich Co. designed and built the silver [spacesuit](#) that Glenn wore on Feb. 20, 1962, as the first American to orbit the Earth. Monday is the 50th anniversary of the Ohioan's historic flight aboard the Mercury space capsule Friendship 7. He became a national hero when he made three trips around the world, traveling 83,450 miles in four hours and 55

minutes.

Goodrich made every spacesuit worn by Project Mercury's seven original astronauts. The others were [Alan Shepard](#), Gus Grissom, Scott Carpenter, Walter Schirra, Gordon Cooper and Donald "Deke" Slayton.

In 1959, NASA agreed to buy 20 suits from Goodrich for \$75,000, about \$3,750 each. Today, that would be \$583,249, or \$29,000 apiece.

Glenn and Schirra were the first to be fitted, arriving in Akron in October 1959. Dressed in civilian clothes, they dined with 40 workers in Goodrich's cafeteria and left that same day.

"For a pair whose pictures and life stories have been spread across the pages of newspapers and national magazines for months, they attracted little attention," the Beacon Journal reported.

The other five astronauts soon followed..

Goodrich traced the history of its space garb to 1934 when famed pilot Wiley Post ordered a high-altitude suit. Goodrich worker Russell S. Colley designed the pressurized garment from balloon fabric. His wife, Dorothy, stitched it together on her sewing machine.

Nearly 25 years later, Goodrich named Colley the engineer of the Mercury spacesuit project. The Beacon Journal called him "the first tailor of the Space Age."

Goodrich built a stainless-steel chamber at its research center in Brecksville to test spacesuits in a vacuum. The room mixed hydrogen, nitrogen, argon and oxygen to simulate high altitudes.

"We needed to know how fabrics and other materials would stand up

under flexing, abrasion, elongation and friction in a space environment," Frank K. Schoenfeld, vice president of research and development, explained in 1961. "We had to know how strong they were, how they reflected light, conducted heat and behaved under other conditions."

Ultimately, Goodrich made its airtight suits with two layers of aluminized nylon coated with neoprene. Each insulated outfit had four sections - torso, helmet, gloves and boots - and required the assembly of 1,600 custom-made parts.

The spacesuits weighed 20 pounds, not counting the long underwear that astronauts wore. Oxygen was pumped in through a waist connection.

Built with molded forms, the suits didn't stretch much, and that presented Goodrich with some unusual difficulties.

During a 1960 meeting with NASA, Colley confided: "We get the suit very carefully made - a perfect fit. And then the astronauts go on the banquet circuit and put on weight. It's a real problem."

He wasn't speaking of Glenn, though. A veteran of World War II and the Korean War, the Marine lieutenant colonel was an exercise fanatic, running five miles a day, performing calisthenics and working out on a trampoline. During his flight at age 40, he stood 5-foot-10 and weighed 168 pounds.

The United States had fallen behind in the space race with the Soviet Union. On April 12, 1961, cosmonaut Yuri Gagarin became the first man to rocket into space and orbit the Earth.

NASA responded by launching 15-minute suborbital flights from Cape Canaveral, Fla., with Shepard aboard Freedom 7 on May 5 and Grissom aboard Liberty Bell 7 on July 21.

Goodrich's spacesuits met expectations, but the company continued to modify the gear.

"We let [astronauts](#) suggest what they want in way of pockets," explained Wayne Galloway, spacesuit production manager for Goodrich in 1962. "Glenn wanted two zipper pockets below his knees and one on his thigh. In this he carries surgical shears to be used in an emergency to cut himself out of his suit and safety belt. One other pocket is a slit on the right shoulder for his hankey."

Glenn's spacesuit was the first to have battery-powered lights embedded in its gloved fingertips, a new innovation.

"Now he can point a finger and be able to read his path indicator telling him where he is at all times or look at a map even though the capsule is in darkness," Galloway noted.

Glenn's flight, originally set for December, was delayed 10 times before NASA gave it a green light in February 1962.

The astronaut woke up at 2:20 a.m. Feb. 20, took a shower, shaved and had a steak breakfast to fortify himself. A doctor examined him at 3 a.m. and attached sensors to his body to monitor his heartbeat, blood pressure and temperature.

"At 4:30 a.m., he began donning the suit - pulling it on one leg at a time, then shrugging into the arms and zipping it up with the aid of a technician," the Associated Press reported. "His silver-topped gloves were zippered to the arms of the suit to seal it and Glenn slipped a pair of dust-resistant galoshes over his silver boots."

Glenn arrived at the launch pad at 5:17 a.m. and took an elevator to the top of an Atlas rocket. He climbed into the Friendship 7, ran through a

prelaunch checklist, hooked himself up, strapped himself down and waited for the signal.

With a deafening roar, the rocket blasted off at 9:47 a.m.

"Five, four, three, two, one, zero, liftoff," Glenn told Mercury mission control. "The clock is operating. We are under way. Roger. Read you loud and clear. Roger."

Carpenter, Mercury's backup astronaut, called over the radio: "Godspeed, John Glenn."

Glenn marveled as the Earth fell behind. He could see for hundreds of miles.

"I feel fine - the view is tremendous - the capsule is in good shape," he radioed.

After the booster rocket separated, the 4,200-pound Friendship 7 began orbiting about 160 miles above Earth, traveling 17,530 miles an hour. It zoomed across the Atlantic, Indian and Pacific oceans, passing from day to night to day about every 45 minutes.

"I am very comfortable," Glenn told Mercury control.

The spacesuit's designers had to love that comment.

Glenn circled the Earth three times before the capsule made a fiery descent through the atmosphere. Heat shields protected the astronaut from harm. A red-and-white parachute let the capsule float gently into the Atlantic near Grand Turk Island in the Bahamas.

It splashed down at 2:43 p.m. The USS Noa, a Navy destroyer, plucked

the capsule from the ocean 10 minutes later.

"My condition is excellent," Glenn told rescuers.

Glenn's spacesuit and the Friendship 7 capsule are at the Smithsonian Institution's National Air and Space Museum in Washington, D.C. Today, Glenn is 90 and lives in Columbus with his wife, Annie.

"Although Colonel Glenn traveled alone in his 81,000-mile journey, the thoughts and prayers of millions were with him," the Beacon Journal editorialized in 1962.

"Pride in achievement mixed with prayerful thanksgiving when word came that he was down and safe.

"It was a day of glory for a brave man and for the nation whose prestige and honor he carried into space."

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