10 inventions with ties to NASA

These out-of-this world innovations have a history with the U.S. space program.

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NASA/courtesy of nasaimages.org

Velcro accidentally stuck to NASA
In the weightlessness of space, everything, including astronauts, floats freely unless harnessed down in one fashion or another. Apollo astronauts found a solution in Velcro brand hook-and-loop fastener technology, using it to secure everything from food to notepads to their suits as they ventured around outer space. Though the space agency's embrace of the two-sided fastener likely helped Velcro products rocket to fame, NASA did not invent it. Rather, the invention is credited to Swiss outdoorsman George de Mestral, who became fascinated by the burrs relentlessly clinging to his clothes and dog's fur. He examined them under the microscope and realized they were covered in tiny hooks. Intrigued, he set about developing the technology, which he patented in 1952. The Velcro trademark was registered in the U.S. in 1958.

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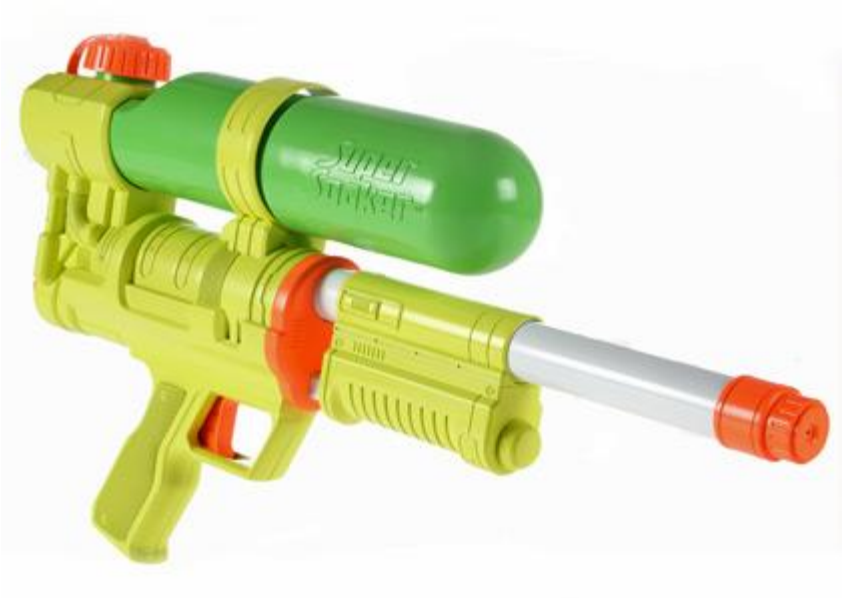

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Photo Courtesy of © 2008 Hasbro

NASA engineer gets world soaked

For anyone who's been blasted with what seems like squirt gun on steroids – the Super Soaker – there's a NASA engineer to thank. Lonnie Johnson helped make propulsion systems for interplanetary spacecraft at the U.S. space agency, but was constantly tinkering at home on side projects that he hoped would change the world for the better. Instead, he changed it for the wetter. He was working on a cooling system to replace the refrigerant Freon when he attached some vinyl tubing to the bathroom sink and blasted his bathtub with a powerful stream of water. The gizmo uses pressurized air to achieve its soaking blast.

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NASA/courtesy of nasaimages.org

Scent is out of this world

Get a whiff of this: A rose flown on space shuttle Discovery in 1998 yielded an out-of-this-world scent that scientists have replicated for use in a perfume. International Flavors and Fragrances sent the rose into space as part of experiments to determine how microgravity affects plants. Researchers found that space changed three major chemical components of the flower, a company representative said. The result was a new fragrance that has a more floral aroma than that of the Earth rose. The scent, called "space rose note," is an ingredient in Shiseido Cosmetics' perfume Zen.

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Photo Courtesy of © 2009 Zeno Corporation

A zit zapper built with NASA expertise

"Most rocket scientists probably had pimples," Robert Conrad, the founder and chief technology officer of Zeno, says as a way to explain why NASA engineers jumped at the chance to help him develop his zit-zapping gizmo. The device uses a temperature-controlled tip that is applied directly to a pimple to shut down production of acne-causing bacteria. Within a day or two, he says, the zit disappears. Conrad made early prototypes in his garage, but applied to NASA's Space Alliance Technology Outreach Program, or SATOP, for assistance with a more cost-efficient design. Though NASA's solution didn't quite work for his needs, Conrad says it "changed the way I was looking at the problem and helped me come up with a new solution."

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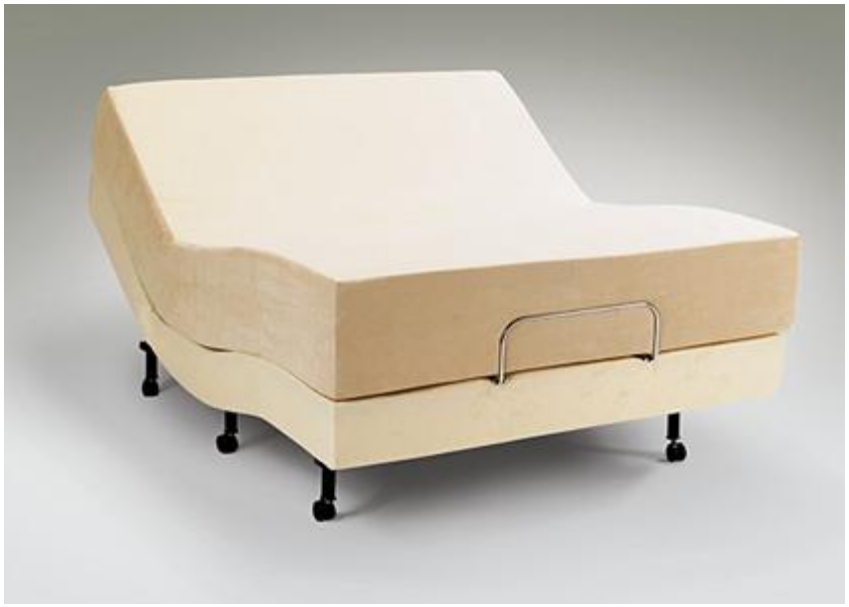

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Photo Courtesy of © 2009 Tempur-Pedic Management Inc

The bed for astronaut wannabes

As many an off-hour television viewer knows, the Tempur-Pedic mattress uses a material originally developed by NASA and certified by the U.S. Space Foundation, a nonprofit advocacy organization. At the root of Tempur-Pedic's technology is NASA's temper, or memory, foam, which was developed in 1966 as a shock absorber for the space agency's airplane seats. Over the years, the foam has found its way into everything from football helmets to prosthetics. The Tempur-Pedic mattress idea builds on the foam's pressure-relieving properties improved by scientists with the Swiss firm Fagerdala. Horse breeder Bobby Tussel slept on one while at a race in France. Wowed by his night's sleep, he founded Tempur-Pedic in 1992 to sell the mattresses in the U.S.

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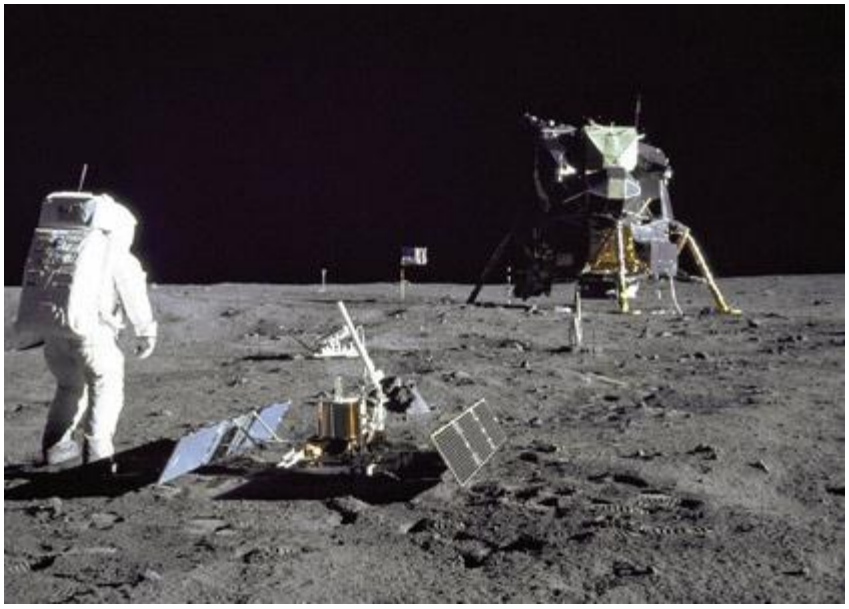

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NASA/courtesy of nasaimages.org

NASA spin doesn't stick to Teflon

When U.S. astronaut Neil Armstrong took his "giant leap for mankind" on the surface of the moon in 1969, a material called Teflon was in his spacesuit and throughout the spacecraft that helped him and his nation achieve the historic feat. But the famously slippery material, contrary to popular belief, was discovered decades before NASA was formed. The tale of the material's discovery dates back to 1938, when DuPont chemist Roy Plunkett was experimenting with refrigerants. He left one experiment in the fridge overnight, only to find that it turned into a white, waxy solid – polytetrafluoroethylene (PTFE). Trademarked as Teflon, the substance found its way into myriad technologies and products, including the famous nonstick pans.

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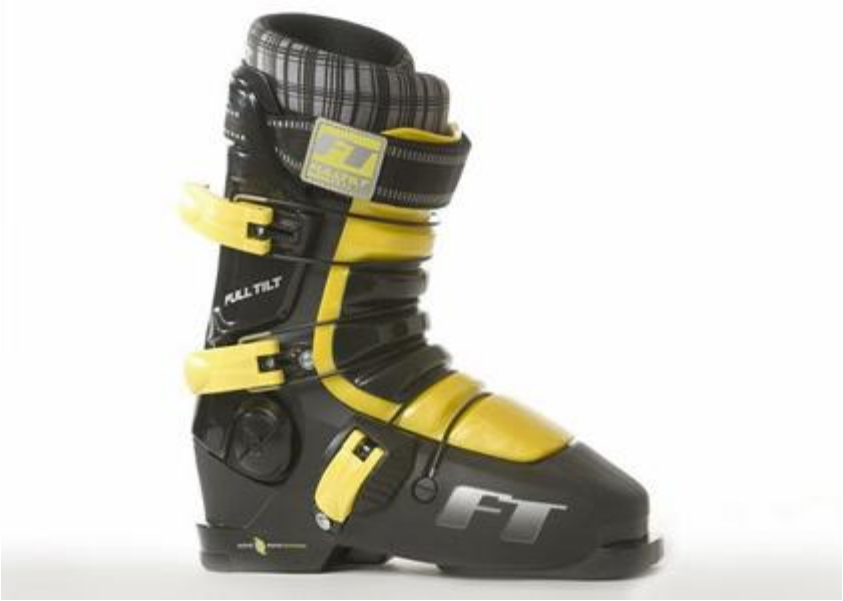

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Photo Courtesy of www.fulltiltboots.com

Spacesuit's flex finds ski boot fame

The elbow and knee joints of spacesuits have accordionlike corrugations similar to those in a flexible drinking straw. The design prevents internal pressurization- and temperature-control plumbing from kinking as astronauts bend their limbs. In the late 1970s, one of the engineers who helped design the suits applied the concept to ski boots and a cult was born – the Raichle Flexon. The boot's tongue is corrugated, which allows it to flex without distorting the lower shell. Skiers swore by it and when the Swiss manufacturer halted production in 1996, devotees scrounged garage sales and online auction sites for spare parts and replacements. Then, in 2006, to much fanfare in the ski world, Full Tilt brought the model back into production because "the design works so well," says Jason Levinthal, a brand manager for the company.

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© *Christinne Muschi / Reuters*
NASA helps reduce swimmers' drag

What makes Olympic champion swimmer Michael Phelps so fast? Beyond hours of rigorous training and a diet of champions, he wears an aerodynamic Speedo swimsuit developed with the assistance of NASA wind tunnel technology. NASA and Speedo engineers tested more than 60 types of fabric in the tunnels to figure out which one had the least amount of drag. Drag is the force that slows an object down as it moves through a substance, like a spaceship soaring through the air or a swimmer gliding through the water. The resulting swimsuit, called the LZR Racer, helped Phelps to the top of the podium eight times in the 2008 Beijing Olympics.

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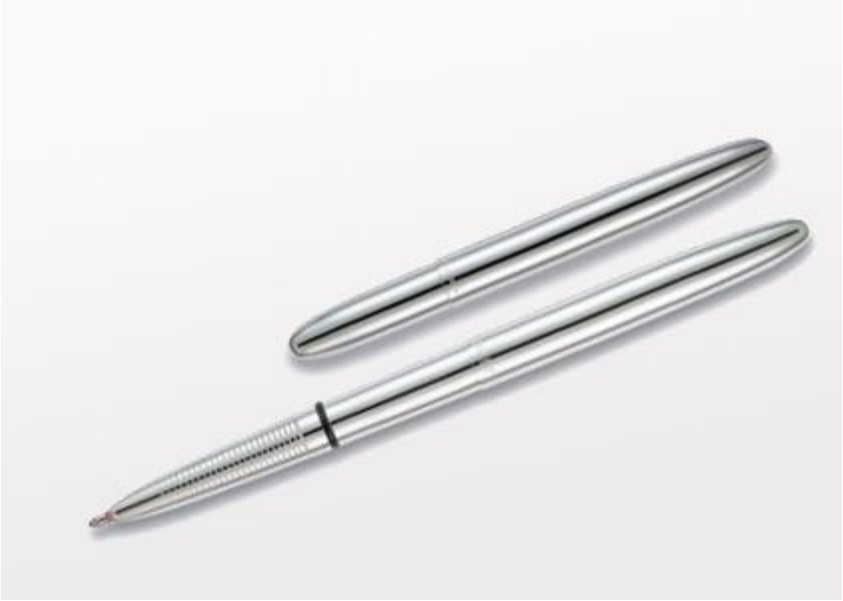

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Photo Courtesy © Fisher Space Pen Co.

A pen for zero gravity

How to write in space? Regular ballpoint pens, after all, rely on gravity and atmospheric pressure for ink to flow. Inventor Paul Fisher tackled the problem for NASA – without funding from the space agency – with the aptly named Anti-Gravity Pen, which he patented in 1965. The gizmo has a pressurized cartridge that keeps ink flowing under any conditions – zero gravity, underwater, extreme heat and extreme cold. "No matter the conditions you're in, the pen will write," says Timothy Lawson, director of marketing for the Fisher Space Pen Co. NASA embraced the technology in 1968 for the Apollo program, launching the pen to the international fame it continues to enjoy.

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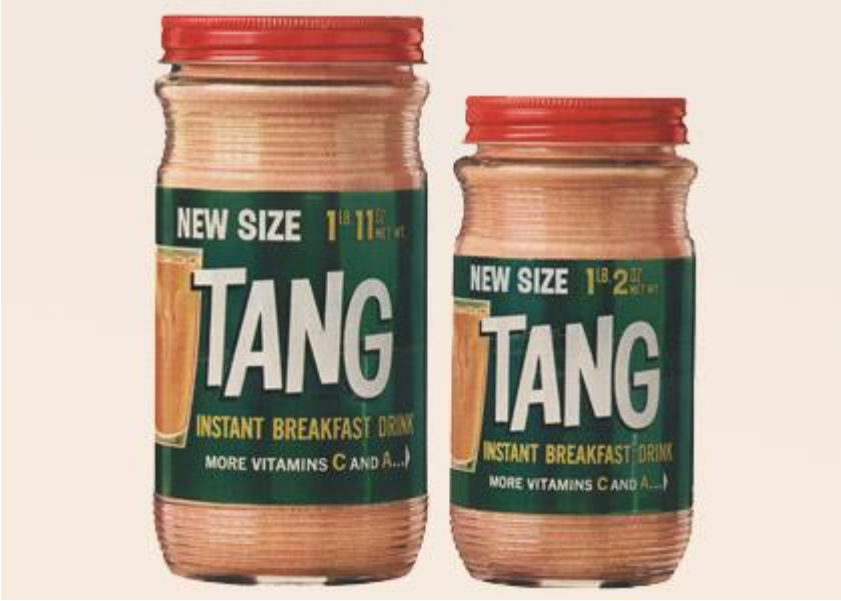

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Photo Courtesy 2008 Kraft Foods Inc.

Tang came before NASA

NASA, the U.S. space agency, has put people on the moon and robots on Mars, and has sent a probe rocketing towards Pluto and beyond, but contrary to popular belief it did not invent the powdery drink mix Tang. In fact, General Foods began to test-market the orange-flavored concoction in 1957, a year before NASA was born. However, the space agency did help launch Tang on the road to fame when astronaut John Glenn, in 1962, selected the mix for eating experiments in orbit. Tang flew on all Gemini and Apollo missions, a fact that General Foods used to its advertising advantage. Click the "Next" button to learn about nine more technologies tied up with NASA's history.

-- *By John Roach, special to MSN*

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