THE FIRST A.I. RAISED BY ASTRONAUTS

When astronaut Alexander Gerst's new assistant arrived on the International Space Station on July 2, the first thing it had to do was identify G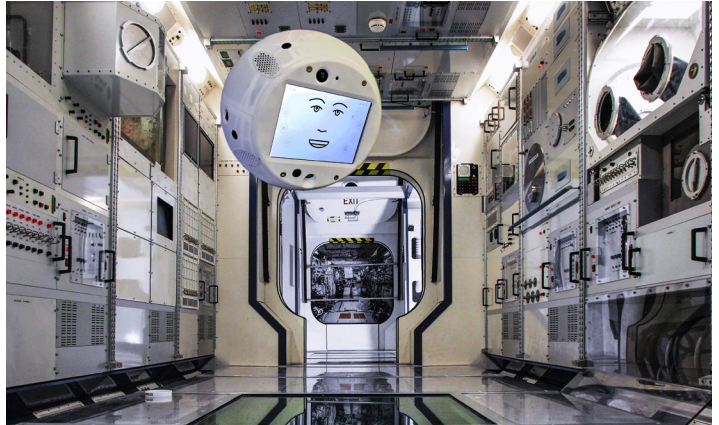erst. Which wasn't necessarily easy, since CIMON (Crew Interactive MObile Companion) is an A.I.-powered robot—a floating, screen-faced orb based on IBM's Watson platform—and computers trained to recognize people have almost always been able to count on the fact that humans have their feet on the ground and their heads in the air. Which isn't the case for Gerst. And there's so much more CIMON, the first such robot in space, will have to learn to help Gerst with his tasks growing crystals and carrying out medical experiments. CIMON will hear the different languages of the ISS and the strange, formal English of astronauts, for whom "yes" is "affirmative" or "A-firm." When astronauts tell CIMON they miss their families, because CIMON can learn empathy, it will come to change its inflection and facial expressions and suggest video calls home. There have been studies on astronauts, such as twins Scott and Mark Kelly, to see what happens to humans who spend extended time in space. Were CIMON to someday be the subject of the first twin study on A.I., it might tell us, more than anything, about us. Because CIMON, raised by astronauts, will see humans speaking in a strange, clipped dialect and working endlessly on scientific tasks, it'll perceive us as weightless, lonely creatures. CIMON will understand people in a way that only a few of us, like the Kellys, yet understand ourselves: as a spacefaring species. —*Sunny Kim*

A NEW TOOL FOR FIGHTING WILDFIRES

In late June, when the Pawnee Fire in Northern California had burned more than 10,000 acres and was less than one-third contained, the Cal Fire operations chief and incident commander gathered around a sandbox. A crushed-walnut-shell box, actually. The 3-by-6-foot box was part of a device called the Simtable, which also uses a downward-facing projector to help firefighters shape the walnut shells (sand is too reflective) into an accurate 3D map of an area's topography, then project fire simulations based on the landscape's conditions (like wind, temperature, and relative humidity). The Simtable has been used at Cal Fire's training academies for three years, but this was the first time it was deployed to a real fire. The command post used it to run worst-case scenarios: If a small spot fire were to spark on the other side of a ridge, how fast would it grow, and how fast could they respond? While its simulation software is probably a year or two from being useful for higher-level decision-making, fire behavior analyst Jon Heggie, who operated the table, said, "It's going to help us with that visual representation of where our trouble areas are, where our opportunities for success could be, and where issues for evacuations are going to be." By early July, Cal Fire had the Pawnee Fire 100 percent contained. Three weeks later, the biggest conflagration in state history, the Mendocino Complex, started. At 75,000 acres burned and less than 10 percent containment, incident command requested the Simtable.

THINGS YOU WOULD HAVE LEARNED IF WE HAD MORE ROOM IN THIS ISSUE

FACT No. 1 > The top sale at this year's Mecum Auctions in Indianapolis was a Ford GT that went for $1.8 million (Large Photo of the Month, page 12). **FACT No. 2 >** The average chainsaw injury requires 110 stitches ("The Popular Mechanics Guide to Firewood," page 78). **FACT No. 3 >** Einstein's brain had a normal number of neurons, but he had substantially more glial cells in the left inferior parietal area, which is associated with imagery, creativity, and complex thought ("The Incredibles," page 66).