Fifty years since Yuri Gagarin’s historic first orbit, whatever happened to the Space Race?

TWO HOURS before take-off Yuri Gagarin climbed to the top of the gantry at the Baikonur launch pad and into the spherical crew module on the Vostok spacecraft. Technicians sealed the round hatchway with bolts that could be fired should he need the ejector seat. At 07:28 on 12 April 1961 the rocket was ignited. “Poyekhali!” he shouted – “Let’s Go!” – and nine minutes later he was in orbit, the first man in space.

Gagarin’s flight 50 years ago this month shocked the world. Four years earlier US President Eisenhower had dismissed the Sputnik satellite as “one small ball in the air”. Now the Soviets had produced the first spaceman and it couldn’t be dismissed. It wasn’t going to stop there. Science and engineering usually suffer as political footballs but in this case the space race between the USSR and the USA gave both sides the commitment and the resources they needed to progress fast.

In this issue we look at how the Soviets beat America to manned flight, what it meant for engineering in the decades after and its legacy for the future.

Mark Williamson recounts events on that day and examines the technology behind it on p30. Piers Bizony has written a biography of Gagarin and tells his story on p34, alongside that of the other great man of that day, Sergei Pavlovich Korolev, Sputnik chief designer who went on to design the R-7 launcher that thrust Gagarin into orbit.

What does it take to become an astronaut? Dmitri Vitaliev discovers how the Canadians do it on p43 and on p40 we look at why and how nearly 40 nations are still sending astronauts into orbit. The latest E&T video follows six volunteers who have been locked inside a sealed nest of modules in Moscow for a total of 320 days, the time it would take to fly to Mars and back. Access it at www.EandTmagazine.com/videos.

Now the old space race is over, it’s all about international cooperation; there’s no better embodiment of this than the International Space Station. We visited Thales-Alenia Space in Turin where many of its pressurised modules were built (p44). We wrap up our space special with images of 9 March 2011, the day when the space shuttle Discovery made its very last landing.

Also in this issue, American correspondent Paul Dempsey reports from the American Association for the Advancement of Science annual meeting on the technology to recognise language patterns that can warn of terrorist activity and catch terrorist attacks before they are launched. ‘A War of Words’ is on p64. He also reports on the latest in semiconductor technology development from the International Solid State Circuits Conference in San Francisco (p67).

And what has IBM ever done for us? As the company celebrates its centenary Chris Edwards finds it’s done an awful lot. No aqueducts. But it did help to put a man on the Moon...