A3
TIME MACHINES

Lisa Mitchell
516 words
19 August 2003
The Age
8
English

1 Harrison's Marine Chronometer

Before the 1750s, explorers bumbled about at sea guided only by celestial tables. Then English clockmaker John Harrison invented the first marine chronometer. Now in London's National Maritime Museum, the chronometer allowed Captain James Cook to map the Pacific accurately for the first time. Explorers could also determine longitude instead of relying on "dead reckoning" or intelligent guesswork.

2 PARCS Space Clock

Space agency NASA wants to know if the speed of light is the same in all directions and what the exact duration of the second should be. So, in 2008, NASA will hoist a new atomic clock into space on the back of the International Space Station. The laser-cooled cesium atomic clock is expected to be 10 times more accurate than Earth-based cesium atomic clocks. Researchers will also use the clock to improve the accuracy of global positioning systems (GPS) and international timekeeping.

3 The 10,000 Year Clock

Danny Hillis - inventor, scientist, author and engineer - has a plan to ensure his place in posterity and clockmakers of the world are taking it seriously. Hillis has come up with a prototype for a 10,000-year clock, which The Long Now Foundation will install in a hollowed chamber in a limestone cliff in the Nevada desert. But even Hillis is sceptical about the longevity of his project. He reckons great monuments to civilisation, such as Stonehenge and the pyramids, only stand the test of time if they are made from worthless materials, or are lost. The finished version of the 10,000-year clock will be big enough to walk through and its torsional pendulum will rotate at a snail's pace. The clock will tick once every 30 seconds, the century hand will advance once every 100 years and the cuckoo will chirp each millennium. It will be driven by regulated falling weights, by changes of temperature and a binary mechanical computer will count the hours, calendar and solar years, the centuries and phases of the moon and zodiac.

4 The Frodsham Regulator

This was the first instrument used to regulate standard time in Victoria, from 1865 until 1944. Based in the Melbourne Observatory, key public clocks such as those at the GPO and railway stations were linked to the Observatory by telegraph lines. A "time ball" at Williamstown was lowered at 1pm each day to allow ships' captains to check the accuracy of their chronometers.

These days, the National Measurement Laboratory (NML) CSIRO division of Telecommunications and Industrial Physics handles the task of standard timekeeping for Australia. The NML's atomic clock, based in Sydney (with a back-up in Melbourne), works with 300 clocks around the world.

5 Greenwich Mean Time Clock

Established for British navigation in the mid-9th century, Greenwich Mean Time (GMT) has been replaced by Coordinated Universal Time (UTC). British law still refers to GMT, however, because a 1997 bill that tried to update it to UTC was never passed. It ran out of time.

Document AGEE000020030818dz8j0001a

