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“YOU DON’T HAVE TO BE A MATHEMATICIAN TO HAVE A FEEL FOR NUMBERS.” — JOHN FORBES NASH
13 JUNE 1928–23 MAY 2015
CREDIT: ANDREAS MÜLLER / VISUM

The most accurate clock ever made
A strontium clock now has the accuracy to detect changes in gravity. CATHAL O’CONNELL reports.

Scientists have succeeded in making a clock so precise it could tick for 15 billion years—longer than the age of the Universe—without gaining or losing a second.

At the heart of the clock mechanism, above, lies a blue cloud of strontium atoms. The tick rate—430 trillion times a second—is set by the quantum leaps of their electrons.

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One blood type for all within reach

A breakthrough for quantum computers

Comets paint Mercury black

Radio interference wreaks havoc

The secret signal in a peacock’s tail

The oldest evidence of life on Earth?

The search for planets beyond Pluto
A closer look at the big stories

DIGEST

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“Nothing exists except atoms and empty space.” — Democritus 460-370 BC.

Perhaps it was the whiff of baking bread that led Democritus to imagine that matter was composed of tiny, indivisible building blocks. Atoms, he called them, meaning something that cannot be cut.

If only the Greek philosopher could take a peek through today’s scanning transmission electron microscopes. This image peers inside garnet, a semi-precious mineral found throughout Earth’s crust, to see neat stacks of yttrium atoms. On the left, we’re looking down the stacks; on the right we see the stacks side-on.

Some elements diffused throughout the garnet record the pressure and temperature at which the rocks around them formed. Read these patterns and you can read the Earth’s geological history.

CREDIT: Q M RAMASSE / M SCHAFFER / SUPERSTEM LABORATORY, UK
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Credit: Q M Ramasse / M Schaffer / SuperSTEM Laboratory, UK.
Our Earth encircled by satellites and their multiplying junk. (Artist's depiction, objects not to scale.)
More and more junk is cluttering space, threatening our satellites and rockets. DANIEL CLERY reports.
With inflation, an initial force inflates the Universe and then dark energy kicks in and gradually expands the Universe, growing stronger as the Universe grows.
In the cyclic theory, dark energy is the driving force all the way through but it reverses direction.
China has enjoyed an unprecedented gold rush of feathered dinosaur fossils – but how many are real? JOHN PICKRELL reports.

X-RAYS SHOWED this spectacular missing link between bird and dinosaur was a cut-and-paste of different fossils.
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ON THE RIGHT SIDE OF HISTORY

Not one to duck for cover, Alan Trounson has braved fiery social conflict to deliver IVF and embryonic stem cells to the clinic. Now he’s set his sights on treating cancer. ELIZABETH FINKEL reports.

ALAN TROUNSON has just spent seven years leading California’s $3 billion push to turn stem cells into cures.
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WHY ARE CHILDREN SMARTER THAN THEIR PARENTS?

IQ test scores have been creeping upwards for a century, writes KARL KRUSZELNICKI.

IQ tests indicate children are adapting well to a contemporary environment.
WE’VE ALL HEARD OF intelligence quotient (IQ) tests. Psychologists see IQ as our “fluid and crystallised intelligence” – our ability to solve problems and to reason deeply and speedily. But surprisingly, averaged around the world, the typical IQ is not fixed. IQ seems to be creeping upwards, at about three IQ points every decade.

This story begins back in 1948 when RD Tuddenham, a psychologist, examined the IQ scores of American conscripts between the years 1917 and 1943. He showed that their IQ scores increased by about 4.4 points every decade.

Today it’s known as the Flynn effect, named after moral philosopher James R Flynn who rediscovered the effect in 1984 (and is now Emeritus Professor of Political Studies at the University of Otago in New Zealand).