

ANNOYING NOISES EXPLAINED



Why are some sounds, such as fingernails on a chalkboard, excruciating? Musicologists believe they have found the answer. The researchers from Germany and Austria modified recordings of fingernails and chalk by removing or attenuating various frequency ranges. They found that the frequencies responsible for making a sound unpleasant were in the range of 2,000 to 4,000 Hertz. That is within the span of human speech, which ranges from 150-7,000 Hertz. The experts believe the human ear canal amplifies sounds made at the offending frequencies to painful effect.



Dr Ioannis Ieropoulos of UWE is working on ways to generate energy from human waste

ENERGY

Pee can provide power

Urine could be a new source of electricity. Scientists at the University of the West of England in Bristol are investigating using urine in microbial fuel cells. In these cells, microorganisms like bacteria live in the anode. They oxidise a fuel source, in this case urine, producing electrons through anaerobic (without oxygen) respiration. The electrons move to the cathode and electricity is generated. Combining many such cells could produce sufficient power for a home or small village, say the researchers.

NEUROLOGY

Friendship alters the brain

Having a wide circle of friends could cause certain parts of your brain to grow, according to a new study. Scientists at the University of Oxford and Mount Sinai School of Medicine in New York studied the brains of macaque monkeys that lived by themselves, with a friend or in a small group. Their findings revealed that the monkeys that lived in a more social setting developed more grey matter in areas of the brain that are associated with processing social information, such as the rostral prefrontal cortex.

NEWS IN BRIEF

A Russian spacecraft bound for the Martian moon Phobos ground to a halt in Earth orbit when its second stage rocket failed to fire. Roscosmos, the Russian space agency, had hoped the Phobos-Grunt craft would return samples from the planet's surface, a feat NASA has yet to achieve. But the rocket failure left the £103 million mission stranded with full fuel tanks. As *Focus* went to press, a tracking station in Australia had re-established contact with the stricken probe, although it was still unclear whether or not its rocket could be reactivated.

Just how birds are able to dart through narrow spaces has been discovered. When an animal moves forwards, distant objects appear to move more slowly than closer objects and it is this phenomenon that birds employ. Using budgerigars trained to fly down corridors, Australian scientists found that if a bird spots one wall moving faster than the other, indicating it is closer, they will adjust to balance the speed of both walls.

The physicists who found that neutrinos apparently travel faster than light have carried out an improved experiment – and confirmed the result. Members of the OPERA collaboration fired neutrinos from CERN in Geneva to a detector at the INFN-Gran Sasso lab in Italy and this time they released shorter neutrino bunches, making it easier to identify when they had left. The idea that nothing can travel faster than light is set out in Einstein's theory of special relativity. In spite of the findings, other sources of uncertainty would have to be eliminated from the measurements before it's accepted that neutrinos can indeed break the 'speed limit'.

Scientists have borrowed from nature to build a tank-like robot that can scale smooth walls. Drawing inspiration from the gecko, the 'Timeless Belt Climbing Platform' has adhesives that mimic the toe-pads of the lizard. The device created at Simon Fraser University in Burnaby, Canada could be used to inspect pipes and power plants, and for search and rescue operations.

The lion's ferocious roar has its origins in the unusual shape of the big cat's vocal chords

