RESEARCH HIGHLIGHTS

F. JOREZ/GETTY

Bird's eye view

Biol. Psychiatry doi: 10.1016/j.biopsych.2008.06.012 (2008)
People with autism have incredibly keen eyesight, seeing almost as acutely as birds of prey.

The surprise finding from Emma Ashwin and her colleagues at the University of Cambridge, UK, shows that the unusually keen senses that have been associated with the condition since the 1940s stem not from how intensely autistic people feel their senses, but from how sharp their senses actually are.

Ashwin and her team tested 15 men with autism-spectrum disorders using the Freiburg Visual Acuity and Contrast Test, and found them to have, on average, 20:7 vision. This means they can see the same detail on an object 20 metres away that a person with average vision can see at 7 metres. Birds of prey have roughly 20:6 vision. What gives people with autism hawk-like vision isn't known.

COSMOLOGY

Dark limit

J. Phys. A **41,** 412002 (2008)
Dark matter is a hypothetical class of particles that interact mainly through the force of gravity. How much dark stuff might be lurking around Earth is the subject of some debate, but Stephen Adler at the Institute for Advanced Study in Princeton, New Jersey, has set an upper limit.

Adler took data on the radius and period of a gravity-sensing satellite to estimate the planet's mass, including its dark matter, as well as lunar and asteroid orbital data to estimate the total mass inside the Moon's orbit.

Subtracting these two masses from a separate estimate of the combined masses of Earth and the Moon reveals the amount of dark matter within the Moon's orbit. He calculates that this can be no more than four billionths the mass of Earth, or 1.5×10^{15} kilograms.

BIOMECHANICS

Fungal ballistics

PLoS ONE **3,** e3237 (2008)
Some dung-feeding fungi squirt their spores at speeds of up to 25 metres per second. The spores need to travel several metres for herbivores to eat them — because most animals won't graze near their droppings — and thus to continue their life cycles.

The velocities were captured on high-speed video cameras (images right) by Nik Money at Miami University in Oxford, Ohio, and his colleagues. They showed that the pressure inside the squirt gun cell of several species is similar to that of other fungal tissues. Their study will allow scientists to distinguish models that correctly describe the spore-ejection process.

ZOOLOGY

Boomerang bluefins

Science doi:10.1126/science.1161473 (2008)
Isotopic analysis of the ear bones of Atlantic bluefin tuna (*Thunnus thynnus*) has shown, for the first time, that an ocean-roaming fish returns to where it was born before spawning.

Jay Rooker of Texas A&M University in Galveston and his colleagues studied the ratio of oxygen-16 to oxygen-18 in the otoliths of these fish. Their findings indicate that 99.3% of the bluefin tuna spawning in the Gulf of Mexico and 95.8% of those spawning in the Mediterranean had swum back to their natal waters.

Populations of the fish have seen a precipitous decline from overfishing; the authors hope that their results will contribute to the species' future management.

N. MONEY

PHYSICS

Light squeezing

Phys. Rev. Lett. **101,** 123601 (2008)
Physicists at the Pierre and Marie Curie University in Paris have proposed 'squeezing' light in order to measure the distance between objects in space more precisely.

The classic method, called the Einstein protocol, bounces pulses of light between two objects. But, at the quantum level, light is noisy, adding tiny measurement errors that can be significant when extreme accuracy is required.

Brahim Lamine and his colleagues calculate that squeezing light — shaping femtosecond laser pulses so as to reduce noise-inducing quantum fluctuations — might help. If their scheme works, it should provide greater control for positioning future flotillas of spacecraft such as Darwin, or space observatories like LISA — missions that aim to detect and observe Earth-like exoplanets and gravitational waves, respectively.

ORGANIC CHEMISTRY

State benefits

Angew. Chem. Int. Edn doi:10.1002/anie.200803648 (2008)
A new explosive that is among the most powerful known has the added benefits of being a solid at room temperature but having a low melting point of about 85 °C. This means it should make for a safer and more useful explosive than alternative esters of nitrate because it can be poured rather than pressed into shape.

The tetranitrate ester was made from a commercially available dioxane molecule by