A mosaic of visible to near-infrared images of the surface of Mercury, obtained by the MESSENGER spacecraft on 14 January 2008. The circular feature in the upper right is the Caloris impact basin, 1500 kilometers in diameter. Results from the flyby are discussed in a special section beginning on page 58.

Molecular Biology
A Global View of Gene Activity and Alternative Splicing by Deep Sequencing of the Human Transcriptome
M. Sultan et al.
Shotgun sequencing of 27-base pair segments of messenger RNA from human kidney and immune cells identifies previously undescribed transcriptional units and splice junctions.
10.1126/science.1160342

Atmospheric Science
BREVIA: N₂O₅ Oxidizes Chloride to Cl₂ in Acidic Atmospheric Aerosol
Laboratory studies affirm that the oxidation of chloride ions in aerosols by N₂O₅ is a significant source of chlorine in the troposphere, a major reactant that helps form ozone.
10.1126/science.1158777

Letters
Painful Publishing M. Raff, A. Johnson, P. Walter
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The Enemy Within V. L. Roggli
The Limits of Water Pumps L. Wang and P. D’Odorico
Omissions in GLAST Story G. F. Bignami et al.

Books et al.
Gorilla Mountain R. Ebersole; Robo World J. D. Brown;
Nature’s Machines F. Watts; reviewed by S. Kovats
Ghostwalk R. Stott, reviewed by J. Golinski
Falling for Science Objects in Mind S. Turkle, Ed.
The City and the Stars A. C. Clarke

Policy Forum
An Earth Systems Science Agency M. Schaefer et al.

Perspectives
The Scale of Experience M. E. Hasselmo
Indirect Social Influence J. Denrell
Transient Dynamics for Neural Processing M. Rabinovich, R. Huerta, G. Laurent

Brevia
Reduced Responses to Selection After Species Range Expansion
B. Pujol and J. R. Pannell
An annual spurge with a geographical range that expanded after the Ice Age shows decreased response to selection at the edges of its new range, as predicted by theory.

Research Article
Phanerozoic Trends in the Global Diversity of Marine Invertebrates
J. Alroy et al.
A compilation of more than 3 million specimens of fossil marine invertebrates shows that their diversity increased more in the Jurassic and less since then than an earlier study implied.

Reports
Self-Sorted, Aligned Nanotube Networks for Thin-Film Transistors M. C. LeMieux et al.
Treating silicon substrates with a silane layer allows them to absorb spin-coated, semiconducting carbon nanotubes, yielding aligned and densely packed nanotube films.
Reports continued...

**Astronomy**

Relativistic Spin Precession in the Double Pulsar

R. P. Breton et al.

Four years of data track the spin precession of a pulsar orbiting a second pulsar, providing a positive test of general relativity in a strong gravitational field.

**Materials Science**

Characterization of Step-Edge Barriers in Organic Thin-Film Growth

G. Hawcock et al.

In contrast to the growth of inorganic films, bending of a rod-shaped organic molecule at step edges and its anisotropy leads to a change from growth of layers to terraced mounds.

**Climate Change**

Large and Rapid Melt-Induced Velocity Changes in the Ablation Zone of the Greenland Ice Sheet

R. S. W. van de Wal et al.

Measurements of ice velocity across western Greenland show that the ice sheet responds within days to excess meltwater, although annual flow has slowed a bit over 17 years.

**Chemistry**

Mg/Al Ordering in Layered Double Hydroxides Revealed by Multinuclear NMR Spectroscopy


Rapid sample spinning during nuclear magnetic resonance spectroscopy reveals a highly ordered cation distribution in layered materials.

**Developmental Biology**

Autophagy Is Essential for Preimplantation Development of Mouse Embryos

S. Tsukamoto et al.

As fertilized mouse eggs develop into embryos and maternal proteins are eliminated, the degradative process of autophagy is required for proper growth.

**Evolution**

Phylogenetic Signal in the Eukaryotic Tree of Life

M. J. Sanderson

A survey of sequences in GenBank, which represent about 10 percent of described species, shows that the patchy distribution of data is insufficient to build a eukaryotic tree of life.

**Ecology**

Accelerated Human Population Growth at Protected Area Edges

G. Wittemyer et al.

Contrary to expectations, human populations living near protected areas in 45 countries in Africa and Latin America are increasing nearly twice as fast as other rural ones.
TIMP-dependent dephosphorylation.

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W. G. Stetler-Stevenson

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