

EDITORIAL

- 439 **How to Keep Science Moving**
Ralph J. Cicerone

NEWS OF THE WEEK

- 446 **Draft Stem Cell Guidelines Please Many, Disappoint Some**
- 447 **Did Humans Learn From Hobbits?**
- 448 **Genome Scans: Impatient for the Payoff**
- 449 **Newsmaker Interview: Brilliant Moves to Tackle Global Threats**
- 449 **From *Science's* Online Daily News Site**
- 450 ***Science* Retracts Discredited Paper; Bitter Patent Dispute Continues**
- 451 **From the *Science* Policy Blog**
- 452 **German Physical Society**
A New Take on Doping in Iron-Based Superconductors
Leverage: The Root of All Financial Turmoil
Water Droplets Grow Faster Than Expected
Snapshots From the Meeting

NEWS FOCUS

- 454 **A New Look at the Mayas' End**
- 457 **Newsmaker Interview: Jim Kim on Why He Took the Top Job at Dartmouth**
- 458 **A Quest for Compassion**
- 460 **Stars in Dusty Filing Cabinets**

LETTERS

- 463 **Retraction**
B. Alberts
Opportunity in the Wake of Natural "Disasters"
D. B. Lindenmayer et al.
The Hard Problem
E. J. Neafsey
The Way Forward in the World of Robotics
K. W. Goodman and N. G. Einspruch
Response
N. Sharkey

- Culling Whales: Ethically and Ecologically Wrong**
D. Balata and S. Mariani
Linguistics More Robust Than Genetics
J. Friedlaender et al.

- 465 **CORRECTIONS AND CLARIFICATIONS**
- 465 **TECHNICAL COMMENT ABSTRACTS**

BOOKS ET AL.

- 466 **For the Love of Animals**
K. Shevelov, reviewed by C. G. Gross
- 467 **The Social Amoebae**
J. T. Bonner, reviewed by R. L. Chisholm

POLICY FORUM

- 468 **Farm Animal Research in Crisis**
R. M. Roberts et al.

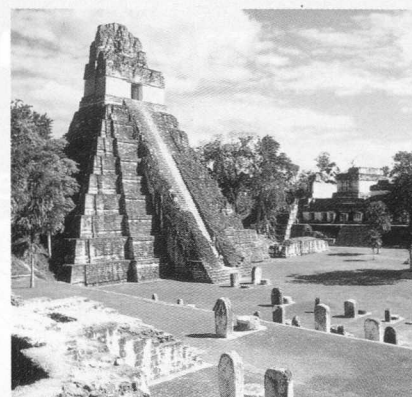
EDUCATION FORUM

- 470 **Summer Institute to Improve University Science Teaching**
C. Pfund et al.

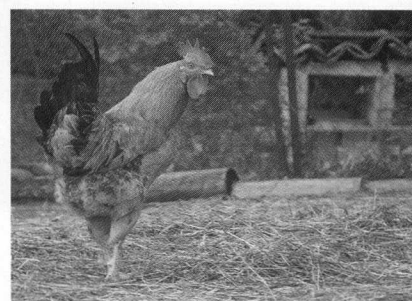
PERSPECTIVES

- 472 **Exploring Terra Incognita**
D. J. Mabberley
- 473 **Where Is My Quantum Computer?**
P. Hemmer and J. Wrachtrup
- 474 **The Thickness of Tectonic Plates**
B. Romanowicz
>> Reports pp. 495 and 499
- 476 **To Divide or Not to Divide**
J. M. Skotheim
>> Report p. 509
- 477 **Shifting Gear, Quickly**
E. G. Nisbet and J. Chappellaz
>> Report p. 506
- 478 **It's a Bull's Market**
H. A. Lewin
>> Reports pp. 522 and 528; Science Podcast

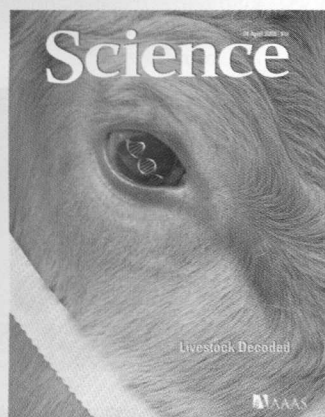
CONTENTS continued >>



page 454



page 468



COVER

Animal domestication has been key to the development of human societies. The sequence of the bovine genome reveals new insights into the history and biology of cattle. See pages 522 and 528, and related research on horse and sheep genetics and domestication on pages 485 and 532.

Photo illustration: Yael Kats (images: Jupiterimages)

>> See also Policy Forum p. 468 and Perspective p. 478

DEPARTMENTS

- 435 **This Week in *Science***
- 440 **Editors' Choice**
- 442 **Science Staff**
- 445 **Random Samples**
- 480 **AAAS News & Notes**
- 537 **New Products**
- 538 **Science Careers**

REVIEW

- 481 **Fire in the Earth System**
D. M. J. S. Bowman et al.

BREVIA

- 485 **Coat Color Variation at the Beginning of Horse Domestication**
A. Ludwig et al.

As part of the domestication process, humans appear to have selectively bred color variants of horses.

REPORTS

- 486 **The Disappearance of the Progenitors of Supernovae 1993J and 2003gd**

J. R. Maund and S. J. Smartt

The presumed progenitor stars of supernovae are indeed absent in later images from these sites.

- 488 **Greatly Increased Toughness of Infiltrated Spider Silk**

S.-M. Lee et al.

Infiltration of spider silk with impurities enhances the mechanical performance.

- 492 **Asymmetric Autocatalysis Triggered by Carbon Isotope ($^{13}\text{C}/^{12}\text{C}$) Chirality**

T. Kawasaki et al.

The origin of chirality in asymmetric autocatalysis is due to carbon isotope substitution.

- 495 **A Global View of the Lithosphere-Asthenosphere Boundary**

C. A. Rychert and P. M. Shearer

Seismic imaging reveals a global velocity anomaly at depths of 70 to 100 kilometers that may be from some melt or a strong fabric in Earth's mantle.

>> Perspective p. 474

- 499 **Seismic Evidence for Sharp Lithosphere-Asthenosphere Boundaries of Oceanic Plates**

H. Kawakatsu et al.

Detection of the presence of melt at variable depth beneath two oceanic plates reveals the vertical extent of old oceanic plates.

>> Perspective p. 474

- 502 **Subducting Slab Ultra-Slow Velocity Layer Coincident with Silent Earthquakes in Southern Mexico**

T.-R. A. Song et al.

Seismic mapping suggests that silent earthquakes may be related to an ultra-slow velocity layer on top of a subducting slab.

- 506 **$^{14}\text{CH}_4$ Measurements in Greenland Ice: Investigating Last Glacial Termination CH_4 Sources**

V. V. Petrenko et al.

Radiocarbon measurements show that wetlands were responsible for the rapid increase of atmospheric methane concentration during the last deglaciation.

>> Perspective p. 477

- 509 **Tuning the Activation Threshold of a Kinase Network by Nested Feedback Loops**

Q. A. Justman et al.

Interacting negative feedback loops control the sensitivity of amphibian oocytes to the hormone progesterone.

>> Perspective p. 476

- 513 **Catalytic Core of a Membrane-Associated Eukaryotic Polyphosphate Polymerase**

M. Hothorn et al.

A yeast membrane protein complex contains a domain that generates linear phosphate polymers from adenosine triphosphate.

- 516 **Homeostatic Sleep Pressure and Responses to Sustained Attention in the Suprachiasmatic Area**

C. Schmidt et al.

After prolonged wakefulness, people who are "night owls" do better at mental tests than those who are "early birds."

- 519 **Intuition and Deliberation: Two Systems for Strategizing in the Brain**

W.-J. Kuo et al.

Optimal gaming requires matching the type of neural circuitry (intuitive versus deliberative) to the type of game.

- 522 **The Genome Sequence of Taurine Cattle: A Window to Ruminant Biology and Evolution**

The Bovine Genome Sequencing and Analysis Consortium

- 528 **Genome-Wide Survey of SNP Variation Uncovers the Genetic Structure of Cattle Breeds**

The Bovine HapMap Consortium

A survey of genetic diversity of cattle suggests two domestication events in Asia and selection by husbandry.

>> Perspective p. 478; Science Podcast

- 532 **Revealing the History of Sheep Domestication Using Retrovirus Integrations**

B. Chessa et al.

Sheep retroviruses can be used to map the selective preferences of early farmers and trace livestock movements across Europe.

>> Science Podcast

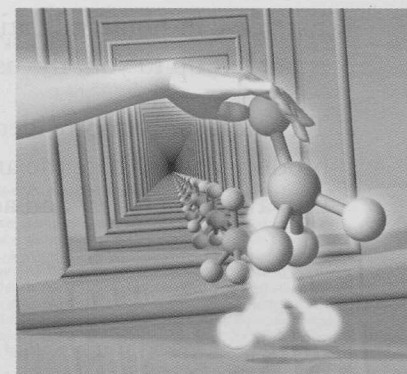
CONTENTS continued >>



page 472



page 488



page 492