EDITORIAL

146 It's the Teachers
John E. Burris

NEWS OF THE WEEK

150 A roundup of the week's top stories

NEWS & ANALYSIS

153 Tobacco Scientist's Election Tars Academy's Image

155 Pleading Poverty, NSF Delays Plans for Giant Telescope

156 A Quick (Partial) Fix for an Ailing Atmosphere >> Research Article p. 183

157 Top Indian Chemist Helps Make the Case for Science Windfall

NEWS FOCUS

158 The Peopling of the Aleutians >> Science Podcast

162 Materials Research Society's
Fall Meeting and Exhibit
New Lease for Leftover Light
Snapshots From the Meeting
Al Bids to Vie With Li in Battery Wars

LETTERS

165 | Single-Sex Education: Results One-Sided O. A. Kalkus

Single-Sex Education: Positive Effects H. Park et al.

Single-Sex Education: Unequal to Segregation B. Ford

Single-Sex Education: Parameters Too Narrow

T. G. Palaima

Response
D. F. Halpern et al.

167 CORRECTIONS AND CLARIFICATIONS

167 TECHNICAL COMMENT ABSTRACTS

BOOKS ET AL.

169 All the Fish in the Sea C. Finley, reviewed by C. Safina

170 Behind Closed Doors
L. Stark, reviewed by C. W. Lidz

EDUCATION FORUM

171 Better Research Needed on the Impact of Charter Schools J. R. Betts and R. C. Atkinson

PERSPECTIVES

173 SWEET! The Pathway Is Complete
D. M. Braun
>> Report p. 207

174 Biodiversity and Ecosystem Function
G. F. Midgley
>> Report p. 214

175 Gamma-Ray Binaries Revealed
I. F. Mirabel ->> Report p. 189

177 A Composite Matter of Alignment
P. Fratzl
P. Report p. 199

178 An Elusive Intermediate Gets Caught
G. Marston
>> Report p. 204

179 Sheddase Gets Guidance S. F. Lichtenthaler >> Reports pp. 225 and 229

181 Retrospective: Paul Mead Doty (1920–2011) M. Meselson

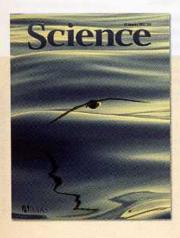
CONTENTS continued >>



page 158



page 169



COVER

A young wandering albatross (*Diomedea exulans*) glides smoothly over the Southern Ocean swell during a calm day. Albatrosses take advantage of ocean winds to travel more efficiently. Recent changes in Southern Ocean wind conditions have allowed wandering albatrosses to travel more rapidly and shift their foraging range southward, with positive influences on reproduction and potential contributions to albatross conservation. See page 211.

Photo: Paul Tixier

DEPARTMENTS

144 This Week in Science

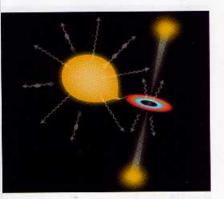
147 Editors' Choice

148 Science Staff

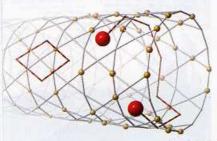
239 New Products

240 Science Careers

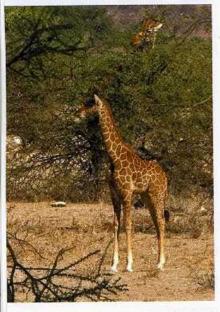




pages 175 & 189



page 193



pages 174 & 214

BREVIA

182 Bubblegrams Reveal the Inner Body
of Bacteriophage

W. Wu et al.
Radiation damage is used to locate proteins
embedded in dense DNA in a megavirus.

RESEARCH ARTICLE

183 Simultaneously Mitigating Near-Term
Climate Change and Improving Human
Health and Food Security
D. Shindell et al.
Reducing anthropogenic emissions of
methane and black carbon would have
multiple climate and health benefits.
>> News story p. 156; Science Podcast

REPORTS

189 Periodic Emission from the Gamma-Ray
Binary 1FGL J1018.6–5856
The Fermi LAT Collaboration
A new type of a gamma ray-emitting binary
object was not previously detected by x-ray
emission.
>> Perspective p. 175

193 Universal Signatures of Fractionalized
Quantum Critical Points
S. V. Isakov et al.
Numerical simulations directly demonstrate
a fractionalized quantum critical point in a
triangular kagome lattice of bosons.

196 Bistability in Atomic-Scale
Antiferromagnets
S. Loth et al.
Atomically engineered antiferromagnets
consisting of a few atoms exhibit stable
magnetic states at low temperature.

199 Composites Reinforced in Three
Dimensions by Using Low Magnetic
Fields
R. M. Erb et al.
Iron oxide—coated rods and platelets can
reinforce a polymer composite through
alignment with magnetic fields.
>> Perspective p. 177

Direct Kinetic Measurements of Criegee
Intermediate (CH₂OO) Formed by Reaction
of CH₂I with O₂
O. Welz et al.
An elusive intermediate implicated in
atmospheric oxidation chemistry has been
identified in the laboratory.

>> Perspective p. 178

207 Sucrose Efflux Mediated by SWEEJ Proteins as a Key Step for Phloem Transport
L.-Q. Chen et al.
Transporters hand off sucrose from production cell to transport cell.
>> Perspective p. 173

11 Changes in Wind Pattern Alter Albatross Distribution and Life-History Traits H. Weimerskirch et al. Changing wind patterns in the Southern Ocean have improved foraging conditions for wandering albatrosses.

214 Plant Species Richness and Ecosystem
Multifunctionality in Global Drylands
F. T. Maestre et al.
Plant species richness is positively related
to ecosystem multifunctionality in drylands
at a global scale.
>> Perspective p. 174

218 A DOC2 Protein Identified by Mutational Profiling Is Essential for Apicomplexan Parasite Exocytosis

A. Farrell et al.

An evolutionarily conserved Ca²⁺-binding protein promotes parasite invasion.

221 Cytoplasmic Dynein Moves Through
Uncoordinated Stepping of the
AAA+ Ring Domains
M. A. DeWitt et al.
The molecular motor dynein moves each
of its two heads independently along the
microtubule.

225 Tumor Necrosis Factor Signaling Requires iRhom2 to Promote Trafficking and Activation of TACE

C. Adrain et al.

iRhom2 Regulation of TACE Controls
TNF-Mediated Protection Against
Listeria and Responses to LPS
D. R. McIlwain et al.
A pseudoprotease is required for the proteolytic cleavage of the proinflammatory cytokine tumor necrosis factor.
>> Perspective p. 179

233 Widespread Genetic Switches and Toxicity
Resistance Proteins for Fluoride
J. L. Baker et al.
A fluoride-sensing riboswitch regulates the
expression of putative fluoride channels in
prokaryotes.

Erasure of a Spinal Memory Trace

235

of Pain by a Brief, High-Dose Opioid
Administration
R. Drdla-Schutting et al.
Opioid administration turns down a pain
amplifier by reversing synaptic long-term
potentiation in spinal nociceptive pathways.