Lake El’gygytgyn, measuring 12 kilometers in diameter and 170 meters in depth, is located in a meteorite impact crater 100 kilometers to the north of the Arctic Circle in northeastern Russia. An international drilling campaign recovered a sediment record from the bottom of the lake, which sheds new light on the climate history of the Arctic over the past 2.8 million years. See page 315.

Photo: Petr Tikhomirov
REVIEW
310 The Exploration of Hot Nuclear Matter
B. V. Jacak and B. Müller

RESEARCH ARTICLE
315 2.8 Million Years of Arctic Climate Change from Lake El’gygytgyn, NE Russia
M. Melles et al.
A sediment core from a Russian lake provides a high-latitude climate record where prior terrestrial records have been sparse.

REPORTS
320 Imaging the Impact of Single Oxygen Atoms on Superconducting $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$
I. Zeljkovic et al.
Extending the energy range in scanning tunneling spectroscopy of a cuprate reveals additional oxygen defects.

324 Spin-Transistor Action via Tunable Landau-Zener Transitions
C. Betthausen et al.
An alternative design for a spin-based transistor proves tolerant to disorder.

327 A Paramagnetic Bonding Mechanism for Diatomics in Strong Magnetic Fields
K. K. Lange et al.
At the enormous field strengths prevailing near stars, theory predicts a magnetically induced class of chemical bonding.

331 Sulfate Burial Constraints on the Phanerozoic Sulfur Cycle
I. Halevy et al.
Sulfur isotopes from the stratigraphic record constrain evolving mass fluxes into sulfate-bearing evaporite sediments.

334 Rapid Variability of Seawater Chemistry Over the Past 130 Million Years
U. G. Wortmann and A. Paytan
Modeling the evolution of the marine sulfur cycle suggests that short intervals of rapid change punctuated long periods of stasis.

337 Identifying Influential and Susceptible Members of Social Networks
S. Aral and D. Walker
A randomized experiment based on product adoption among Facebook friends identified trend setters and followers.

341 Sex-Specific Adaptation Drives Early Sex Chromosome Evolution in Drosophila
Q. Zhou and D. Bachtrog
Evolutionarily new X and Y chromosomes evidence how selection for sexual function shapes sex chromosomes.

>> Science Podcast

345 Hypoxia Triggers Meiotic Fate Acquisition in Maize
T. Kelliher and V. Walbot
Maize anthers use cellular redox status rather than a specific germ cell lineage to signal production of new germ cells.

>> Perspective p. 301

349 Diversity of Interaction Types and Ecological Community Stability
A. Mougi and M. Kondoh
A theoretical model incorporating multiple interactions shows how ecological complexity leads to ecosystem stability.

>> Perspective p. 306

351 LAAT-1 Is the Lysosomal Lysine/Arginine Transporter That Maintains Amino Acid Homeostasis
B. Liu et al.
A lysosomal membrane protein identified in nematodes can explain how cysteamine alleviates a lysosomal storage disease.

355 Deformations Within Moving Kinetochores Reveal Different Sites of Active and Passive Force Generation
S. Dumont et al.
Distinct active, force-generating and passive, frictional interactions with microtubules allow processive chromosome movement.

358 Regional Astrocyte Allocation Regulates CNS Synaptogenesis and Repair
H.-H. Tsai et al.
In the mouse brain, astrocytes are not as interchangeable as previously thought.

362 High-Resolution Protein Structure Determination by Serial Femtosecond Crystallography
S. Boutet et al.
A powerful x-ray laser source can probe proteins in detail using much smaller crystals than previously required.

CONTENTS continued >>