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THIS ISSUE

While a majority of this edition of *Coal Age* is dedicated to Longwall USA, several articles address safety through automation both above and below ground. On the cover, a drum on a ranging-arm shearer machine cuts coal on a longwall face.

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DRONING ON FOR SCIENCE

28 UNMANNED AERIAL VEHICLES TAKE OFF IN GEOSCIENCES RESEARCH

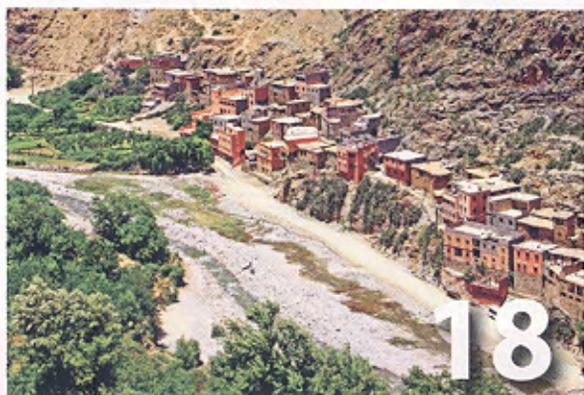
Despite some controversy, scientists whose work involves imaging, monitoring or otherwise investigating the outdoor world have gradually been turning to unmanned aircraft in recent years, touting drones' versatility, affordability and safety compared to manned flights. The possibilities for drones in the natural sciences are almost boundless.

Timothy Oleson



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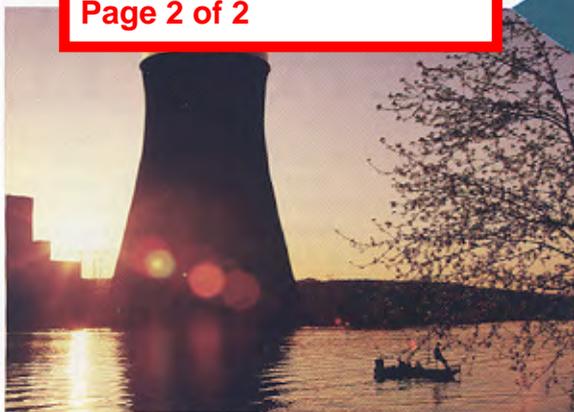
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Energy provides a constraining factor on the world's management of water issues; likewise, water is a constraining factor on the world's energy supply. This interdependence is the energy-water nexus and the way we manage the delicate relationship between energy and water will have major implications for the future of both critical resources.

Kelly T. Sanders and Michael E. Webber



TRAVELS IN GEOLOGY

THE CANARY ISLANDS: TOURING THE "HAWAII OF EUROPE" 46

With diverse volcanic landscapes, copious sunshine, attractive beaches, a wealth of water sports and distinctive traditional foods, the Spanish Canary Islands, off the coast of Morocco, are a popular destination for Europeans, but relatively unknown to Americans.

Terri Cook



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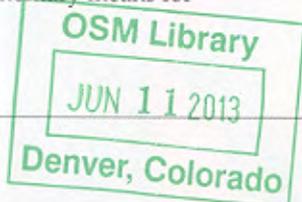
At their cores, science and faith are both about pursuing understanding, but neither can provide provable and unchanging knowledge about the world. If we accept these limitations, then science and religion become complementary means for deeper human exploration.

Jacob Haqq-Misra

72 GEOLOGIC COLUMN REMEMBRANCE OF THINGS PAST

A geology department reunion provided a nostalgic look at how geology has evolved over the author's 37-year career as a professor. Geology may attract a somewhat different, more technologically sophisticated constituency today than it used to, but most geologists remain captivated by our planet.

Fred Schwab



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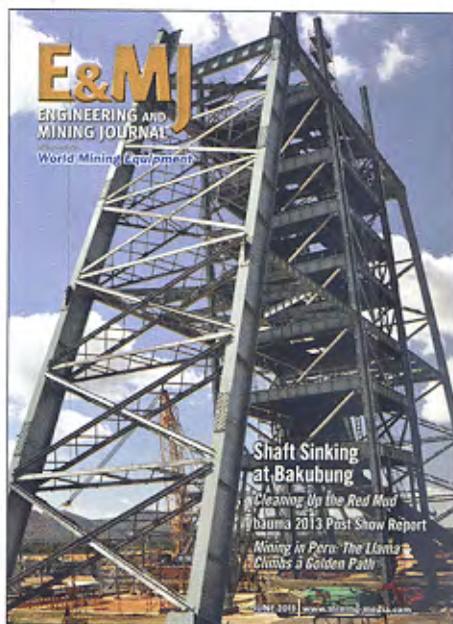
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The Bakubung platinum mine plans to raise 230,000 metric tons per month (mt/m) of ore to the surface from a 1,000-m deep main shaft. The superstructure (on the cover) stands 86-m high and holds 1,860-mt of headgear.



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The Cuyahoga County Executive
and Council Offices

The soon-to-be-replaced Cuyahoga County headquarters in Cleveland

Cover: A parking garage constructed inside the former Michigan Theater, built on the site where Henry Ford assembled his first car

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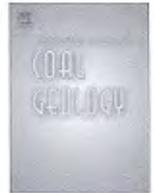
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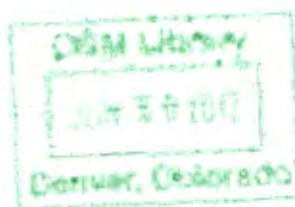
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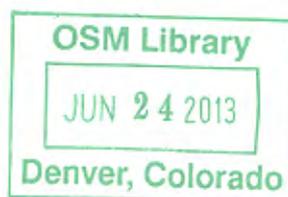
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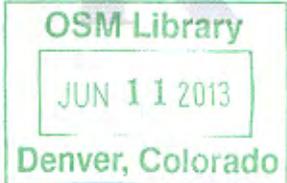


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Cover photo: Shannon River at Killaloe, Ireland. Photo by Ken Lanfear.

Land and Water

THE MAGAZINE OF NATURAL RESOURCE MANAGEMENT AND RESTORATION

Volume 57, Number 3

May/June 2013

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With over 260 sites through multiple climate zones, over rough, remote terrain, and only accessible by air, crews needed to develop a way to carry hydro-mulchers by helicopter to provide necessary erosion control.
by Jim Wohl

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ABOUT THE COVER

The Whiskeytown Lake curtain near Redding, California, serves as a barrier to keep warm water from the Carr Powerhouse from mixing with cold water that is necessary for salmon reproduction. The 60-mil-reinforced polypropylene geomembrane curtain was designed to conform to the reservoir bottom contours while a gap at the curtain's bottom allows colder water to pass under the curtain and into the power plant intakes. See story page 8.



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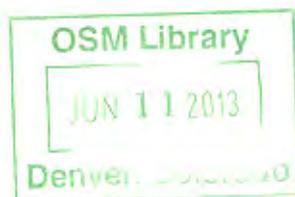
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An Interdisciplinary Approach to Soils Research

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