



## तकनीकी पत्रिका विषय-सूची ***CURRENT CONTENT***

*(Technical Journals)*

*(A Monthly Current Awareness Service from technical journals)*

***Vol.2, No.1, January 2018***

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# I N D E X

<u>S.No</u>	<u>Title</u>	<u>Page No</u>
1)	Down to Earth	4-5
2)	Economic Geology	06
3)	Engineering & Mining Journal	07
4)	JPC Bulletin	08
5)	Journal of the Geological Society of India	09-12
6)	Journal of Mines Metals & Fuels	13-16
7)	Mineral Economics	17
8)	Minerals & Metallurgical Processing	18
9)	Mining Engineering	19-20
10)	Mining Engineers Journal	21
11)	Mining Magazine	22-23
12)	Metal Bulletin Monthly	24-25
13)	Resource Policy	26
14)	The Indian Mining & Engineering Journal	27

# contents

Down to Earth Vol.26 No.15  
December 2017



11

## Diminishing protectors

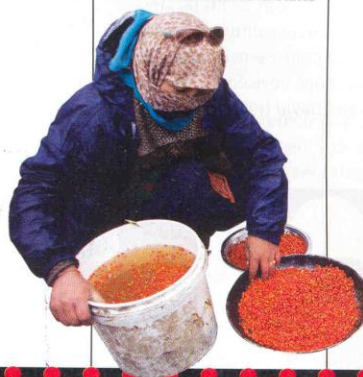
The decreasing number of palm trees near paddy fields in Odisha could be leading to deaths of agricultural workers from lightning



THIS YEAR

## Rewind 2017

As 2017 comes to an end, *Down To Earth* reporters share their experiences on covering some of the most challenging stories of the year



26

## Waste of wonder shrub?

Seabuckthorn, a shrub whose berries have transformed the lives of people in India's cold deserts, is failing to find a market in other states



## Is there hope for ASHA workers?

The country's frontline health workers are demanding greater rights and acceptance into the formal health sector

16

## Rank injustice

Women in India devote most of their time in doing unpaid work and as a result are excluded from the formal economy



## Double whammy

After facing irregular rainfall during the monsoon, farmers in nine states are reeling from pest attacks

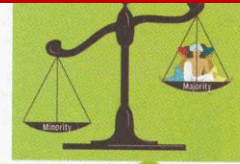
28



22

30

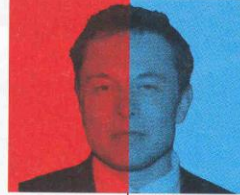
# Down to Earth Vol.26 No.15 December 2017



58

## Not electorally valuable

Yogendra Yadav explains why Indian farmers have not been electorally powerful



## Musk's U-turn on patents

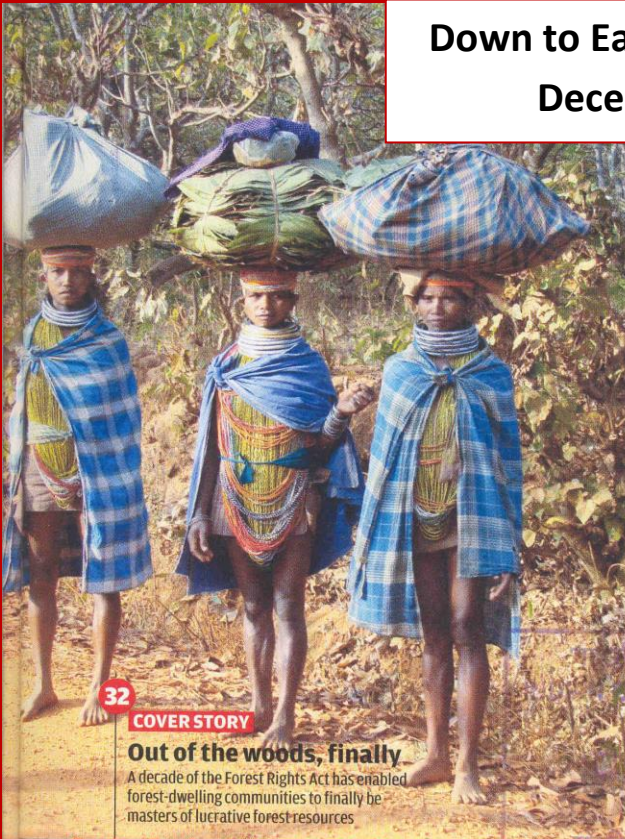
Elon Musk's Tesla patents a battery-swapping system in a volte-face from its 2014 position on open source sharing

54



## INTERVIEW Near death and back

Manipuri bodybuilder, Pradipkumar Singh, talks about how he defeated HIV to build a new life



32

## COVER STORY

## Out of the woods, finally

A decade of the Forest Rights Act has enabled forest-dwelling communities to finally be masters of lucrative forest resources

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## SCIENCE Spinning shock

A new research paper says the earth's slowing rotation could lead to more earthquakes



46

## Almost there, but

The proposed rules on groundwater extraction are steps in the right direction, but have many shortcomings



16-31 DECEMBER 2017



## FOOD

## Crimson blossom

The hibiscus flower is therapeutic and can be used to make healthy beverages in addition to being used for worship

48

52



## WILDLIFE

## Dethroned kings

Kenya's iconic lions fight a losing battle over habitat loss with the country's pastoral tribespeople

## REVIEW

## Climate change on celluloid

Nila Madhab Panda's new movie, "Kadvi Hawa" tells us why climate change is a reality that is here to stay

56



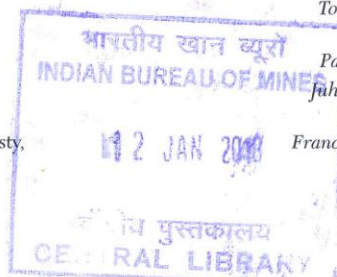
www.downtoearth.org.in 9

# Economic Geology Vol.122 No.6 September-October 2017

## CONTENTS

### Papers

- The Importance of Structural Mapping in Ore Deposits—A New Perspective on the Howard's Pass Zn-Pb District, Northwest Territories, Canada *Edith Martel* 1285
- Volcanic and Structural Reconstruction of the Deformed and Metamorphosed Ming Volcanogenic Massive Sulfide Deposit, Canada: Implications for Ore Zone Geometry and Metal Distribution *Jean-Luc Pilote, Stephen J. Piercey, and Patrick Mercier-Langevin* 1305
- Zonation of Merensky-Style Platinum-Group Element Mineralization in Turfspruit Thick Reef Facies (Northern Limb of the Bushveld Complex) *Marina A. Yudovskaya, Judith A. Kinnaird, Daniel F. Grobler, Gelu Costin, Vera D. Abramova, Tim Dunnett, and Sarah-Jane Barnes* 1333
- The Waterberg Platinum Group Element Deposit: Atypical Mineralization in Mafic-Ultramafic Rocks of the Bushveld Complex, South Africa *Judith A. Kinnaird, Marina Yudovskaya, Matthew McCreesh, Florian Huthmann, and Thys J. Botha* 1367
- Age of the Late Cretaceous Ultramafic-Hosted Giant Mascot Ni-Cu-PGE Deposit, Southern Canadian Cordillera: Integrating CA-ID-TIMS and LA-ICP-MS U-Pb Geochronology and Trace Element Geochemistry of Zircon *Matthew J. Manor, James S. Scoates, Corey J. Wall, Graham T. Nixon, Richard M. Friedman, Marghalery Amini, and Doreen E. Ames* 1395
- Cyclic Magmatic-Hydrothermal Evolution in Porphyry Systems: High-Precision U-Pb and Re-Os Geochronology Constraints on the Tibetan Qulong Porphyry Cu-Mo Deposit *Yang Li, David Selby, Daniel Condon, and Simon Tapster* 1419
- Composition and Evolution of Fluids Forming the Baiyinnuo'er Zn-Pb Skarn Deposit, Northeastern China: Insights from Laser Ablation ICP-MS Study of Fluid Inclusions *Qihai Shu, Zhaoshan Chang, Johannes Hammerli, Yong Lai, and Jan-Marten Huizenga* 1441
- Ore Mineralogy and Fluid Inclusion Constraints on the Temporal and Spatial Evolution of a High-Sulfidation Epithermal Cu-Au-Ag Deposit in the Reesk Ore Complex, Hungary *Ágnes Takács, Ferenc Molnár, Judit Turi, Aberra Mogessie, and John C. Menzies* 1461
- Hydrothermal Rare Earth Element (Xenotime) Mineralization at Maw Zone, Athabasca Basin, Canada, and Its Relationship to Unconformity-Related Uranium Deposits *Morteza Rabiei, Guoxiang Chi, Charles Normand, William J. Davis, Mostafa Fayek, and Nigel J.F. Blamey* 1483
- Tectonic Framework for Late Cretaceous to Eocene Quartz-Gold Vein Mineralization from the Caborea Orogenic Gold Belt in Northwestern Mexico *Aldo Izaguirre, Alexander Iriondo, Michael J. Kunk, Ryan J. McAleer, William W. Atkinson, Jr., and Luis M. Martínez-Torres* 1509
- Scientific Communications**
- Early, Deep Magnetite-Fluorapatite Mineralization at the Olympic Dam Cu-U-Au-Ag Deposit, South Australia *Olga B. Apukhtina, Vadim S. Kamenetsky, Kathy Ehrig, Maya B. Kamenetsky, Roland Maas, Jay Thompson, Jocelyn McPhie, Cristiana L. Ciobanu, and Nigel J. Cook* 1531
- Book Reviews**
- Nickel Sulfide Ores and Impact Melts: Origin of the Sudbury Igneous Complex (P.C. Lightfoot) *Tony Green* 1543
- Applied Mining Geology (M. Abzalov) *Paul Jensen* 1543
- Mineral Deposits of Finland (W.D. Maier, R. Lahtinen, and H. O'Brien, eds.) *Juhani Ojala* 1544
- Ore Deposits in an Evolving Earth (G.R.T. Jenkin, P.A.J. Lusty, I. McDonald, M.P. Smith, A.J. Boyce, and J.J. Wilkinson, eds.) *Franco Pirajno* 1545
- Interesting Papers in Other Journals** 1549



## FEATURES

### Nordic Miners Mark Time

✓ From the boom days of just a few years ago, the Nordic mining scene has essentially retrenched to its established structure as more speculative ventures have found the going too tough. That has not stopped innovation, however, particularly in the region's metallurgical sector..... 32

### Nordic Suppliers Make Smarter Machines

New ideas empower miners to develop custom solutions to site-specific needs..... 42

### Slope Stability Solutions Give Actionable Data Fast

New and established products compete at accuracy, speed and usability..... 48

### Thickeners Improve Production at Cerro Pasco

A Peruvian plant experienced a dramatic increase in capacity through the use of thickeners..... 54

### Meeting the Narrow-vein Challenge

Design improvements provide safer, more productive machines..... 56

### Moving More For Less

The industry is asking for conveyors with higher capacities, lower energy costs and safer, more reliable components, along with less environmental impact. Here's how system suppliers are meeting those requests..... 60

### Government Bankrolls Initial Efforts to Extract Rare Earths From Coal Waste

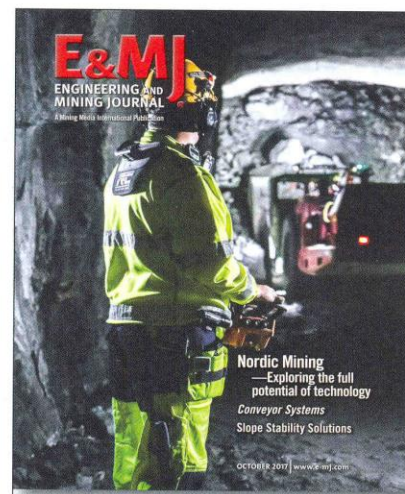
The Department of Energy is funding coal research that could help yield metals of critical military and strategic importance by 2020, but to do so must meet strict regulations and face entrenched Chinese competition..... 65

## LEADING DEVELOPMENTS

Tanami Reaches Commercial Production .....	4
Buenaventura Achieves Commercial Production at Tambomayo .....	4
OZ Minerals Starts Building Major Mine at Carrapateena .....	4
Sibanye Gold Changes Name to Sibanye-Stillwater .....	5
Never Rest on Your Ores .....	5
Alamos Acquires Richmond; Ontario Properties Sold to Monarques .....	6
Kinross to Proceed With Tasiast, Round Mountain Expansion Projects .....	30

## AROUND THE WORLD

U.S. & Canada: Coeur Acquires Silvertip Mine in British Columbia .....	8
Latin America: Leagold Commences Development of Bermejal Underground.....	14
Australia/Oceania: Cadia East PCI Production Begins Again.....	18
Africa: Endeavour Starts Building It's CIL Project in Cote d'Ivoire .....	20
Asia: Polyus Starts Commissioning Natalka Mine in Russia's Far East.....	24



This month, E&MJ reviews activities in the Nordic region with two reports on mining and technology. On the cover, a miner operates an LHD using remote controls. (Photo: Boliden)

## DEPARTMENTS

Calendar .....	30
Classified Advertisements.....	78
Commentary.....	26
Equipment Gallery.....	74
From the Editor.....	2
Markets .....	80
Operating Strategies.....	68
People .....	12
Processing Solutions.....	72
Suppliers Report.....	70
This Month in Coal .....	28

## CONTENTS

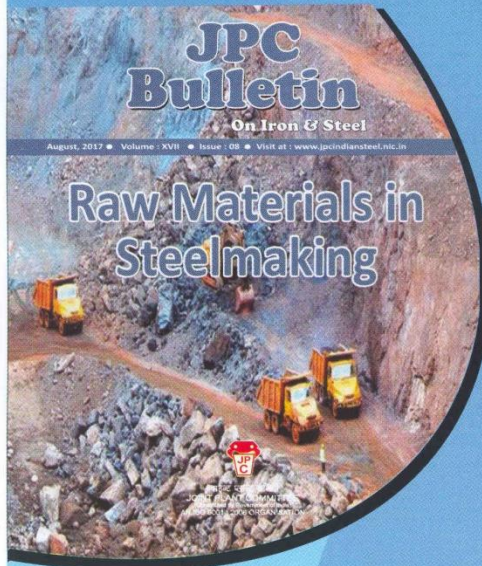


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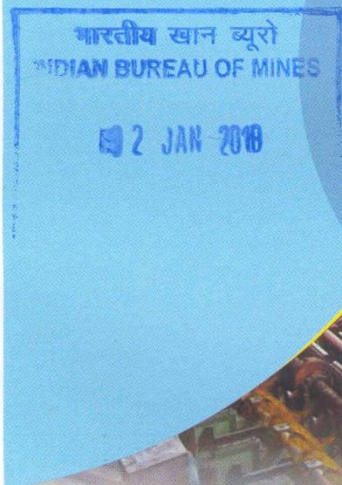
Vol.17 No.09  
September 2017

CONTENTS



## CONTENTS

Trend Report	1
Feature	11
Upcoming Project	42
News National	47
News International	51
Upcoming Events	55
Summary	56
Statistics	57



# JOURNAL of THE GEOLOGICAL SOCIETY OF INDIA

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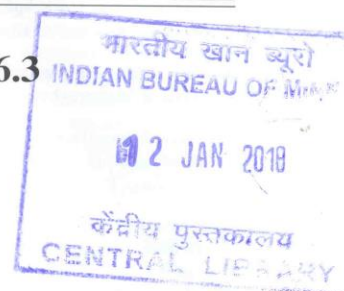
Vol. 90

DECEMBER 2017

No. 6

## 50 Years of 10 December 1967 M 6.3 Koyna Earthquake

*Guest Editor:*  
Harsh K. Gupta



50 Years of 10 December 1967 M 6.3 Earthquake Koyna Earthquake: Preface. HARSH K. GUPTA .....	641
Koyna, India, an Ideal site for Near Field Earthquake Observations. HARSH K. GUPTA .....	645
Deccan Basalts in and around Koyna – Warna Region, Maharashtra: Some Reflections. K.V. SUBBARAO and VINCENT COURTILOTT .....	653
Deep Seismic Sounding Experiments in the Koyna RTS Region: An Overview of the Results. DIPANKAR SARKAR and KALACHAND SAIN .....	663
Lineament Fabric from Airborne LiDAR and its Influence on Triggered Earthquakes in the Koyna-Warna Region, Western India. KUSUMITA ARORA, R.K. CHADHA, Y. SRINU, ADRIEN SELLES, SRINAGESH DAVULURI, VLADIMIR SMIRNOV, ALEXANDER PONOMAREV and V.O. MIKHAILOV .....	670
In-situ Pore Pressure Variations in Koyna-Warna – A Promising Key to Understand Triggered Earthquakes. H.-J. KUEMPEL, R. K. CHADHA, D. V. RAMANA and M. RAVI .....	678
Earthquake Focal Mechanism Studies in Koyna-Warna Region in the Last Five Decades – Current Understanding on Tectonics and Seismogenesis. N. PURNACHANDRA RAO and D. SHASHIDHAR .....	684
Three Dimensional Velocity Structure of the Koyna-Warna Region using Local Earthquake Tomography. SANJAY KUMAR and MADAN M. DIXIT .....	692
Migration of Seismicity and Pore Pressure Diffusion for Five Decades Long Koyna-Warna Sequence and Precursory Nucleation Process for Earthquake Forecasting. B.K. RASTOGI .....	698
Co-seismic Gravity Changes in the Koyna-Warna Region: Implications of Mass Redistribution. K.N.D. PRASAD, N. SRINIVAS, A.E. MESHAM, A.P. SINGH and V.M. TIWARI .....	704
Ground Electrical and Electromagnetic Studies in Koyna-Warna Region, India. PRASANTA K. PATRO, UJJAL K. BORAH, G. ASHOK BABU, B. VEERAIAH and S.V.S. SARMA .....	711
Long-term Hydrochemical Earthquake Precursor Studies at the Koyna-Warna Reservoir Site in Western India. D.V. REDDY, DEVENDER KUMAR and N. PURNACHANDRA RAO .....	720
Influence of Permeability in Modeling of Reservoir Triggered Seismicity in Koyna Region, Western India. PINKI HAZARIKA, AMRITA YADAV and SUKANTA ROY .....	728

# CONTENTS

<b>Sustained Seismicity near Koyna-Warna Reservoir: A Mish-mash of Physical Processes.</b> KALPNA GAHALAUT and VINEET K. GAHALAUT .....	733
<b>Tectonic Geomorphology in Parts of Koyna Region, Maharashtra.</b> PRADEEP B. JADHAV and KSHIRSAGAR LALITKUMAR, K. ....	738
<b>Volcanology and Lava Flow Morpho-types from the Koyna-Warna Region, Western Deccan Traps, India.</b> RAYMOND A. DURAISWAMI, PURVA GADPALLU, BABAJI MASKARE, AISHWARYA PURWANT, POOJA MEENA, P. KRISHNAMURTHY and B. MAHABALESHWAR .....	742
<b>Faulting in Deccan Traps in the Vicinity of Koyna-Warna Seismic Zone.</b> NEHA BHAVE, M. IMRAN SIDDIQUE, JAYESH DESAI, SHILPA PATIL PILLAI, GAURI DOLE, HIMANSHU KULKARNI, and VIVEK S. KALE .....	748
<b>Evidence for Neoarchean Basement for the Deccan Volcanic Flows around Koyna-Warna Region, Western India: Zircon U-Pb Age and Hf-isotopic Results.</b> Y.J. BHASKAR RAO, B. SREENIVAS, T. VIJAYA KUMAR, NAMRATA KHADKE, A. KESAVA KRISHNA and E.V.S.S.K. BABU .....	752
<b>The Subsurface Megascopic Characteristics of Basalt and Basement Rocks from Koyna-Warna Area of Maharashtra, India.</b> D.K. SINHA, ANJAN SOM and SUKANTA ROY .....	761
<b>Magnetic Mineralogical Variability along Deccan Trap Basalt Borehole (KBH07), Koyna Deep Continental Drilling Program, Western Maharashtra, India.</b> S.J. SANGODE, M. VENKATESHWARULU, RASIKA MAHAJAN and VINAY RANDIVE .....	769
<b>Granite-gneiss Basement below Deccan Traps in the Koyna Region, Western India: Outcome from Scientific Drilling.</b> SURAJIT MISRA, VIKRANT BARTAKKE, GAURAV ATHAVALE, VYASULU V. AKKIRAJU, DEEPIYOTI GOSWAMI, and SUKANTA ROY .....	776
<b>Rock Strength and Elastic Properties of Basement Granitoids from Koyna Region, Deccan Volcanic Province, India.</b> DEEPIYOTI GOSWAMI, VYASULU V. AKKIRAJU, SANTOSH K. SINGH, SHALIVAHAN and SUKANTA ROY .....	783
<b>A 1251m-thick Deccan Flood Basalt Pile Recovered by Scientific Drilling in the Koyna Region, Western India.</b> SATRUGHNA MISHRA, SURAJIT MISRA, DIGANT VYAS, DINESH NIKALJE, ASHISH WARHADE and SUKANTA ROY .....	788
<b>High Resolution Core Scan Facility at BGRL-MoES, Karad, India.</b> SANJAY TIWARI, SATRUGHNA MISHRA, SRIHARIPRASAD, G., DIGANT VYAS, ASHISH WARHADE, DINESH NIKALJE, VIKRANT BARTAKKE, B. MAHESH, PALLAVI TEMBHURNIKAR and SUKANTA ROY .....	795
<b>Recent Seismicity Patterns and Microearthquake Activity on an Active Intraplate Fault System at Koyna-Warna, Western India.</b> D. SHASHIDHAR, K. MALLIKA, C.R. MAHATO, B.S. MAITY and H.V.S. SATYANARAYANA .....	798
<b>Reservoir Loading Parameters at Koyna and their Correspondence with Reservoir Triggered Seismicity.</b> M. UMA ANURADHA and K. MANI K. SURESH .....	802
<b>AUTHOR INDEX</b> .....	805
<b>SUBJECT INDEX</b> .....	809

Cover

*Koyna-Warna region near west coast of India. Location of the Koyna main earthquake of December 10, 1967; earthquakes of  $M \sim 5$  during August 1967 through June 2017; smaller earthquakes from August 2005 through June 2017; surface and borehole seismic stations; green curve indicates the WGE (Western Ghats Escarpment). Left top inset: Koyna location in India; 2nd inset: Distribution of  $M \geq 3.7$  earthquakes for 1967- 2015 (USGS) in the vicinity of Koyna and an outer circle of 100 km radius indicating that there is almost no seismic activity outside the Koyna region.*

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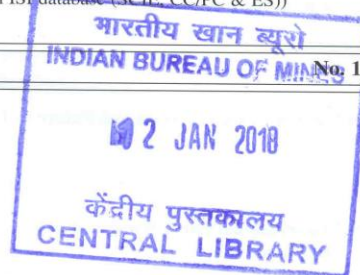
Vol. 91

JANUARY 2018

## CONTENTS

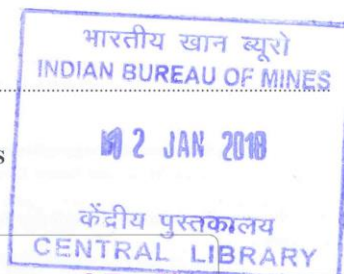
### RESEARCH ARTICLES

<b>Cobaltian Pyrite in a Lamprophyre from the Sidhi Gneissic Complex, Mahakoshal Belt, Central India.</b> ROHIT KUMAR GIRI, DINESH PANDIT and N.V. CHALAPATHI RAO .....	5
<b>Fault Rupture Directivity of Large Earthquakes in Himalaya.</b> H.N. SRIVASTAVA, MITHILA VERMA and B.K. BANSAL .....	9
<b>Seismic Moment Release Data in Earthquake Catalogue: Application of Hurst Statistics in Delineating Temporal Clustering and Seismic Vulnerability.</b> BASAB MUKHOPADHYAY and DIPTANSU SENGUPTA .....	15
<b>Hydrothermal Fracture Controlled Vein Type Uranium Mineralization in the Paleoproterozoic Bijawar Group of Rocks, Sonrai Basin, Lalitpur District, U.P. – Fresh Findings from Subsurface Borehole Data</b> T.P.S. RAWAT, MADHUPARNA ROY and G.B. JOSHI .....	25
<b>Structural Data Extraction from Stereographic or Equal Area Projections using Image Processing.</b> VAIBHAV SINGHAL, SURAJIT MISRA and SAIBAL GUPTA .....	32
<b>Plug Shaped Burrows <i>Conichnus</i> - <i>Conostichus</i> from the Late Cretaceous of Bagh Group, Gujarat, Western India.</b> SATISH J. PATEL, APURVA D. SHITOLE and JAQUILIN K. JOSEPH .....	41
<b>2D and 3D Rockfall Hazard Analysis and Protection Measures for Saptashrungi Gad Temple, Vani, Nashik, Maharashtra – A Case Study</b> M.K. ANSARI, M. AHMAD, RAJESH SINGH and T.N. SINGH .....	47
<b>Structure and Stratigraphy of Rumbli and Panjar Areas of Kashmir and Pakistan with the Aid of GIS,</b> OMER IQBAL, MIRZA SHAHID BAIG, SHAHAB PERVEZ and MUHAMMAD IQBAL SIDDIQI .....	57
<b>Geochemistry and Petrogenesis of 2.8 Ga Old Rare Metal Bearing Fertile Granite at Allapatna, Mandya District, Karnataka.</b> CHANCHAL SARBAJNA, U.K. PANDEY and P. KRISHNAMURTHY .....	67
<b>Application of Multivariate Statistical Techniques for the Characterization of Groundwater Quality of Bachel and Kirandul Area, Dantewada District, Chattisgarh.</b> BHAGI BEHERA and Mira Das .....	76
<b>Paleoseismological Investigations along Joggers Park Fault, Port Blair, South Andaman: Implications towards Delineation of Blind Thrusting and Related Crustal Deformation through Ground Penetrating Radar (GPR) and Electrical Resistivity Techniques (ERT and VES).</b> GULAM RASOOL BHAT, S. BALAJI, BIKRAM S. BALI, VAZEEM IQBAL, BALAKRISHNA and HAMID HUSSAIN .....	81



## CONTENTS

<b>Assessment of Groundwater Potential of Gandhinagar Region, Gujarat.</b> SWAYAM SIDDHA and PAULAMI SAHU .....	91
<b>Lithium Enrichment and Isotopic Variation in Minerals from Peridotite Xenoliths from Northwestern Ethiopian Plateau.</b> MELESSE ALEMAYEHU, HONG-FU ZHANG, PATRICK ASAMOAH SAKYI and MUHAMMED HAJI .....	99
<b>Bearing of Structural Anisotropy on Deformation and Mechanical Response of Rocks: An Experimental Example of Rocksalt Deformation Under Variable Compression Rates.</b> R.K. DUBEY .....	109
<b>BOOK REVIEW</b>	
<b>Paleoecology: Past, Present and Future</b> by David J. Bottjer. <i>Reviewed by</i> OMKAR VERMA .....	115
<b>NEWS AND NOTES</b>	
<b>11<sup>th</sup> International Earth Science Olympiad (IESO), Coté d'Azur, Nice, France.</b> HEMA ACHYUTHAN and K.S. GODHAVARI .....	117
<b>Report on ICDP Post-Operations International Workshop on Scientific Deep Drilling in Koyna, India.</b> NAGARAJU PODUGU, AMRITA YADAV, KOTHAMASU MALLIKA, DEEPIYOTI GOSWAMI and M. UMA ANURADHA .....	120
<b>Prof. R. Vaidyanadhan Award Lecture on Geomorphology and Economic Mineral Deposits.</b> K.N. PRUDHVI RAJU	125
<b>Prof. C. Mahadevan Endowment Lecture on National Mineral Exploration Policy-2016: Initiatives of Geological Survey of India.</b> M. RAJU .....	127
<b>OBITUARY</b>	
<b>T. Ramamohana Rao (1933-2017).</b> P.S.N. MURTHY and B.L. NARASAYYA .....	130
<b>ANNOUNCEMENTS</b>	



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### *Cover*

*Chistolite-Andalusite variety encompassing alkali metasomatism within the Champaner Group, Gujarat, Western India*

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Vol.65, No.8, AUGUST 2017

## CONTENTS

- Research on highly-weathered swelling granite roadway support technology  
*by Fan Shen, Jun Du and Guojian Feng* 423
- A step toward achieving a zero accident potential in Indian mining industry  
*by Aveek Mangal, Falguni Sarkar and P. S. Paul* 432
- Instability analysis of anchorage supporting in soft rock roadways based on strain softening  
*by Lei Wang Yao Wei and Yongyi Ren* 438
- Experimental study on reservoir acidification and application effect of interstratified illite/smectite clay  
*by Qu Xiyu, Dong Xiaofang, Liu Zhen, Zhang Shoupeng, Wang Weiqing and Fang Zhengwei* 444
- Effect of uniaxial compressive strength of rock on penetration rate and bit wear rate of drill  
*by Sandeep Kumar Sahoo and B. S. Choudhary* 454
- On the deformability and mobility of clay-cement grout  
*by Jingtai Ran, Kepeng Hou, Niyan Dai and Kegang Li* 461
- Research on the application of chaos dynamics in coal mine risk prediction  
*by Kun Liu* 467

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Vol.65, No.9, SEPTEMBER 2017

## CONTENTS

- Study on the critical value of gas content in regional prediction of coal and gas outburst based on gas adsorption and desorption experiment  
*by Liang Chen, Shaowu Fan, Jianhang Guo, Xiaokai Xu, and Lang Zhang* 473
- Evaluation research on the circular economy efficiency of the coal industry based on DEA model  
*by Dongfeng Yi* 479
- Pelletisation in Indian context – need of the hour  
*by Nirlipta P. Nayak and B. K. Pal* 485
- Design of underhand cut and fill method for extraction of friable chromite ore left in open pit benches  
*by Dinesh Kumar, Priyadarshi Hem, Aman Kumar, Ravindra Kumar Gupta and U. K. Singh* 490
- A new type of multi-layer metal composite materials for preventing impact and absorbing energy in hot forming and its application  
*by Pingping Sun* 496
- Influence and control effect of drawing speed on mining-induced fractures “O” form circle’s fully mechanized surface  
*by Ke Fang, Wanlong Huang, Chunjie Song, and, Song Hu* 503
- Distribution of iron oxide in different size fractions of Kusmunda coals, Korba coalfield  
*by Manjula Sharaff, Sharad K. Vajpaia and Kiran Vajpai* 509

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SPECIAL ISSUE ON  
ISSUES OF MINING INDUSTRY IN CHINA: EMERGING SCENARIO  
INCORPORATING  
Vol.65, No.10, OCTOBER 2017

## CONTENTS

Editorial: Issues of mining industry in China: emerging scenario	
Similitude model experiments for studying slip-buckling failures in high and steep side slopes set along the bedding plane of layered rocks by Yiming Wen, Yong Cheng, Wei Liang, Chong Chen, Xiaoyan Zeng, Wei Sun and You Lin	515
Experimental study on prevention and control of coal-bed methane (CBM) through mining of the protective seam of multiple coal seams by Dongfang Xu, Tao Feng, Jing Yang and Zuoya Qin	521
Experimental study on the change features of infrasonic waves in coal sample loading by Jia Bing, Wen Zhihui and Wang Qingjun	524
Study on the application of double corridor project in managing geological defects affecting transmission lines in mining areas by Tao Guo, Jianhua Yang and Lie Shi	531
Patterns of powder transport by spiral drill pipes at different powder inputs and rotation rates by Fei Xue and Baisheng Nie	534
Enhanced oil recovery mechanism of geological research of tight tuff in Tiaohu formation in Santanghu basin by Wen Jing Liu Changdi, Yao Mengduo, He Yongming and Luo Wei	540
Stability analysis of high-steep mining slope based on clustering and unascertained measuring method by Jinchun Xue, Weifang Huang and Jiefang Jin	547
Study on the foundations of transmission lines in mining area with the risk of geological hazards by Liu Chao, Yang Jianhua and Zhou Zhenfeng	553
Mineral composition and brittleness of Lower Cambrian Niutitang formation shale in northwest Hunan by Zhen Zhang, Wen Pang, Linting Zhang, Peng Jiao and Xikai Wang	556
Research on infrared image SVM segmentation algorithm for mine drilling and rescue by Fei Jinbiao, Wen Hu and Zhang Duo	563
Pozzolanic reactivity and hydration products of epidote by Chao Ren, Keqing Li, Wen Ni, Biyao Geng, Xiaowei Cui and Jiajia Wang	570
Application of hollow grouted anchor cable in coal roadway of compound roof by Mingzhou Zhao, Renshu Yang and Juan Fang	575
Experimental research on device with multi-turn overlapping loops by applying mine TEM by Yunbo Li	581

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SPECIAL ISSUE ON

## ERREEN GOLD ORE DEPOSIT IN MONGOLIA

INCORPORATING

Vol.65, No.11, NOVEMBER 2017

### CONTENTS

Editorial: Ereen gold ore deposit in Mongolia in search of a mine developer	587
Geological features and prospecting of Ereen gold ore deposit in Mandal Soum, Selenge province, Mongolia by Yang Wu, Zhang Min and Mao Kainan	589
Mining assessment of Ereen gold ore in Mandal Soum, Selenge province Mongolia by Yang Wu, Zhang Min and Mao Kainan	595
Study on the heavy metals in soil in different functional zones of Ereen by Zhang Min, Yang Wu and Mao Kainan	599
Characteristics of mineral alteration and weathering in Ereen gold ore in Mandal Soum, Selenge province, Mongolia by Yang Wu, Zhang Min and Mao Kainan	604
Digitizing and three-dimensional model establishment for Ereen gold ore deposit in Mandal Soum, Selenge province, Mongolia by Yang Wu, Zhang Min and Mao Kainan	610
Design strategies of soil and water conservation measures for Ereen gold deposit in Mandal Soum, Selenge province, Mongolia – a case study by Zhang Min, Yang Wu and Mao Kainan	617
Drilling analysis and prospecting prediction of Ereen gold ore in Mandal Soum, Selenge province, Mongolia by Yang Wu, Zhang Min and Mao Kainan	623
Contributors to this issue	628

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ORIGINAL PAPERS

**What is behind the search for social acceptability of mining projects? Political economy and legal perspectives on Canadian mineral extraction**  
B. Campbell · M.-C. Prémont 171

**Artisanal versus industrial mining: impacts on poverty in regions of Burkina Faso**  
Y. Ouoba 181

**Long-term demand and supply of non-ferrous mineral resources by a mineral balance model**  
K. Tokimatsu · S. Murakami · T. Adachi · R. Li · R. Yasuoka · M. Nishio 193

**Trade specialisation patterns in major steelmaking economies: the role of advanced economies and the implications for rapid growth in emerging market and developing economies in the global steel market**  
N. Sekiguchi 207

**Towards a multi-dimensional methodology supporting a safeguarding decision on the future access to mineral resources**  
A. Mateus · C. Lopes · L. Martins · J. Carvalho 229

**Assessment of critical minerals: updated application of an early-warning screening methodology**  
E. McCullough · N.T. Nassar 257

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**Instructions for Authors** for *Mineral Economics* are available at <http://www.springer.com/13563>

# CONTENTS

## Special Issue on Rare Earths

- ✓ **Recovering rare earths from waste phosphors using froth flotation and selective flocculation** 161  
**M. Yu:** Wuhan University of Technology, Wuhan, China  
**G. Mei:** Wuhan University of Technology, Wuhan, China, and Hubei University of Education, Wuhan, China  
**Y. Li:** Wuhan University of Technology, Wuhan, China  
**D. Liu and Y. Peng:** University of Queensland, St. Lucia, Queensland, Australia
- Chemical extraction of rare earth elements from coal ash** 170  
**M. Peiravi, L. Ackah, R. Guru, M. Mohanty and J. Liu:** Southern Illinois University, Carbondale, IL, USA  
**B. Xu, X. Zhu and L. Chen:** Henan Polytechnic University, Jiaozuo, Henan, China
- ✓ **Exploring blast furnace slag as a secondary resource for extraction of rare earth elements** 178  
**Abhilash and P. Meshram:** CSIR-National Metallurgical Laboratory, Jamshedpur, India  
**S. Sarkar and T. Venugopalan:** Tata Steel, Jamshedpur, India
- ✓ **The ultimate mineral processing challenge: Recovery of rare earths, phosphorus and uranium from Florida phosphatic clay** 183  
**P. Zhang:** Florida Industrial and Phosphate Research Institute, Bartow, FL, USA  
**H. Liang:** Northeastern University, Shenyang, China, and Florida Industrial and Phosphate Research Institute, Bartow, FL, USA  
**Z. Jin:** Florida Industrial and Phosphate Research Institute, Bartow, FL, USA  
**D. DePaoli:** Oak Ridge National Laboratory, Oak Ridge, TN, USA
- ✓ **Rare earth mineralogy in tailings from Kiirunavaara iron ore, northern Sweden: Implications for mineral processing** 189  
**C. Wanhainen, B.I. Pålsson and O. Martinsson:** Luleå University of Technology, Luleå, Sweden  
**Y. Lahaye:** Geological Survey of Finland, Espoo, Finland
- ✓ **Rare earths recovery and gypsum upgrade from Florida phosphogypsum** 201  
**H. Liang:** Northeastern University, Shenyang, China, and Florida Industrial and Phosphate Research Institute, Bartow, FL, USA  
**P. Zhang and Z. Jin:** Florida Industrial and Phosphate Research Institute, Bartow, FL, USA  
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- Index to Volume 34, 2017** 207
- MPD Student Poster Contest — Invitation to Participate**

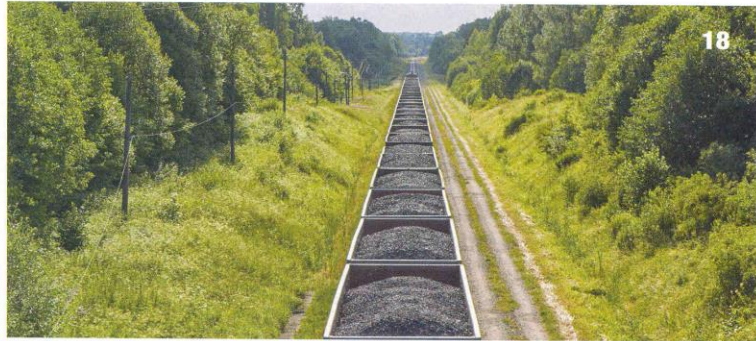
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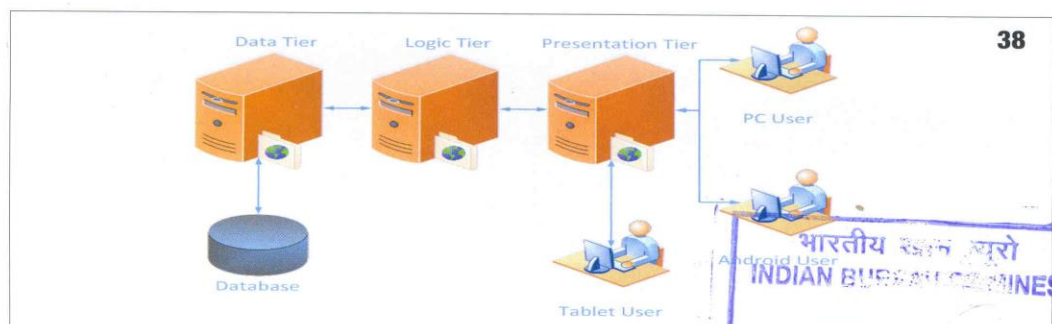
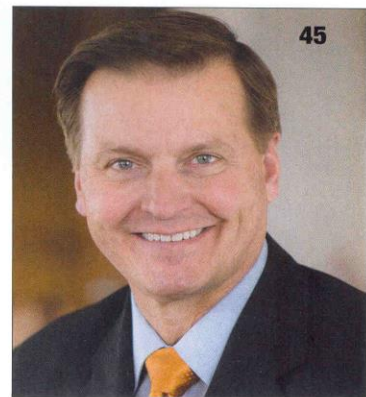
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OCTOBER 2017  
VOL. 69 NO. 10



## Feature Articles

- 16 Coal production has increased but the future of coal remains uncertain**  
William Gleason
- 18 A study of US coal mine closures since 1994**  
Jacob Brinkman, Jay R. Schafler and Catherine E. Johnson
- 38 Development of a new Web-based platform for ground control applications**  
C. Newman, Z. Agioutantis and N. Schaefer
- 45 Mining Foundation of the Southwest to host 35th Awards Banquet**



## Technical Papers (peer-reviewed and approved)

- 47 Risk management and long-term production schedule optimization at the LabMag iron ore deposit in Labrador, Canada**  
M. Spleit and R. Dimitrakopoulos
- 54 Have emerging technologies reached the point where diesel particulate matter can be removed from underground mines?**  
K.C. Kocsis

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## SME News

- 61 MEC
- 61 Personal News
- 62 SME Foundation
- 63 Environmental Division
- 64 Fine Grind
- 65 Local Section News
- 66 Young Leaders
- 67 Henry Krumb Lecturers



## Departments

- 6 President's Page
- 8 Politics of Mining
- 10 Industry Newswatch
- 77 New Products
- 78 Coming Events/Short Courses
- 79 Classifieds
- 80 Web Directory
- 81 Professional Services
- 87 Index of Advertisers
- 88 Drift of Things

### In This Issue

Once the primary fuel source for the United States and the economic backbone for communities from Appalachia to Wyoming, coal has been on a steady decline since the mid-1990s, due mostly to more stringent environmental regulations put in place by the Obama administration. However, coal in the United States is making a small comeback, particularly since the Trump administration took over in January. ME's Bill Gleason provides a recap on page 16. That said, many coal operations have shut down, as coal-fired power plants have made the shift to natural gas and environmental regulations became more strict. The feature beginning on page 18 takes a look at coal mine closures in the United States since 1994. Shutterstock cover photo.

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## this issue contains...

President's Message	5
Editor's Desk	7
News from the Mining World	8
Application of Slope Stability Radar in An Opencast Mine	10
- Sandi Kumar Reddy, James Paul and Paul Prsanna Kumar	
Development in Slope Monitoring Technology - with specific reference to use of Drone at Noamundi Iron Mine	15
- Pankaj Kumar Satija, Dipak Behera and Priyabrata Mishra	
Readers' Views	21
MEAI News	22
Conferences, Seminars, Workshops etc.	34

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# Mining Magazine, November 2017

## How to optimise your mine

**O**ptimise (verb): to make the best or most effective use (of a situation or resource). I don't think there is a business on the planet right now that isn't striving for this in one way or another. When times get tough, the tough look very hard at their balance sheets and at how they can make the most of their existing assets/operations.

We have saved the most timely (some might say the best) topic for the last of our special issues this year. And I think it's important that we speak openly about this from the start; traditionally, optimisation is not something that miners have been very good at. The collective mindset, even after the 2012 market crash, was to just keep digging that dirt. The more the merrier. And if you needed really huge, expensive equipment to do that, then so be it. Never mind the long lead time.

I have noticed a clear change over the past five years. Let's call it a pivot point. The industry, as a whole, has finally noticed that this approach – the one it has been using for hundreds of years – just isn't going to work any more. New equipment, however exciting and innovative, just isn't going to cut the mustard unless we look to drastically change the way we mine resources and the fundamental principles underpinning the mining business.

It's no longer enough to be good at digging dirt. Miners must also be stewards of the environment, champions of local communities, carbon neutral, greenhouse-gas conscious and, perhaps the most tricky one, offer investors longevity and profitability in uncertain markets.

So what do you do when asked to perform in arenas you maybe don't understand, or those you know aren't your strong point? You look outside and take note of those companies that are successful. Look to those that have found ways to survive, new ways prosper, in difficult circumstances. Those that dared to think outside the box and try something new. You know who they are: Toyota, Uber, Airbnb, Amazon, Tesla. The list is endless. Miners, we need to get down off our high horses and ask for some help.

Beg, borrow or steal ideas if need be, or even just use these companies' approaches to inspire your own transformation. Embrace all of the tools available to you, even if they do require some serious homework and appear pretty scary at first (algorithms, anyone?). And open your doors and minds to the little guys. Even the biggest, most advanced tech companies in the world were small start-ups once (I bet some people laughed at Steve Jobs when he turned up at their office with a picture of the Apple 1, and look where that company is now); they might just have an idea that could give you an edge.

Because when your competitors hit the wall and start to really struggle – and that point is coming, sooner than you might think – you will be glad you took the plunge.

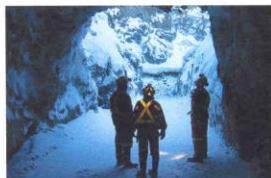
In that spirit, we are using this issue to bring you some ideas and success stories from companies around the globe that have excelled in optimising their businesses.

Got an ageing mine that needs a new lease of life as well as a serious injection of digital technology? Turn to page 10 and our mine of the month, Chelopech. If Dundee can do it, then why can't you? Want a more efficient way to handle your parts inventory and keep your miners safe during shifts? Cortez has some great ideas, see page 6. Or perhaps your operations are a bit clunky and need streamlining? Try implementing some lean mining principles – Dassault explains how on page 14.

Or, alternatively, if you're already well advanced with your own optimisation programme and seeing impressive gains, then dare to think bigger. Ask others what a mine might look like in 2050. After all, Barrick just had the Space X team round for tea. Just saying.

CARLY LEONIDA, EDITOR

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**"New equipment, however exciting and innovative, just isn't going to cut the mustard unless we look to drastically change the way we mine resources"**

### CONTENTS

News	2
Special report: Cortez	6
Mine of the Month: Chelopech	10
Special report: Lean mining	14
Feature: Mass mining	19
Feature: Tailings management	22
Feature: Ground support	26
Feature: Concentrator optimisation	31
Feature: Autonomous haulage	42
Semi-famous last words	48
Contacts	48

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INDIAN BUREAU OF MINES

Next month 2 JAN 2018

Platinum & low-profile mining

UAVs and drones

Blast optimisation

Hydrocyclones

Workforce health & wellbeing

Buyers' guide

### COVER

The Chelopech mine is operated by the Canadian miner Dundee Precious Metals and is one of the most technologically advanced underground mines in the world. Driven by a strong set of values and principles, the company and its subsidiaries in Bulgaria continuously pursue progress and development of the mining industry based on health and safety, technologies, sustainable development and concentrated effort to protect the environment. It is already a fact in Chelopech that all processes in the underground mine can be monitored in real time.  
[www.dundeeprecious.com](http://www.dundeeprecious.com)

# Mining Magazine, December 2017

## Appealing to the younger generation

Canada's Mining Industry Human Resources Council (MiHR) published a report earlier this year that said while the mining industry has begun to show signs of economic recovery, it anticipates critical gaps for various mining-related occupations.

According to its forecasts, the Canadian mining industry's hiring requirement in these occupations is projected to be approximately 18,210 from 2018 to 2027; however, mining is only expected to secure about 8,670 new entrants over the same time, representing a gap of about 9,540 people. In other words, roughly 52 percent of all vacancies are projected to remain unfilled. A lot of this is due to the age profile of the industry; younger workers (15-24 year olds) have dropped from 13% to 5% of the sector between 2007 and 2016.

An executive summary of the report stated: "This poses a significant risk to mining operations, given that a thin labour supply has the potential to derail projects, drive up the cost of finding workers and ultimately undermine an operation's ability to run competitively."

Canada is not the only big mining jurisdiction that is seeing this trend. John Langford, director of the Diggers and Dealers conference that was held in Kalgoorlie, Australia, in August, told ABC that the Australian industry is currently seeing a lack of interest in mining careers. "It is an issue of trying to get people to want to go into the mining industry at the moment," he commented. "The industry needs to educate the broader community that mining is a career that people should look at."

The West Australian reported in September that several mining bosses were expressing alarm about a potential skills shortage in the resources sector, through a combination of workers leaving the industry during the recent downturn and a scarcity of new mining graduates. Among these was Independence Group's Peter Bradford, who told the newspaper: "We're not encouraging enough students to come out of high school and look at a career in mining, which is a problem coming down the pipe for the industry."

Jake Klein, executive chairman at Evolution Mining, told a West Australian Mining Club lunch in October that young people are more inclined to look for work in fresh industries such as computing, technology and social media rather than mining. He commented: "We desperately need to make mining an attractive career option for young people again – we need to compete with the allure of the Facebooks and Googles to attract and retain the best and brightest talent back to our industry."

Some mining companies are taking modern approaches to recruitment to encourage millennials to consider a career in mining. BHP recently announced 120 new job openings at its huge Olympic Dam mine in South Australia. Along with participating in South Australia's biggest job fair, it has been using social media "to reach a broader talent pool" for these new roles in its #OlympicDamSquad (their hashtag).

Jacqui McGill, Olympic Dam's asset president, commented: "We've had some great success recruiting people from outside mining and appealing to people with diverse experience and background. It is a really exciting time to be part of the industry, and part of Olympic Dam, and we want people from truck drivers to technology professionals to engineers and everything in between to join us."

Meanwhile, Rio Tinto is working with the Western Australian Government and South Metropolitan TAFE to pioneer a new curriculum designed for the mining industry's jobs of the future (see page 4).

This issue features a range of articles on the topic of workforce wellbeing; for example on page 39 we examine the struggle to attract fresh talent to the mining industry, while on page 36 we look at ways the health of mine workers can be protected. Topics like these are crucial in such times of skills shortages to recruit and retain workers, as they will gravitate towards companies that treat their staff well.

AILBHE GOODBODY, DEPUTY EDITOR

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## CONTENTS

News	2
Five minutes with... Artur Zakirov, RISE	8
Special report: Conflict-free coal	10
Special report: Sonic drilling for REEs	12
Special report: Fire safety underground	14
Feature: UAVs and drones	16
Feature: Blast optimisation	26
Snapshot	30
Feature: Hydrocyclones & classification	32
Feature: Workforce wellbeing	36
Contacts	48



Next month:  
THE IT & COMMUNICATIONS ISSUE  
Mine design software  
Block chain technology and in-situ mining  
Underground connectivity/communications  
Surface coal  
MM awards supplement

## COVER

Motion Metrics employs the latest image processing and deep learning techniques to improve safety and productivity at over 80 mines and quarries worldwide. Its most recent product, PortaMetrics™, is a handheld device that provides almost instant fragmentation analysis without the need for a reference scaling object. When it is teamed with MetricsManager™ Pro, a secure web-based platform, results can be accessed by mine management from any laptop, tablet or smartphone.  
[www.motionmetrics.com](http://www.motionmetrics.com)

### Features

20

#### Cover story

Unicoil's chief executive officer Rayed Abdullah Al-Ajaji explains the company's strategy of emphasising its high quality output and services in the face of imports

20



UNICOIL

### Middle East steel

26

#### A continuing drive for self-sufficiency

Middle East steelmakers are increasing production while regional governments protect their domestic producers through increases in anti-dumping duty

28

#### Iranian steel expands

A view on how the Iranian steel industry and its raw material sector upstream is growing rapidly

32

#### Value in use of ore-based metallics

The International Iron Metallics Association provides an explanation of its value-in-use model for ore-based metallics

37

#### Technological solutions

Danieli's recent 'Innovation' event provided insights into advanced technologies tailored to new market realities

### Review of 2017

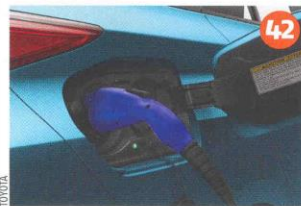
42

#### A positive year for base metals

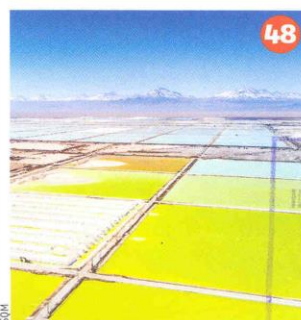
Prices for most base metals have risen in 2017. What can we learn from the main market drivers?



26



42



48

### Copper

46

#### Achieving quality in copper tube

An explanation of how differences in quality control and quality assurance influence copper tube manufacturing strategy and plant development

### Minor metals

48

#### A 21st century lithium rush

Examining the impact of rising electric vehicle production on lithium demand, prices and production

52

#### Driving the demand for cobalt

As auto manufacturers turn to electrification, the demand for cobalt for use in rechargeable batteries is pushing prices ever higher

56

#### New plant orders

The latest quarterly list of international orders

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Bulletin Group



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[@metalbulletin](https://twitter.com/metalbulletin)



### News and analysis

10

#### Non-ferrous news review

A summary of key developments in the non-ferrous sector over the past month

12

#### Steel news review

A round-up of important developments in the iron and steel sectors over the past month

14

#### Base metals and steel analysis

Metal Bulletin Research analyses the drivers of the base metals, steel and steel raw materials markets

18

#### Regional reviews

Correspondents in Europe, North America, Latin America, Asia, Africa and the Middle East discuss topical issues in their regions

66

#### Chartist

2018: China could disappoint but will it matter that much?

### Regulars

9

#### Comment

Middle East steel and more

25

#### People moves

New appointments around the global metals industry

61

#### Supply chain services

News from service providers across the metals supply chain

25



ARCONIC

62

#### Innovations

New developments in metals technology, processes and products

63

#### End-user

Advances and market developments in applications

64

#### Events

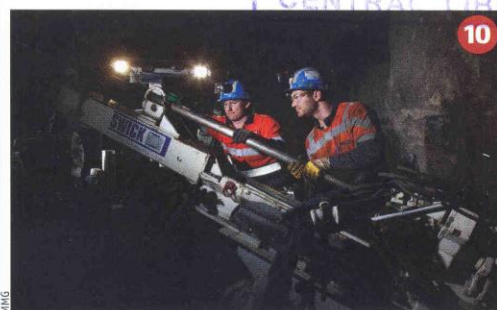
Forthcoming conferences and exhibitions

#### Prices

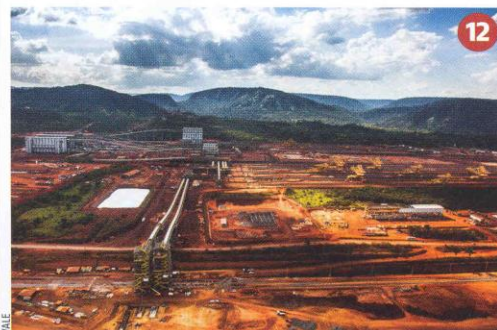
69

October averages

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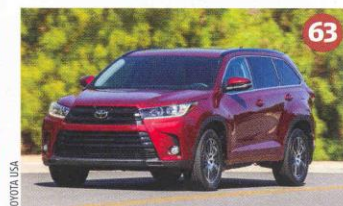
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# RESOURCES POLICY

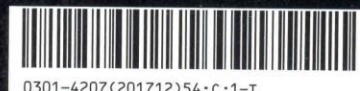
Volume 54 December 2017

- 1 Disparate impacts of coal mining and reclamation concerns for West Virginia and central Appalachia  
*Sarah J. Surber and D. Scott Simonton*
- 9 Price forecasting in the precious metal market: A multivariate EMD denoising approach  
*Kaijian He, Yanhui Chen and Geoffrey K.F. Tso*
- 25 Innovation and economic growth in the mining industry: Evidence from China's listed companies  
*Songmei Fan, Jingjing Yan and Jinghua Sha*
- 43 The neglected role of local institutions in the 'resource curse' debate. Limestone mining in the Krobo region of Ghana  
*Eric Tamatey Lawer, Martin C. Lukas and Stig H. Jørgensen*
- 53 Does gold act as a hedge against inflation in the UK? Evidence from a fractional cointegration approach over 1257 to 2016  
*Goodness C. Aye, Hector Carcel, Luis A. Gil-Alana and Rangan Gupta*
- 58 Volatility forecasting using high frequency data: The role of after-hours information and leverage effects  
*Xuehong Zhu, Hongwei Zhang and Meirui Zhong*
- 71 Potash ownership and extraction: Between a rock and a hard place in Saskatchewan  
*Aidan R. Vining and Mark A. Moore*
- 81 The synchronized and exceptional price performance of oil and gold: Explanations and prospects  
*Roberto F. Aguilera and Marian Radetzki*
- 88 How "black swan" disruptions impact minor metals  
*Benjamin Sprecher, Laurie Reemeyer, Elisa Alonso, Koen Kuipers and Thomas E. Graedel*
- 97 Extractive industries in forest landscapes: options for synergy with REDD+ and development of standards in the Democratic Republic of Congo  
*Kirsten Hund, Jolien Schure and Arend van der Goes*

*continued on inside back cover*

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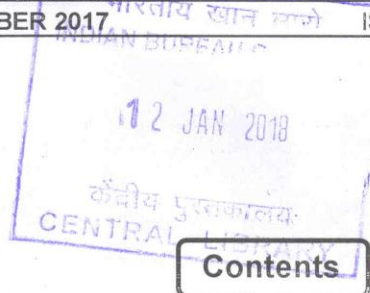
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October 2017



## Contents

4. The IME Journal Readers' Forum
4. Persons in the News
6. Indian Mining Industry News
10. Mining Events Diary

## Technical Papers

11. Assessment of Airborne Respirable dust in the Iron Ore Mines of Goa  
**D.K Bhagat, Suraj Kumar & R.B.Lohani**
19. Analysis of Laminated Roof with Rock Bolt Using Numerical Simulation Method  
**Rizwan Hasim, Ashok Jaiswal & B. K Shrivastva**
25. Underground Utilities: Constructing a Sustainable Future  
**Dr. A. K. Soni**
30. Discovery to Marketing of a Metal - Requisite of a Success Story  
**P. Balamadeswaran, M. Ifthikar Ahmed & M. Palanikumaresan**