



तकनीकी पत्रिका विषय-सूची

CURRENT CONTENT

(Technical Journals)

(A Monthly Current Awareness Service from Technical Journals)

Vol.3 No.6, June, 2019

The Central Library, IBM, Nagpur is subscribing the technical journals and also receiving them on complimentary basis on various subjects like Geology, Mining, Mineral Economics etc. These Technical Journals make up an important collection of latest scientific information. The library is rendering Reference Service to its users from these technical Journals (Article Indexing is one of them). Central Library, IBM provides Current Content Service from these technical journals in the name of "GEM" since 2006 on half yearly basis in print form. To expand this service to the IBM Offices all over India i.e. H.Q., Zonal & Regional Offices and to take a call of time, the Controller General, IBM desired to make this service online on monthly basis. The library staff made efforts to make it successful. This is the 6th issue of Volume-3 for this service named "तकनीकी पत्रिका विषय - सूची" (Current Content- A Monthly Current Awareness Service from Technical Journals) Vol.3 No.6, June, 2019.

It will be highly appreciated if the valuable feedback is reciprocated. If some article as per content list is found to be of use by the reader the same may be requested and the library will send the scanned copy of the article to the interested reader.

Mrs.D.H.Vairagare

Assistant Library & Information Officer

I N D E X

<u>S.No</u>	<u>Title</u>	<u>Page No</u>
1)	Down to Earth	3-6
2)	Iron & Steel Review	7-8
3)	JPC Bulletin	9
4)	Journal of the Geological Society of India	10-11
5)	Journal of Mines, Metals & Fuels	12-16
6)	Mining Magazine	17-18
7)	Mining, Metallurgy & Exploration	19-23

Down to Earth, Vol.28 No.1, 16-31 May, 2019

Down To Earth

Founded in 1992 to arm you with
knowledge critical to shaping a better world

FOUNDER EDITOR Anil Agarwal

EDITOR Sunita Narain

MANAGING EDITOR AND PUBLISHER

Richard Mahapatra

ASSOCIATE EDITORS Vibha Varshney,
S S Jeevan, Deepan Joshi, Snigdha Das, Sonalika
Sinha (Copy), Anab Pratik Dutta (Multimedia)

CREATIVE DIRECTOR Ajit Bajaj

GRAPHIC EDITOR Sorit Gupta

REPORTING TEAM Jitendra, Kundan Pandey,
Ishan Kukreti, Akshit Sangomla, Meenakshisushma,
Banjot Kaur, Shagun Kapil

COPY DESK Aditya Misra, Rajit Sengupta, Deepanwita
Gita Niyogi

DESIGN TEAM Chaitanya Chandon, Sanjit Kumar, Shri
Krishan, Vijayendra Pratap Singh,
Tarique Aziz, Ritika Bohra

PHOTOGRAPHER Vikas Choudhary

PHOTO LIBRARY Anil Kumar

PRODUCTION Rakesh Shrivastava, Gundhar Das

WWW.DOWNTOEARTH.ORG.IN

EDITORIAL Joyjeet Das, Rajat Ghai, Isha Bajpai, Abida
Khan, Rachel V Thomas

TECH SUPPORT Rajendra Rawat, Jaidev Sharma

MULTIMEDIA Srikanth Choudhary, Sunny Gautam,
Adithyan P C

INFORMATION AND RESEARCH SUPPORT

Kiran Pandey

www.indiaenvironmentportal.org.in team

CONSULTING EDITORS Chandra Bhushan, Anumita
Roychowdhury

Vol 28, No 1; Total No of Pages: 60

Editorial, subscriptions and advertisements:
Society for Environmental Communications,
41, Tughlakabad Institutional Area,
New Delhi 110 062.

Phone: 91-11-29955124,
29956110, 29956394, 29956399
Fax: 91-11-29955879.

Email: editor@downtoearth.org.in

© 2019 Society for Environmental Communications. All rights
reserved throughout the world. Reproduction in any manner is
prohibited. Printed and published by Richard Mahapatra on be-
half of Society for Environmental Communications. Printed at
International Print-o-Pac Limited, B-204, 205, Okhla Industrial
Area, Phase I, New Delhi-110020, India, and published at
4T, Tughlakabad Institutional Area, New Delhi 110 062.

To subscribe, sms 'die Subscribe' to 56070
or visit www.downtoearth.org.in/subscribe

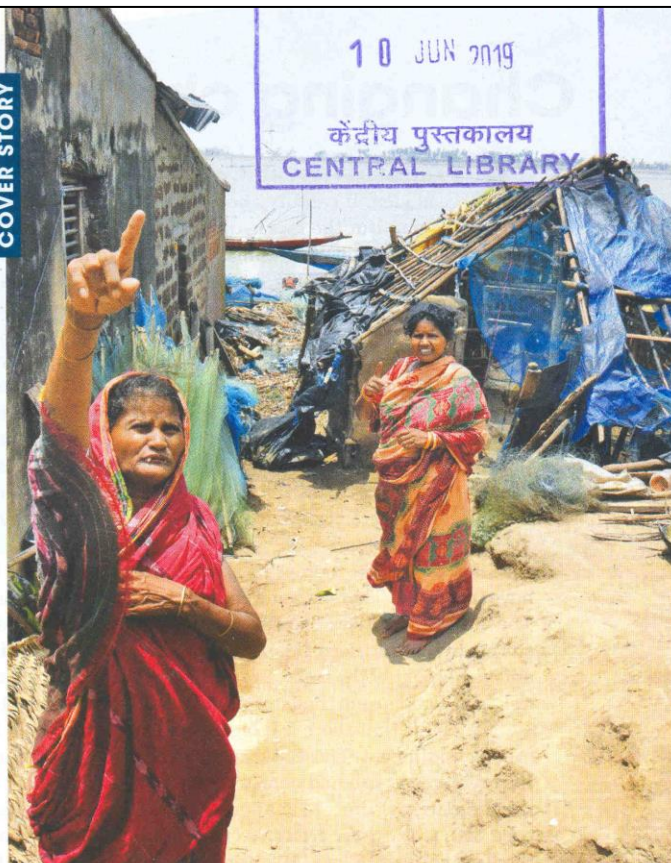
FOR ADVERTISEMENTS: Jyoti Ghosh
jghosh@cseindia.org

FOR SUBSCRIPTIONS:
KCR.Raja.raja@cseindia.org



◀ Cover photo: Arabinda Mahapatra. Design: Ajit Bajaj

COVER STORY



18

Wind is
changing the
character of
cyclones

11 Digest

For 20 years, Ram Kumari has
been ensuring malaria
diagnosis in Bilaspur

40 Forest

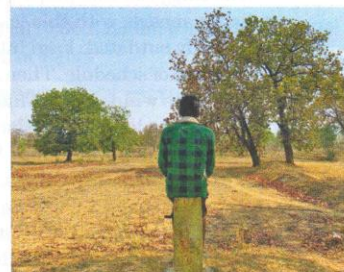
Residents of Korea district in
Chhattisgarh are set to
lose their lands to
compensatory afforestation

54 Patently absurd

The Delhi High Court allows
the makers of generic drugs to
export in small quantities

58 Straightforward

The environment ministry's
move to use fly ash to make
bricks will shut down the
construction industry

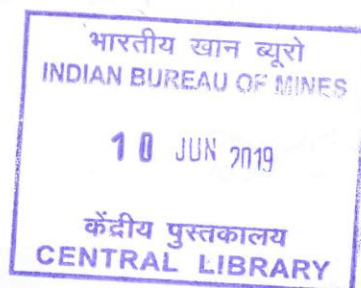
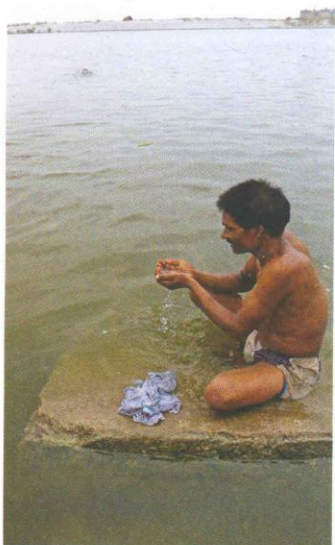


Down To Earth does not endorse the content of advertisements printed in the magazine

Contents

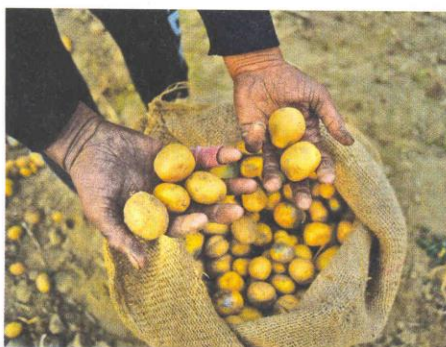
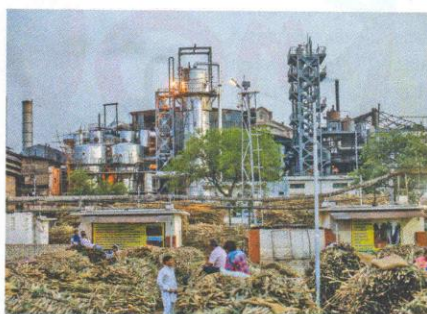
Thanks to the Kumbh
and a non-functional
waste treatment plant,
Prayagraj is sinking
under solid waste

36



42

Sugarcane farmers are
on the streets as sugar
mills in collusion with
governments owe them
₹24,000 crore



32

Agriculture

The fallout between PepsiCo
and Gujarat's potato growers
underlines the threat to
farmers' rights over seeds



56

David Wallace-Wells'
book narrates what the
world would look like if
temperatures rise by
4° C by 2100

Down to Earth, Vol.28 No.2, 1-15 June, 2019

Down To Earth

Founded in 1992 to arm you with
knowledge critical to shaping a better world

FOUNDER EDITOR Anil Agarwal

EDITOR Sunila Narain

MANAGING EDITOR

Richard Mahapatra

ASSOCIATE EDITORS Vibha Varshney, S S Jeevan,
Deepan Joshi, Snigdha Das, Sonalika Sinha (Copy),
Anab Pratim Dutta (Multimedia)

CREATIVE DIRECTOR Ajit Bajaj

GRAPHIC EDITOR Sorit Gupta

REPORTING TEAM Jitendra, Kundan Pandey,
Ishan Kukreti, Akshit Sangomla, Meenakshisushma,
Banjot Kaur, Shagun Kapil

COPY DESK Aditya Misra, Rajit Sengupta,
Deepanwita Gita Niyogi

DESIGN TEAM Chaitanya Chandon, Sanjit Kumar,
Shri Krishan, Vijayendra Pratap Singh,
Tarique Aziz, Ritika Bohra

PHOTOGRAPHER Vikas Choudhary

PHOTO LIBRARY Anil Kumar

PRODUCTION Rakesh Shrivastava, Gundhar Das

WEB EDITORS Joyjeet Das, Rajat Ghai, Isha Bajpai,
Abida Khan, Rachel V Thomas

TECH SUPPORT Rajendra Rawat, Jaidev Sharma

MULTIMEDIA Srikanth Choudhary, Sunny Gautam,
Adithyan P C

INFORMATION AND RESEARCH SUPPORT
Kiran Pandey, Susan Chacko, Madhumita Paul, Sheeja
Noir, Dhanbir Thapliyal, Lalit Maurya, Dayanidhi Mishra

CONSULTING EDITORS Chandra Bhushan,
Anumita Roychowdhury

Vol 28, No 2; Total No of Pages: 96

Editorial, subscriptions and advertisements:
Society for Environmental Communications,
41, Tughlakabad Institutional Area,
New Delhi 110 062.

Phone: 91-11-29955124,
29956110, 29956394, 29956399
Fax: 91-11-29955879

Email: editor@dwntoearth.org.in

© 2019 Society for Environmental Communications. All rights
reserved throughout the world. Reproduction in any manner is
prohibited. Printed and published by Richard Mahapatra on be-
half of Society for Environmental Communications. Printed at
International Print-o-Pac Limited, B-204, 205, Okhla Industrial
Area, Phase I, New Delhi-110020, India, and published at
41, Tughlakabad Institutional Area, New Delhi 110 062.

To subscribe, sms 'dte Subscribe' to 56070
or visit www.downtoearth.org.in/subscribe

FOR ADVERTISEMENTS: Jyoti Ghosh
jghosh@cseindia.org

FOR SUBSCRIPTIONS:
K C R Raja, raja@cseindia.org



◀ Cover illustration: Tarique Aziz Design: Ajit Bajaj

COVER STORY

24
The new
government
must steer the
country towards
the Sustainable
Development
Goals

AIR POLLUTION
HEALTH

UNEMPLOYMENT
CLIMATE CHANGE

SDG
AGRICULTURE

11 Digest
Drones deliver medicines
in African hospitals. India to
benefit soon

68 Patently Absurd
Ramdev claims his
firm has trademark
right over Patanjali

74 Civil Lines
As half of India's districts reel
under drought, there is a
feeling of uneasiness about
this year's monsoon

22 Health
Why doesn't the industry
admit that sugar
is bad for health?



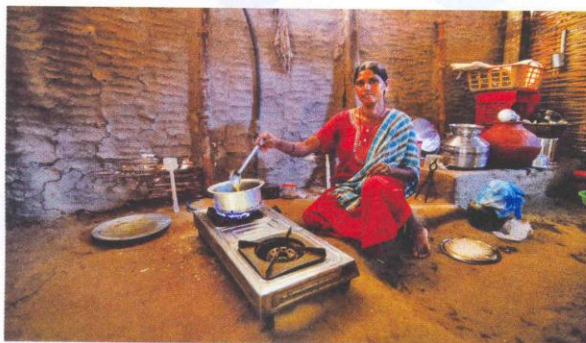
Down To Earth does not endorse the content of advertisements printed in the magazine. All disputes are subject to the exclusive jurisdiction of competent courts and forums in Delhi/New Delhi only.

Down to Earth, Vol.28 No.2, 1-15 June, 2019

WORLD ENVIRONMENT
DAY SPECIAL



Contents



18

Are Swachh Bharat Mission officials reluctant to promote a technology that generates cooking gas from human excreta?



The Centre for Science and Environment rates India's urea industry on the basis of environmental parameters

56



70

Local ingredients make a comeback, this time in restaurants

20-PAGE SUPPLEMENT
WITH SUBSCRIPTION COPIES

GOBAR TIMES
75-94



SUPPLEMENT EDITOR
Soril Gupto

COPY DESK
Aditya Misra,
Pallavi Ghosh

DESIGN
Ajit Bajaj, Ritika Bohra
and Surender Singh

ILLUSTRATIONS
Soril Gupto, Tarique
Aziz and Ritika Bohra

Features

Editor & Publisher:
Santosh Mahanti

Directors:
Sabita Mahanti
Abhishek Mahanti

Director & Content Strategist:
Kritika Mahanti

Editorial:
Anindita Banerjee
Megha Ghosh

Marketing:
Shyamalendu Banerjee
Angan Chatterjee

New Delhi Representative:
Maqsood Alam Khan

Design & Layout:
Dipak Adhikari
Sambaran Karmakar

Editorial & Corporate Office:
Merlin Links, Block 5E/5F, 5th Floor
166B, S. P. Mukherjee Road
Kolkata - 700 026
Phone: 91-033-2465-8581/9406
Fax: 91-033-2465-3790
E-mail: isinfo@eth.net
contact@isinfomedia.in
Website: www.isinfomedia.com

Registered Office:
10, Chowringhee Road
Kolkata - 700 013

Subscription Rate

Domestic
₹ 10,000 (Yearly)
₹ 950 (Single Copy)
Overseas
\$ 1400 (Yearly)
€ 1200 (Yearly)

● 5 % GST on advertisement as applicable

Owned & Printed by Santosh Mahanti
at M/s. Gupta Quick Printers
4D/28, Dharmatalla Road
Kolkata - 700 039
and published by him from
10, Chowringhee Road
Kolkata - 700 013, India.

Reproduction of matter published here, in whole or in parts, is prohibited without written permission from the publisher.

The publisher and printer do not accept any responsibility for statements, data and opinions expressed by the author.



भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES
14 JUN 2019
केंद्रीय पुस्तकालय
CENTRAL LIBRARY

Download the app



Now available on
Android/iOS

Follow us on:



www.facebook.com/ISInfomedia/

Now Available on
amazon

Special Feature

21

Implementation of Industry Standard 4.0 in Steel Industry

Digitalization and other elements of Industry 4.0 in the steel industry for improved production

National Trends

34

SAIL supplies steel for indigenous artillery gun - 'Dhanush'

Current events and latest developments in Indian steel & allied industries

Global Trends

47

SMS group to upgrade walking beam furnace at Sidenor Basauri

Latest news and updates on iron & steel industry across the globe

Focus

62

worldsteel Short Range Outlook for April 2019

In April 2019, worldsteel released its SRO, a forecast for steel demand



Denitell Automation



Primetals

Interview

64

"I see A. R. Engineering as a leader with a substantial market share in hands and with a drive to operate globally"

Manuel Michelin, the new COO of A. R. Engineering Works on his new responsibility for the company, driving it towards excellency

Steel Market

67

Indian Steel Market in FY'19

Performance of Indian steel industry during FY 2018-19

Company News

79

Inauguration of Heatworks' graphite electrode dipping plant at Jamshedpur

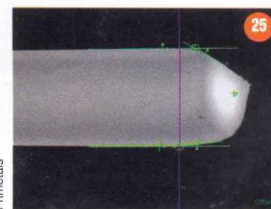
Heatworks inaugurates a state-of-the-art graphite electrode dipping processing facility

Market & Product

82

A Focus on Safe Homes: SAIL SeQR TMT

SAIL's new brand of TMT bars imparts strength to building structures, leading to safety



Primetals

Contd...

Features

Steel Technology

86

Yildiz Demir Çelik Cold Mill Complex, Turkey

Danieli supplies a complete state-of-the-art cold-mill complex to Yildiz Demir Çelik, Turkey

Refractory

92

Enhancement of Blast Furnace Trough Cover Campaign Life at Tata Steel

Developing new refractory design to improve the performance of trough cover refractory

Pre Show Report

106

2019 SEAISI Conference & Exhibition

The 2019 SEAISI Conference & Exhibition will be held from 17th to 20th June in Bangkok, Thailand

Upcoming Events

108

Upcoming Business Events/Exhibitions/Trade Fairs in India and around the world

Statistics

110

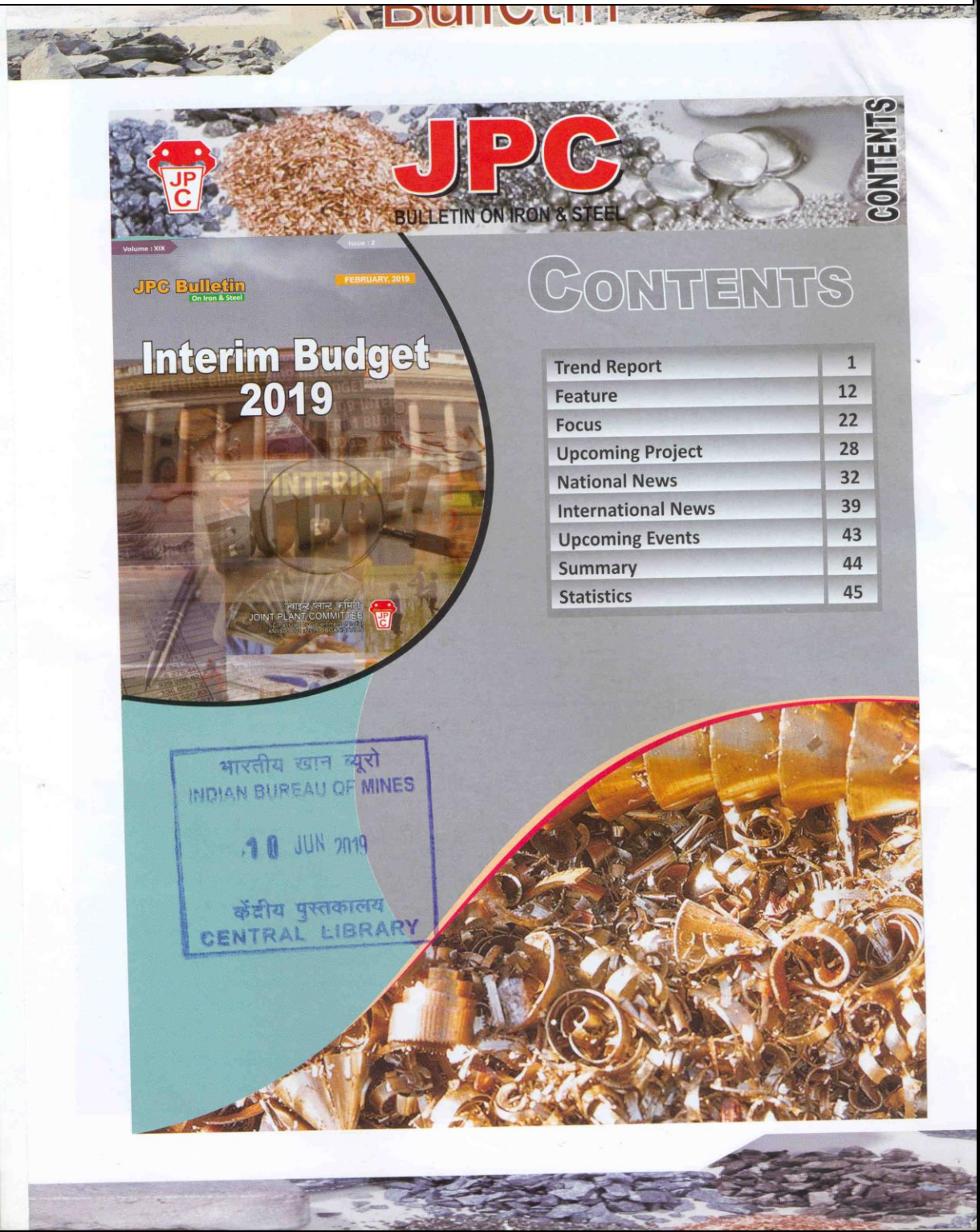
Indian Steel Market & Prices - March 2019



ABB



Advertisers' Index	
A	K
ABB35	KELK60
A. R. Group of Industries58-59	Klüber Lubrication India Pvt. Ltd.Third Cover
Atomat Group55	M
Aman Machine Tools Pvt. Ltd.14	Mipalloy Nomura Plating Company LLP77
ARB Bearings Ltd.111	Maxis Motion Controls Pvt. Ltd.109
C	N
CBMM104	Nuhydro Automation Products16
Creative Carbon Pvt. Ltd.107	NMDC Limited37
D	O
Danieli48-49	Orind Special Refractories (P) Ltd.99
Danieli Corus61	P
Dalmia-OCL Refractories LimitedSecond Cover	P. P. Rolling Mills Mfg. Co. Pvt. Ltd.40-41, 71, 81
E	Preet Group45
Electrotherm (India) Limited13	R
Ecomaister Beads India Pvt. Ltd.51	Refratechnik93
G	S
GSB Group105	Subscription Form12
GFG43	SMS groupGate Fold
H	SEW Eurodrive39
H & K Rolling Mill Engineers Pvt. Ltd.15	Siempelkamp75
Heatworks Pvt. Ltd.18-19	Seminar Ad (Messe Düsseldorf)63
H. M. Cardan Shafts73	T
Henan Yuxing Engineering & Technology of Hot Blast Stove Co. Ltd.8-9	TMEIC Industrial Systems India Private Limited53
I	TRL Krosaki Refractories Limited95
Indiana Machine Tools10	U
Indrox Global Pvt. Ltd.17	UGI Engineering Works Pvt. Ltd.78
Intocast Hitech101	V
J	VezzaniBack Cover
JSW Steel11	VELCO103
Jaypee Cardan Shafts46	Z
	Zumbach97



JOURNAL of THE GEOLOGICAL SOCIETY OF INDIA

(Abstracted/Indexed in AGI's Bibliography and Index of Geology, Chemical Abstracts, Current Contents,
GEOBASE, GEORef, Mineralogical Abstracts, GeoArchive, Thomson ISI database (SCIE, CC/PC & ES))

Vol. 93

JUNE 2019

No. 6

CONTENTS

Structural Geology and India's Societal Requirements.

MANISH A. MAMTANI

627

RESEARCH ARTICLES

Mineralogy of a New Occurrence of Lamprophyre Dyke from the Saurashtra Peninsula of Gujarat, Northwest Deccan Trap, India.

MD. NAUSHAD, ASHISH DONGRE, JNANA R. BEHERA, P. V. R. MURTHY and MONALISA CHAKRA

629

Estimation of Paleo-ice Sheet Thickness and Evolution of Landforms in Schirmacher Oasis and Adjoining Area, cDML, East Antarctica.

PRAKASH K. SHRIVASTAVA, SANDIP K. ROY, HARI B. SRIVASTAVA and AMIT DHARWADKAR

638

Evolution of Damodar Fan Delta in the Western Bengal Basin, West Bengal.

HIRAK KUMAR MAHATA and RAMKRISHNA MAITI

645

Geodynamic Significance of Cr-spinels from Ophiolite Mantle Peridotites of Northwestern Himalaya.

I. M. BHAT, T. AHMAD and D.V. SUBBA RAO

657

Sediment Hosted Stratiform Copper (SSC) Mineralization in Bhudoli-Basari Area, North Delhi Fold Belt, Mesoproterozoic Delhi Supergroup, Rajasthan.

SHUBHABRATA MUKHOPADHYAY, VINEET KUMAR and MONIKA SANGWAN

663

Upper Cretaceous and Early Paleogene Smaller Calcareous Benthic Foraminifera from Cauvery Basin, Southeast India.

ABIRAMAN GOVINDAN and R. VIJAYAN

675

Comparative Evaluation of GIS Based Landslide Hazard Zonation Maps Using Different Approaches.

LAXMI DEVI VERSAIN, RAJESHWAR SINGH BANSHTU and DESH DEEPAK PANDEY

684

Drainage Pattern and its Bearing on Relative Active Tectonics of a Region: A Study in the Son Valley, Central India.

R.K. DUBEY and RAVI SHANKAR

693

Microfacies and Depositional Environment of the Ilerdian Carbonates in the North-Western Tosya (SE Kastamonu) Region, Northern Turkey.

NAZIRE ÖZGEN ERDEM and CALIBE KOÇ TASGIN

704

625

CONTENTS

- Sequence Stratigraphic Interpretation of Late Cretaceous-Early Paleogene Sediments in the Central Part of Southern Anambra Basin, Nigeria
SAMUEL O. ONYEKURU, ALEXANDER I. OPARA, IKECHUKWU O. NJOKU, EMMANUEL O. BASSEY and CYRIL E. UKAONU 713

NEWS AND NOTES

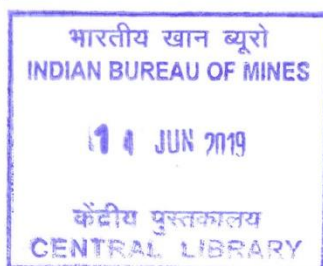
- Report on the Field Training Workshop entitled "Amba Dongar Carbonatite-Alkaline Rocks and Associated Mineral Deposits".
SHRINIVAS VILADKAR, ARUNDHUTI GHATAK and RAYMOND DURAISWAMI 727
- A New Doubtful Microfossil from Pyrite Deposit at Amjhore Bijaigarh Shale, (Upper Mesoproterozoic) Vindhyan Supergroup, India.
K.L. SHRIVASTAVA, VIRENDRA GAUR, SHINJU SATHYADEVA and C.P. KHICHI 729

OBITUARY

- Ashok Kumar Chatterjee (1934-2019). P.S.N. MURTHY 730

- AUTHOR INDEX 731

- SUBJECT INDEX 736



Cover

Photomicrographs of lamprophyre dyke exposed at Khad-Vavdi village, Jasdan taluka (a) idiomorphic amphibole phenocrysts (b) embayed clinopyroxene xenocryst showing microphenocrysts of amphiboles along the margin (for details see pages 629-637).

ADDRESS OF EDITOR

All papers intended for publication and also related correspondence should be addressed to: B. Mahabaleswar, Editor, Geological Society of India, No.63, 12th Cross, Basappa Layout, Gavipuram, Bengaluru - 560 004.
Email: editorjournalgsi@gmail.com; jgsi.journal@gmail.com; **Mobile:** 09341264052;
Telefax: 080-2661 3352; **Telephone:** 080-2242 2943; **Website:** <http://www.geosocindia.org>.

JOURNAL OF MINES, METALS & FUELS

INCORPORATING INDIAN MINING JOURNAL (II ISSN 0022-2755)

(FOUNDED BY LATE P.K. MENON)

Adviser: PROF. A. K. GHOSE, FNAE

Editor: P. K. CHANDA

10 JUN 2019

Joint Publishers:
Books & Journals Pvt. Ltd.
and
International Information
& Engineering Technology
Association (IETA)

Editorial Advisory Board

Prof. A. K. Ghose, FNAE
Prof. R.N. Singh
Prof. Dr. Uday kumar
Prof. Dr. Abdolhadi Ghazvinian
Prof. Dr. Jayanta Bhattacharyya
R.P. Ritolia

Editorial & Business Offices:

6/2 MADAN STREET
KOLKATA 700 072

Telephone :

0091 33 22126526

Fax:

0091 33 22126348

E-mail:

bnjournals@gmail.com

web: www.jmmf.info

Registered Office :

Books & Journals Pvt. Ltd.
6/2 Madan Street
(3rd Floor)
Kolkata 700 072

67
YEARS IN
PUBLICATION
1953-2019

Vol.67, No.1, JANUARY 2019

CONTENTS

- Study on the influence of initiation system on blast induced ground vibration in dragline operations
by C.P. Singh, A.K. Mishra, Romil Mishra and P.K. Singh 1
- Occupational exposure to diesel exhaust and diesel particulate matter (DPM) in Indian underground mines
by M.R. Sagesh Kumar, R.M. Bhattacharjee, A.K. Dash and D.C. Panigrahi 7
- Critical stress distribution inducing subsidence in Barapukuria mining area
by Tusher Mohanta, Sharmin Akter, Chowdhury Quamruzzaman, Mahmudul Hasan, Mahfujur Rahman and Nusrat Mehnaz Arita 13
- Analysis of factors affecting dispersion behaviour of silicon carbide whisker
by Weixing Liu, Jie Li, Yuzhu Zhang, Huiqi Zhang, Jinhong Chen and Enhong Chen 18
- Some insights into fracturing of rock due to blasting in homogeneous material using particle flow code
by Rishikesh Vajre, Suraj Deshmukh and Avtar K. Raina 24
- Corrosion behaviour of magnesium matrix composites reinforced by silicon carbide particles
by Xindong Wang, Qichen Hu, Jie Li, Weixing Liu, Baocheng Liu and Xiaohong Chu 31
- Performance of short carbon fiber reinforced RBSC composite material
by Weixing Liu, Jie Li, Yuzhu Zhang, Fanbei Kong, Jin Zhang and Zengyue Zhang 36

ANNUAL SUBSCRIPTION

Indian:

Rs.2000.00

by M.O., draft or local cheque

Rs.2035.00 by outstation cheque

Foreign:

£250.00 or \$300.00

Monthly issue:

Rs.100.00; £10.00 / \$15.00

Back issues at double rates

Enlist as a subscriber to :

INDIAN JOURNAL OF POWER & RIVER VALLEY DEVELOPMENT

A technical monthly devoted to development of
power and water resources in Asia

Annual Subscription :

Rs.2000 (India); £250.00 or \$300.00 (Foreign)

Write to :

The Manager

BOOKS & JOURNALS PRIVATE LTD.

6/2, Madan Street, Kolkata 700 072

Tel : 0091 33 22126526 • Fax : 0091 33 22126348 • E-mail: bnjournals@gmail.com

JOURNAL OF MINES, METALS & FUELS

INCORPORATING INDIAN MINING JOURNAL (II ISSN 0022-2755)

(FOUNDED BY LATE P.K. MENON)

Adviser: PROF. A. K. GHOSE, FNAE

Editor: P. K. CHANDA

Joint Publishers:
Books & Journals Pvt. Ltd.
and
International Information
& Engineering Technology
Association (IETA)

Editorial Advisory Board
Prof. A. K. Ghose, FNAE
Prof. R.N. Singh
Prof. Dr. Uday kumar
Prof. Dr. Abdolhadi Ghazvinian
Prof. Dr. Jayanta Bhattacharyya
R.P. Ritolia

Editorial & Business Offices:
6/2 MADAN STREET
KOLKATA 700 072

Telephone :
0091 33 22126526

Fax:
0091 33 22126348

E-mail:
bnjournals@gmail.com
web: www.jmmf.info

Registered Office :
Books & Journals Pvt. Ltd.
6/2 Madan Street
(3rd Floor)
Kolkata 700 072

This issue Rs.500.00; £50.00 or \$80.00

ANNUAL SUBSCRIPTION

Indian:
Rs.2000.00
by M.O., draft or local cheque
Rs.2035.00 by outstation cheque
Foreign:
£250.00 or \$300.00
Monthly issue:
Rs.100.00; £10.00 / \$15.00
Back issues at double rates



SPECIAL ISSUE ON THICK SEAM MINING IN CHINA – AN UPDATE

INCORPORATING
Vol.67, No.2, FEBRUARY 2019

CONTENTS

- A successful case study on the reuse of gob side entry retaining by non-coal pillar mining in Gaohe mine
by Meng Zhang, Yidong Zhang, Ming Ji, Zhaohong Chen and Shuai Zhu 41
- Application of BP neural network in the prediction of periodic weighting
by Hongjun Guo, Ming Ji, Meng Zhang, Kun Zhang, Huiqin Wang and Aoxiang Liang 51
- Estimation of tunnel stability and optimization of support parameters for tunnel below gob pillar in closely-spaced coal seams
by M. L. Zhang, Y. D. Zhang, M. Ji and H. J. Guo 59
- Numerical simulation study on surrounding rock stability in large section coal roadway by different lateral pressure coefficient
by Haizhu Li, Yidong Zhang, Hongjun Guo, Meng Zhang, Zhaohong Chen and Ming Ji 69
- Prediction on surrounding rock deformation of roadway based on a neural network model
by Hongjun Guo, Ming Ji, Yidong Zhang, Huiqin Wang, Kun Zhang and Aoxiang Liang 76
- Research and application on support technology of coal seam roadway with high stress
by Hongjun Guo, Ming Ji, Haizhu Li, Kun Zhang, Huiqin Wang and Aoxiang Liang 82
- Research on reasonable mining scheme for coal recovery in thick coal seam under buildings and other structures
by MingLei Zhanga, YiDong Zhangb, Ming Jia, and Peng Jiao 90
- Study on reasonable width of coal pillar in thick coal seam section
by Zhang Kun, Ji Ming, Guo Hongjun and He Wenrui 99
- A study of the failure characteristics of partings in thick coal seams during fully mechanized caving in the Wobei coal mine
by Zhe Wang 105

Enlist as a subscriber to :

INDIAN JOURNAL OF POWER & RIVER VALLEY DEVELOPMENT

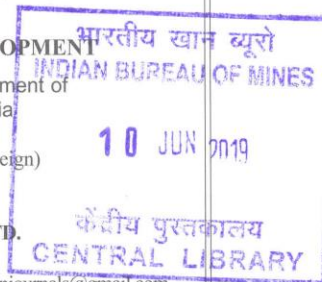
A technical monthly devoted to development of
power and water resources in Asia

Annual Subscription :
Rs.2000 (India); £250.00 or \$300.00 (Foreign)

Write to :
The Manager

BOOKS & JOURNALS PRIVATE LTD.
6/2, Madan Street, Kolkata 700 072

Tel : 0091 33 22126526 • Fax : 0091 33 22126348 • E-mail: bnjournals@gmail.com



JOURNAL OF MINES, METALS & FUELS

INCORPORATING INDIAN MINING JOURNAL (II ISSN 0022-2755)

(FOUNDED BY LATE P.K. MENON)

Adviser: PROF. A. K. GHOSE, FNAE

Editor: P. K. CHANDA

Joint Publishers:
Books & Journals Pvt. Ltd.
and
International Information
& Engineering Technology
Association (IIETA)

Editorial Advisory Board

Prof. R.N. Singh
Prof. Dr. Uday kumar
Prof. Dr. Abdolhadi Ghazvinian
Prof. Dr. Jayanta Bhattacharyya
R.P. Ritolia

Editorial & Business Offices:

Moon Plaza
2A, 2nd Floor
62 Lenin Sarani, Taltala
KOLKATA 700 013

Mobiles :

+91 9239384829
+91 8479919829

E-mail:

bnjournals@gmail.com
pradipchanda@yahoo.co.uk
web: www.jmmf.info

Registered Office :

Books & Journals Pvt. Ltd.
62 Lenin Sarani,
Taltala
Kolkata 700 013



Vol.67, No.3, MARCH 2019

CONTENTS

Design of underground mining wireless communication resource algorithm based on chaotic neural network <i>by Zhao Liang</i>	111
Explosives efficiency improvement with due regard to safety – step towards sustainable mining process <i>by Manish Sinha</i>	116
Study on process mineralogy and iron separation technology by step milling-magnetic separation <i>by Liqun Luo, Sen Tian, Qiang Wu, Zhiqiang Chen and Tiefeng Peng</i>	120
Engineering characteristics of argillaceous soft rock subgrade filling <i>by JU Xing-hua, Yang Xiao-hua, and Zhang Sha-sha1</i>	127
Synthesis, characterization and properties of Schiff base zinc complexes <i>by Ai-Min Yang, Xiao-Lei Yang, Cui-Huan Ren, Xiang-yu Xu and Cheng-Ran Ren</i>	132
Post-mining restoration of people's profile in Indian coalfields – an attempt towards safeguarding human rights <i>by Archana Sinha, Bibhas Chandra, A K Mishra and Satish k. Sinha</i>	136
Experimental studies on a solar integrated plate-fin desalination unit <i>by Shu Xu, Yikai Cheng, and Dapeng Wu</i>	142
Metal-enhancement fluorescence of silicon carbide nano-particles based on self-assembled silver films <i>by Yandong Wang and Cheng Lang</i>	147
SiC composite ceramic materials oxidation behaviour based on three kinds of C _p content <i>by Hongwei Xing, Zhenchao Liu, Hongyan Zhang and Yuzhu Zhang</i>	153
A performance model of six new organic small molecule photovoltaic materials <i>by Ai-Min Yang, Shan-Shan Li, Xiao-Jun Men, Feiyu Cheng and Yue Wang</i>	158
The law of metal flow during raster scribing <i>by MengLiu, Tongling Wang, Hongjun Zhang and Xuemei Li</i>	163
Research on synthesis and optical testing of silicon carbide nanostructures <i>by Ai-Min Yang, Xiao-Lei Yang, Cui-Huan Ren, Xiang-yu Xu and Cheng-Ran Ren</i>	170

ANNUAL SUBSCRIPTION

Indian:

Rs.2000.00

by M.O., draft or local cheque
Rs.2035.00 by outstation cheque

Foreign:

£250.00 or \$300.00

Monthly issue:

Rs.100.00; £10.00 / \$15.00

Back issues at double rates

Enlist as a subscriber to :

INDIAN JOURNAL OF POWER & RIVER VALLEY DEVELOPMENT

A technical monthly devoted to development of
power and water resources in Asia

Annual Subscription :

Rs.2000 (India); £250.00 or \$300.00 (Foreign)

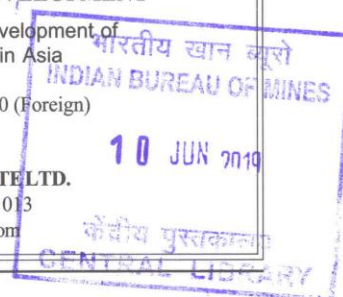
Write to :

The Manager

BOOKS & JOURNALS PRIVATE LTD.

62 Lenin Sarani, Kolkata 700 013

E-mail: bnjournals@gmail.com



JOURNAL OF MINES, METALS & FUELS

INCORPORATING INDIAN MINING JOURNAL (II ISSN 0022-2755)
(FOUNDED BY LATE P.K. MENON)

Editor: P. K. CHANDA

Joint Publishers:
Books & Journals Pvt. Ltd.
and
International Information
& Engineering Technology
Association (IETA)

Editorial Advisory Board
Prof. R.N. Singh
Prof. Dr. Uday kumar
Prof. Dr. Abdolhadi Ghazvinian
Prof. Dr. Jayanta Bhattacharyya
R.P. Ritolia

Editorial & Business Offices:
Moon Plaza
2A, 2nd Floor
62 Lenin Sarani, Taltala
KOLKATA 700 013

Mobiles :
+91 9239384829
+91 8479919829

E-mail:
bnjournals@gmail.com
pradipchanda@yahoo.co.uk
web: www.jmmf.info

Registered Office :
Books & Journals Pvt. Ltd.
62 Lenin Sarani,
Taltala
Kolkata 700 013



Vol.67, No.4, APRIL 2019

CONTENTS

- Characteristics of a coal reservoir pore-fracture system and favourable reservoir selection in the Kuba coalfield, Xinjiang province, China
by Zhou Zhang, Shengwei Wang, Min Zhou and Baoan Xian 175
- Presplit blasting for stabilization of highwall slopes and productivity enhancement in a trench-mining project
by Pijush Pal Roy, Chhange Sawmliana and Rakesh Kumar Singh 184
- Role of modern strata monitoring instrumentation in PSLW face in India
by Aveek Mangal and P S Paul 192
- Strength criterion effect on the mechanical response of elasto-brittle plastic rock mass considering different post-peak elastic strain forms
by Lei Li, Xianbiao Mao and Liang Chen 199
- Effect of a hole drilled under different stress conditions on the behaviour of a coal specimen
by Wei Shen, Lin-ming Dou, Hu He, Guang-an Zhu and Min Zhang 213
- Sandstone bodies distribution in sequence stratigraphic framework of Jurassic Sangonghe formation in Moxizhuang area, Junggar basin
by Zhiwen Li, Jianhua Guo and Zhen Zhang 221
- Hard rock excavation without blasting for civil engineering and mining projects
by Ramesh Murlidhar Bhatawdekar, Edy Tonnizam Mohamad and Sunny M. Babu 227
- Vibration based outlook to monitor health conditions of dragline machine in opencast coal mine in India
by N. C. Dey and Sumit Banerjee 232

ANNUAL SUBSCRIPTION

Indian:
Rs.2000.00
by M.O., draft or local cheque
Rs.2035.00 by outstation cheque
Foreign:
£250.00 or \$300.00
Monthly issue:
Rs.100.00; £10.00 / \$15.00
Back issues at double rates

Enlist as a subscriber to :

INDIAN JOURNAL OF
POWER & RIVER VALLEY DEVELOPMENT
A technical monthly devoted to development of
power and water resources in Asia

Annual Subscription :
Rs.2000.(India); £250.00 or \$300.00 (Foreign)

Write to :
The Manager
BOOKS&JOURNALSPRIVATE LTD.
62 Lenin Sarani, Kolkata 700 013
E-mail: bnjournals@gmail.com

14 JUN 2019

केंद्रीय पुस्तकालय
CENTRAL LIBRARY

JOURNAL OF MINES, METALS & FUELS

INCORPORATING INDIAN MINING JOURNAL (II ISSN 0022-2755)

(FOUNDED BY LATE P.K. MENON)

Editor: P. K. CHANDA

Joint Publishers:
Books & Journals Pvt. Ltd.
and
International Information
& Engineering Technology
Association (IETA)

Editorial Advisory Board
Prof. R.N. Singh
Prof. Dr. Uday Kumar
Prof. Dr. Abdolhadi Ghazvinian
Prof. Dr. Jayanta Bhattacharyya
R.P. Ritolia

Editorial & Business Offices:
Moon Plaza
2A, 2nd Floor
62 Lenin Sarani, Taltala
KOLKATA 700 013

Mobiles :
+91 9239384829
+ 91 8479919829

E-mail:
bnjournals@gmail.com
pradipchanda@yahoo.co.uk

Web:
www.jmmf.info

Registered Office :
Books & Journals Pvt. Ltd.
62 Lenin Sarani
Taltala
Kolkata 700 013

ANNUAL SUBSCRIPTION
Indian:
Rs.2000.00
by M.O., draft or local cheque
Rs.2035.00 by outstation cheque
Foreign:
£250.00 or \$300.00
Monthly issue:
Rs.100.00; £10.00 / \$15.00
Back issues at double rates



Vol. 67, No. 5, MAY 2019

CONTENTS

- Inspection based slope stability engineering and management with greening benefits in coal mines
by Jayanta Bhattacharya, Kaushik Dey, Shubham Gavel and Sachidanand Kumar 241
- Slow loading yielding prop for underground mines - an invention
by Sudhir Kumar Kashyap, Lalan Kumar and Amalendu Sinha 261
- Guidelines for safe design and monitoring of open pit highwalls in India
by Inumula Satyanarayana, Arpan Nandy, Atulya Kumar and Abhinav Vats Raj 264
- Failure mechanism of the high pressure water in the Weibei on the top of the seams floor aquifers
by Li Ang, Ma Qiang, Kang Li, Ma Li, Wu Yan, Li Liang, Cai Lei, Mu Qian and Chen Jianbo 269
- Exploration potential of the Yanxi formation in Middle Ordovician of Hunan province
by Zhiwen Li, Guo Jianhua, Zongxiu Wang and Zhanghu Wang 279
- Optimizing analysis of reasonable limit for depth of deflection point with three-dimensional wellbore trajectory
Mingming Xing, Lili Zhou and Kaifeng Xue 285
- Lack of knowledge on job heaviness may cause occupational stress in welders while working under hostile work environment in a public domain
Partha Mukhopadhyay and Netai Chandra Dey 292

Enlist as a subscriber to :

INDIAN JOURNAL OF POWER & RIVER VALLEY DEVELOPMENT

A technical monthly devoted to development of power and water resources in Asia

भारतीय खान ब्यूरो
INDIAN BUREAU OF MINES

Annual Subscription :
Rs.2000 (India); £250.00 or \$300.00 (Foreign)

Write to :
The Manager

BOOKS & JOURNALS PRIVATE LTD.

62 Lenin Sarani, Kolkata 700 013
E-mail: bnjournals@gmail.com

19 JUN 2019
केन्द्रीय पुस्तकालय
CENTRAL LIBRARY

Mining Magazine, January/February, 2019

A new force in gold mining

The big news in mining this month is that Newmont Mining and Goldcorp have joined forces, with Newmont acquiring all of the outstanding common shares of Goldcorp in a stock-for-stock transaction valued at US\$10 billion.

The companies said that the new Newmont Goldcorp's portfolio will feature "operating assets in favourable jurisdictions, an excellent project pipeline and exploration potential in some of the most prospective gold districts around the globe".

Newmont Goldcorp's reserves and resources, located in favourable mining jurisdictions in the Americas, Australia and Ghana, will reportedly represent the largest in the gold sector. Gary Goldberg, CEO of Newmont, said: "This combination will create the world's leading gold business with the best assets, people, prospects and value-creation opportunities."

David Garofalo, Goldcorp's president and CEO, agreed: "This combination creates the world's premier gold company... The strategic rationale for combining Goldcorp with Newmont is powerfully compelling on many levels."

In addition, both Newmont and Goldcorp are known for being among the most technologically advanced mining companies. For example, Newmont has an operational technology and innovation department that works closely with the company's mining operations to optimise the strengths and capabilities its global teams need to enhance productivity and sustainability, accelerate growth and improve margins.

According to the blog on Newmont's website, some of the strategic digital opportunities being targeted by specialised teams within the department include IT/OT integration architecture and infrastructure through connected, streamlined and analysis-rich operations. It has mine monitoring and control teams that focus on leveraging wearable technology for safety and operational efficiency, while machine control and automation crews work on improving equipment performance, safety and consistency through artificial intelligence and other tools.

Meanwhile, Goldcorp is undergoing a digital transformation strategy. According to the company, it targets "technological opportunities in six areas that are ripe for innovation, covering every stage of the mining life cycle, from exploration and development to operations and reclamation."

These six areas are: big data and machine learning; the connected miner; autonomous mining operations; more sustainable mines with smaller environmental footprints; operations and reclamation; and safety and environmental re-engineering.

Goldcorp has also been running the #DisruptMining innovation challenge since 2017, and will be hosting the third annual event at the Prospectors and Developers Association of Canada (PDAC) conference in Toronto, Canada this March.

Combining their innovation initiatives as Newmont Goldcorp will make these companies even more influential in the gold mining sector – I'll be interested to see what they do next.

Speaking of innovation, it is that time of year again – the winners of the annual *Mining Magazine* awards have been announced! These awards celebrate innovation and commitment to advancing the face of mining, not just technologically but also sustainably and in an environmentally respectful manner.

Every October, we invite *Mining Magazine's* readers to nominate the best mines, teams and projects that they feel have demonstrated outstanding commitment to advancing the face of mining over the previous year. We then trim these nominations down to a shortlist that our readers can vote upon. Turn to page 12 to find out more about this year's winners and the wonderful work that they have been doing.

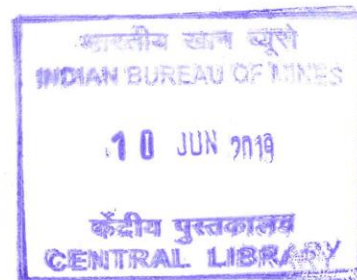
AILBHE GOODBODY, EDITOR

ailbhe.goodbody@miningmagazine.com Twitter: @MM_Ed_Ailbhe

**"This combination
creates the world's
premier gold company"**

CONTENTS

News	2
MM Awards: And the winners are...	12
Mineral exploration: Looking at it another way	19
Leadership & change management: The need for transformation	26
Drilling: Choosing the best contractor	31
Drilling: Rotary blasthole drilling	36
Tyres & wheels: Keeping miners rolling	40
Contacts	48



Next month

Mine design software
Connectivity and communications
Training and simulators
Data management



Mining Magazine, March, 2019

We need to talk about tailings

My first thought when reading the news on January 26 was: "How has this been allowed to happen again?"

I am, of course, referring to the failure of Vale's tailings dam at Brumadinho in Minas Gerais on January 25 – a disaster that killed more than 165 people with 160 still missing as I write this on February 13.

'Allowed' is the correct word in this instance. Action could and should have been taken long ago. And frankly, given some of the information that has emerged in the time since the incident, I would even go as far as to brand Vale's lack of action as gross negligence.

Once again, the mining industry has found itself at the centre of the global media's attention, and for all the wrong reasons. And, once again, I find myself writing a report on what the industry could be doing to better its tailings storage practices. Although it's a little demoralising to know that it will probably fall on deaf ears.

Speaking at the Mine Waste and Tailings conference held in Brisbane, Australia, last year, Andrew Robertson, president of Robertson GeoConsultants, summed up the situation perfectly.

"Tailings dam failures are seldom the result of a single action or mechanism, rather a failure of a system," he said.

In the case of the Feijão iron-ore mine, that systemic failure runs deeper than the dam and monitoring system built to contain tailings; it was the system that Vale uses to manage its tailings storage facilities (TSFs) full stop, the one the Brazilian government uses to regulate mines, and the lack of a global system to ensure best practices are applied regardless of mine location.

Truth is, there are no global standards that mines must comply with when designing, operating and closing a TSF, or a body to regulate them. There are best practices and legislation in certain countries/regions, but sadly the bare minimum to scrape through approvals seems to be the norm at most operations.

Enough is enough. If the current system does not provide, then miners need to take matters into their own hands.

In 2017, I interviewed Peter Larsen, chairman of the Mining Safety Round Table. The group's members have seen a 60-70% reduction in incidents and fatalities at their mining operations thanks to toolkits they have developed through open collaboration.

"We didn't want to have regulations driving our agenda: we wanted to look over our shoulders at regulations, knowing that we had set standards for ourselves that were above and beyond," Larsen told me.

This kind of mentality is exactly what is needed to promote excellence in the design and management of TSFs. I know that there is a strong community of experts out there – miners, consultants and engineers who care and want to see consistent application of best practices globally. So I'm putting the idea out there: is anyone willing to step up?

FROM TAILINGS TO TECHNOLOGY

It's somewhat fitting that this issue, with its focus on technology, marks the end of my tenure at *Mining Magazine*; one that has lasted a decade. I leave you in safe hands and, as I'll still be covering the mining industry, it won't be goodbye completely. If you're interested in new technologies, come follow me over on my blog TheIntelligentMiner.com. Until next time, farewell.

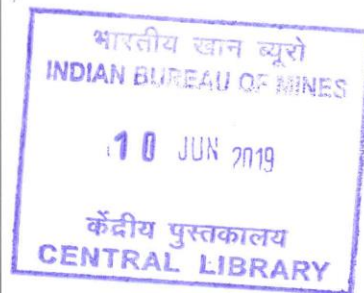
CARLY LEONIDA, EDITOR-IN-CHIEF

carly.leonida@miningmagazine.com Twitter: @MiningMagazine



CONTENTS

News	2
Data management: Mining in the cloud	9
Mine design software: Virtual blueprints	26
Underground communications: Ensuring continuous connections	31
Training & simulators: True-to-life experience	43
Contacts	48



Next month

Pumps, fluid handling and dewatering
Mechanical cutting
Shotcreting and scaling
Material handling

COVER

Inmarsat Enterprise is the leading global provider of satellite-enabled managed connectivity services for mining organisations. Working across exploration, extraction and distribution, we help transform business outcomes: optimising yields, ensuring traceability, supporting regulatory compliance, promoting sustainability and improving worker safety.

www.inmarsat.com/enterprise

Preface to the MME Special Issue in Honor of Professor Emeritus Douglas W. Fuerstenau

J. Gebhardt · Pradip 1

FLOTATION, SURFACE CHEMISTRY AND SEPARATIONS

A Century of Research Leading to Understanding the Scientific Basis of Selective Mineral Flotation and Design of Flotation Collectors

D.W. Fuerstenau · Pradip 3

Effect of ζ -Potentials on Bubble-Particle Interactions

K. Huang · R.-H. Yoon 21

Recent Advances in Studying Colloidal Interactions in Mineral Processing

Z. Xu · Z. Li · Q. Liu 35

On the Management of Gangue Minerals in the Flotation of Platinum Group Minerals

C. O'Connor · J. Wiese · K. Corin · B. McFadzean 55

The Effect of Particles on Surface Tension and Flotation Froth Stability

K. Hadler · J.J. Cilliers 63

The Influence of Polysaccharides on Film Stability and Bubble Attachment at the Talc Surface

V. Atluri · Y. Gao · X. Wang · L. Pan · J.D. Miller 71

Frothing Properties of Amine/Frother Combinations

X. Zhou · Y.H. Tan · J.A. Finch 81

Flotation in Seawater

J.S. Laskowski · S. Castro · L. Gutierrez 89

A Critical Overview of Dithiophosphate and Dithiophosphate Interactions with Base Metal Sulfides and Precious Metals

N. Tercero · D.R. Nagaraj · R. Farinato 99

Rheology of ore suspensions with fibrous minerals and its impact on flotation performance

P. Somasundaran · P. Patra · T. Bhambani · D.R. Nagaraj 111

Promising Options for Solving the Dolomite Problem of the Florida Phosphate Resources—a Brief Review

P. Zhang · S. Zheng · W. Song · C. Feng · B. Moudgil · W. Xiao · D. Zhang 117

On the Mechanisms of Silica (SiO_2) Recovery in Magnetite Ore Low-Magnetic-Drum Concentration

M. Llamas-Bueno · A. López-Valdivieso · M.A. Corona-Arroyo 131

COMMINUTION AND MINERAL PROCESSING – ENGINEERING

Grinding and Flotation Optimization Using Operational Intelligence

O.A. Bascur · A. Soudek 139

The Evolution of Grinding Mill Power Models

R. Rajamani · P. Kumar · N. Govender 151

Linear Circuit Analysis: a Tool for Addressing Challenges and Identifying Opportunities in Process Circuit Design

A. Noble · G.H. Luttrell · S.H. Amini 159

Breakage Behavior of Quartz Under Compression in a Piston Die

A.-Z.M.A. Abouzeid · A.A.S. Seifelnassr · G. Zain · Y.S. Mustafa 173

Updated Look at the DCFC: the Fuel Cell Technology Using Solid Carbon as the Fuel

N.H. Behling · S. Managi · M.C. Williams 181

HYDROMETALLURGY

Will In-Place Recovery Ever Replace the Need for Flotation?

R.J. Batterham · D.J. Robinson 189

**A Review of Nickel, Copper, and Cobalt Recovery
by Chelating Ion Exchange Resins from Mining
Processes and Mining Tailings**

A.B. Botelho Junior · D.B. Dreisinger ·
D.C.R. Espinosa 199

**Effect of Anions on the Solubility of Rare Earth
Element-Bearing Minerals in Acids**

K.N. Han 215

**Estimation of the Standard Free Energy of Formation
of Bastnasite, REFCO₃**

I. Al-Nafai · H. Kim · K. Osseo-Asare 227

**Selective Extraction of Rare Earth Elements
from Monazite Ores with High Iron Content**

L.A.V. Teixeira · R.G. Silva · A. Avelar · D. Majuste ·
V.S.T. Ciminelli 235

Further articles can be found at www.springerlink.com

Indexed in *Current Contents*, *Index Medicus*, and *EMBASE*.

Instructions for Authors for Mining, Metallurgy & Exploration
are available at www.springer.com/42461.

MINING

Evaluation of Different Carbon Monoxide Sensors for Battery Charging Stations

J.H. Rowland · L. Yuan · R.A. Thomas · L. Zhou 245

Formal Assessment and Measurement of Data Utilization and Value for Mines

W.P. Rogers · M.M. Kahraman · S. Dessureault 257

Developing Trees Tolerant to Degraded Mine Soils in an Underground Greenhouse

C. Opoku-Ware · P. Conrad · M. Kukay 269

Influence of Trailing Cables on Magnetic Proximity Detection Systems

C. Zhou · J. Li · N. Damiano · J. Carr · J. Noll 277

MINERAL AND METALLURGICAL PROCESSING

Liberation Limited Dolomite Rejection from Pebble Phosphate in Gravity Concentration

S. Puvvada · C.-L. Lin · J.D. Miller 285

Characterization and Comminution Studies of Low-Grade Indian Iron Ores

T. Santosh · S.I. Angadi · N. Dash · C. Eswaraiah · S.K. Tripathy 303

Efficient Separation of Trace Muscovite within the Surface/Interface of Quartz Grains from a Hydrothermal Deposit by Oxidizing Calcination and Catalytic Pressure Leaching

Z. Pei · M. Lin · Y. Meng · H. Qiu · X. Zhang · S. Lei · Y. Li · A.R. Gerson 313

Investigation of Microwave Exposure on Beneficiation of Low-Grade Banded Iron Ore

V. Rayapudi · S. Agrawal · N. Dhawan 327

Leaching of Trace Amounts of Metals from Flotation Tailings in Cupric Chloride Solutions

P. Altinkaya · J. Liipo · E. Kolehmainen · M. Haapalainen · M. Leikola · M. Lundström 335

A Sulfur K-Edge XANES and Raman Study on the Effect of Chloride Ion on Bacterial and Chemical Leaching of Chalcopyrite at 25 °C

X. Gao · Y. Yang · M.I. Pownceby · S. Zhong · M. Chen 343

Iron Ore Concentrate Particle Size Controlling Through Application of Microwave at the HPGR Feed

M. Athayde · M.C. Bagatini 353

A Comparative Assessment on the Effect of Different Supplemental Iron Sources on the Bio-dissolution of Zn, Pb, Cd, and As from a High-grade Zn–Pb Ore

S. Ghassa · H. Abdollahi · E. Najafi · Z. Boroumand · S. Panda · A. Akcil 363

Separation and Recovery of Iron and Nickel from Low-Grade Laterite Nickel Ore Using Reduction Roasting at Rotary Kiln Followed by Magnetic Separation Technique

L. Gao · Z. Liu · Y. Pan · Y. Ge · C. Feng · M. Chu · J. Tang 375

The Life Cycle of Water Used in Flotation: a Review

Y. Li · S. Xie · Y. Zhao · L. Xia · H. Li · S. Song 385

Effect of Operating Parameters on the Breakage Process of Calcite in a Stirred Media Mill

D. Katircioglu-Bayel · S.G. Ozkan · O.Y. Toraman 399

Combined Effect of Operating Parameters on Separation Efficiency and Kinetics of Copper Flotation

A. Bahrami · Y. Ghorbani · M.R. Hosseini · F. Kazemi · M. Abdollahi · A. Danesh 409

A Visualization Technique to Predict Abnormal Channeling Phenomena in the Blast Furnace Operation

J.-S. Shiau · C.-K. Ho 423

Mining, Metallurgy & Exploration, Vol.36 No.2, April 2019

Simulation of Material Transport in a SAG Mill with Different Geometric Lifter and Pulp Lifter Attributes Using DEM

A. Gutiérrez · D. Ahues · F. González · P. Merino 431

Characterization of Chromium (III) Compounds Isolated from Different Mineral Ores Using Ammonium Phosphate as Flux

T.T. Chiweshe · S. Potgieter-Vermaak · W. Purcell 441

Characterization and Beneficiation of Dry Iron Ore Processing Plant Reject Fines to Produce Sinter/Pellet Grade Iron Ore Concentrate

P. Dixit · D. Makhija · A.K. Mukherjee · V. Singh · A. Bhatnagar · R.K. Rath 451

Purification of High-grade Calcite Ore by Flotation with Alkyl Diamines

P. Dhar · M. Thornhill · H.R. Kota 463

EXPLORATION

Past, Present, and Future of Texas Industrial Minerals

J.R. Kyle · B.A. Elliott 475

Further articles can be found at www.springerlink.com

Indexed in *Current Contents*, *Index Medicus*, and *EMBASE*.

Instructions for Authors for Mining, Metallurgy & Exploration are available at www.springer.com/42461.

MINING

Development of an Underground Haulage System Evaluation Tool for Feasibility Studies

M. Dammers · L. Barnewold · A. Merchiers · P. Jeschke · M. Pütz 487

Associations Between Whole-Body Vibration Exposure and Occupational and Personal Factors in Drill Operators in Indian Iron Ore Mines

D.K. Chaudhary · A. Bhattacharjee · A.K. Patra · R. Upadhyay · N. Chau 495

Evaluation of Post-blast Re-entry Times Based on Gas Monitoring of Return Air

D. Bahrami · L. Yuan · J.H. Rowland · L. Zhou · R. Thomas 513

Performance of a New Fan Silencer Prototype for Auxiliary Ventilation

S. Bhattacharyya · F. Calizaya 523

Face Ventilation on a Bleederless Longwall Panel

S.J. Schatzel · V. Gangrade · J.D. Addis · C.A. Hollerich · L.L. Chasko 531

Influence of Temperature on Generator Current and Magnetic Field of a Proximity Detection System

J. Li · A. Smith · J. Carr · B. Whisner 541

MINERAL AND METALLURGICAL PROCESSING

Evaluation of Mica as a Source of Potash

A. Kumar · H. Tanvar · Y. Pratap · N. Dhawan 547

Thermal and Mechanical Activation in Acid Leaching Processes of Non-bauxite Ores Available for Alumina Production—A Review

T.S. Barry · T. Uysal · M. Birinci · M. Erdemoğlu 557

Maximizing REE Enrichment by Froth Flotation of Alaskan Coal Using Box-Behnken Design

T. Gupta · T. Ghosh · G. Akdogan · S. Bandopadhyay 571

EXPLORATION

The Tichauer-DeTomi Matrix: a Tool for Assessment of Geological Uncertainty in Small-scale Mining

R. Tichauer · G. De Tomi 579

Further articles can be found at www.springerlink.com

Indexed in *Current Contents*, *Index Medicus*, and *EMBASE*.

Instructions for Authors for Mining, Metallurgy & Exploration are available at www.springer.com/42461.