

Sürelî Yayınlar 1984

Mining Magazine

JANUARY 1984

Rajpura-Dariba India's Hindustan Zinc Ltd opened two new mines in 1983 and Rajpura-Dariba, whose project history and current operations are described here, is one of them.	22
Loading granite in French quarry Very hard rock is successfully loaded by a mid-range hydraulic excavator, supported by a wheel loader.	32
Flotation of Cu-Pb-Zn ores Current plant practice in producing concentrates from complex Cu-Pb-Zn sulphide ores is discussed, quoting examples worldwide.	36
Scrapers A review of applications at surface mines and the machines which are available.	46
Mineral reconnaissance Two Irish ideas — hydrocarbon gas detection and a mobile drill rig — help speed location of blind orebodies.	50
Mining Survey Introduction, 58; Analysis by size, 60; Current operations, 61; New projects and expansions, 71.	58

FEBRUARY 1984

The Research Mine An ambitious project at the Luossavaara iron ore mine in northern	134
--	-----

Sweden aims at developing cost-effective underground mining methods and equipment.	
Rock Drill Bits Various types of smaller diameter percussive and rotary drilling bits are considered and the major manufacturers are listed.	143
Elevating and Cross-Pit Conveyors Mobile units are described which can convey coal up steep pit slopes and can carry overburden across strip mines for spreading in the spoils area.	156
Coal Preparation Opportunities exist for updating and revamping coal treatment methods using high-speed solid bowl centrifuges.	160
Branching 46 mm Cored Holes The development of new equipment for the deflection of small diameter diamond drill holes is described.	164

MARCH 1984

Regeneration at Weipa Details of restoration work after the mining of bauxite.	206
Tecnomin'84 A preview of Latin America's most important mining conference and show taking place in Lima, Peru early in April.	215
Balmat Mines St. Joe's zinc mining operations in New York State.	230

Care	237	APCOM	255
Atlas Copco's Computer Analysis of Rock Excavation.		Papers being presented and companies exhibiting at this Computers in the Mineral Industry' conference taking place this month in London, England.	
La Oroya	246		
A new lead sinter plant improves operations at Centromin Peru's smelter.			
Checklist	251	100,000 hours	261
Examining title to mining claims in the U.S.		Achieved by generators at Marcopper mine in the Philippines.	

Mining Engineering

JANUARY 1984

Amoco Develops Thompson Creek Molybdenum Mine	27	Hydrometallurgical Pretreatment of Lead Concentrates for Electric Smelting and Electrolytic Refining	64
Kenneth P. Neumann and William A. Gibson		K. Veda, K. Kabayashi, and Y. Yamaguchi	
Impact of Eliminating Safety Fuse From Metal and Nonmetal Mines	31	Method for Calculating Tonnage and Grade in a Longhole Sublevel Stope	70
Kanaan Hanna, Gordon IB. French, Mir Heydari, and Dipack Sengupta.		J. H. Wright	
Questions Raised Concerning Study of Supply and Demand for Mining Engineers	36	Surface Coal Mining — An Approach to Prime Farmland Requirements	72
		S. T. Sorrell	
Lively Exchange, New Ideas Highlight Technical Sessions at SME-ASME Fall Meeting	40	TECHNICAL NOTE: Semi - Continuous On - Line Uranium Ore Analyzer	74
Jim Oehler		P. Campbell, L Hachkowski, and E. M. Gardy	
Roybal Raise: An Alternative Two-Compartment Raise	40	TECHNICAL NOTE : Application of Electrical Technology to Monitor the Ball Milling Process and Reduce the Rate of Wear of the Grinding Media	75
John Wright, Frank Roybal, and Don Suttie			
Mid-Continent Has Early Success With the Longest Longwall Face Ever Operated in the US	48		
Bradley J. Bourquin and Josinder S. Jaspal			
Examples of Current Surface Mining Research: Operational and Potential	53		
M. B. Treuhaft			
		FEBRUARY 1984	
		Microcomputers and Mining: Background and Setting	129
		Thomas C. Shapiro	

1983 Wrap-Up: SME-AIME Fall Meeting Exhibit	134	turn, Urges More Member Participation	237
Consequences and Economic Impact of Eliminating Safety Fuse	173	Engineering Fundamentals Series: Significant Developments Aerial Ropeway Design	241
Kanaan Hanna, Gordon B. French, Mir Heydari, and Dipack Sengupta		P. Davies	
Personal! Skills: Economic Analysis of Mineral and Energy Investments	143	Microcomputers and Mining: Geology and Exploration	244
Franklin J. Stermole		Tom Shapiro	
Considerations Regarding the Registration of Professional Engineers	147	Grouting in Underground Mine Construction	248
H. S. Pete Fowler		William R. Nash	
Geologic Studies During the Development of the Copper Flat Porphyry Deposit	151	Use Lower Shearer Drum Speeds to Achieve Deeper Coal Cutti	251
P. G. Dunn		Jonathan Ludlow and Robert A. Jankowski	
Oxidative Destruction of Ammonia for Restoration of Uranium Solution Mining Sites	160	Carbon in Pulp Process for Recovering Gold from Acid Plant Calciners at President Brand	257
M. J. Humenick and K. Garwacka		G. J. C. Young, W. D. Douglas, and M. J. Hampshire	
Costs and Cost Effectiveness of Coal Mining Reclamation	166	Controlling the Deleterious Effects of Partial Discharge on High-Volta Cable Couplers in Mine Power Systems	265
S. M. Bishoff		C. J. Bise and R. C. Kadyk	
Magnesium Oxide for improved Heavy Metals Removal	171	Estimation and Incorporation of Metallurgical Data in a Mineralization Model	270
J. E. Schiller and S. E. Khalafalea		V. Miller	
DISCUSSION: Stote Companies in International Industrial Minerals Trading	174	Need for Closely Spaced Samples for Short-Term Coal Mine Planning	276
W. G. Prast and A. M. Radigan		Y. C. Kim and S. L. (Barua	
MARCH 1984			
1984 SME-AIME President Frederic L. Kadey, Jr., Sees Industry Up-		DISCUSSION: Comparison of Different Ore Reserve Estimation Methods Using Conditional Simulation	280
		E. Y. Saafi Y. C. Kim	

Institution Minerals

JANUARY 1984			
UK structural clay products — building on firmer ground	19	mica deposit	37
Williamstown kaolin - silimanite-		Titanium minerals in Brazil — progress and potential	45
		North American cement — US recovery while Canada still suffers	51

Barytes — a plea for o performance index	67
Freights — onward to 1984	69

MARCH 1984

Calcium carbonate fillers — plastics and paper to grow?	23
Antimony — price recovery as production falls	37
Japanese refractories — technology leading the way	53
A profile of SA Mineracao de Amianto — Brazil's asbestos producer	63
Freights — better opportunities for large bulkers	67

FEBRUARY 1984

Silica sand — competition in a tight market	19
North American silica sand —	39
Great Salt Lake Minerals & Chemicals	43
Freights — more optimism	51

Institution of mining and metallurgy

JANUARY 1984

Analysis of stoping sequence and support requirements in a high-stress environment — ZCCM, Mulira Division F. M. Russell, D. R. M. Armstrong and R. Talbot	A1
Study of variables in auxiliary ventilation V. S. Vutukuri	A10
Regional aspects of mining-induced seismicity theoretical and management considerations E. L. Dempster, J. A. Tyser and H. Wagner	A17
Policy analysis model for open-pit mining enterprises R. G. Coyle and D. H. Montaldo-Cancela	A28
Discussions and contributions Application of refrigeration in mines M. J. Howes	A34
Rockhurst phenomena in the gold mines of the Witwatersrand: a review	

J. F. Curtis	A38
Tax allowances and grants applicable to mining operations in the United Kingdom T. Wilkinson	A39

FEBRUARY 1984

Resonance effects in complex resistivity data and their significance in mineral exploration W. J. Phillips	B1
Sulphide-carbonate relationships in Upper Silesian Zn-Pb deposits (Mississippi Valley type), Poland, and their genesis H. Kucha and K. Czajka	B12
Alluvial gold, platinum, osmium — iridium, copper-zinc and copper-tin alloys from Sumatra-their composition and genesis J. F. W. Bowles et al.	B23
Success rates for nickel exploration in Zimbabwe M. Potter	B31

Detrital zircon of Spurn Head, Yorkshire, England the economic potential P. A. Hill A Parker "	B35
Effect of barren dykes on ore potential at Cerro Colorado porphyry copper deposit, Panama E. J. Sides	B39
Discussions and contributions	
Metalliferous and mineralized Caledonian granites in relation to regional metamorphism and fracture systems in northern Scotland J. A. Plant et al.	B47

MARCH 1984

Geostatistical prediction of grain-size fluctuations in feed to Reichert cones A. Sahin	C1
Flotation of spherical particles R. Varbonov	C6
Studies in sulphation:	
1 — Kinetics and mechanism of sulphation of manganese dioxide P. K. Sahoo, S. C. Sircar and S. K. Bose	C9
Studies in sulphation:	
2 — Sulphation of Fe²⁺ and manganese ore in SO₂-O₂ atmospheres P. K. Sahoo, S. C. Sircar and S. K. Bose "	C13
Measure of separation E. Stam'bolliadis	C16
Adsorption of polyvalent metal species on activated carbon C. I. House and H. L. Shergold	C19
Temperature control of acid pressure leaching of uranium ores K. M, Sarkar	C23
Electric smelting of tin concentrates from Cornwall D. S. Rett and D.A. Harrison	C30

Selective magnetic coating for mineral separation P. Parsonage	C37
Oxygen solubility in molten lead D. S. Conochie, C. Ebiogwu and O. G. C. Robertson	C45
Foreword	vii
Pulp dispersion in selective desliming of iron ores S. V. Krishnan (Columbus, Ohio, U. S.A.) and I. Iwasaki (Minneapolis, Minn., U.S.A.)	1
The influence of grinding and flotation environments on the laboratory batch flotation of galena P. J. Guy and W. J. Traihar (Clayton, Vic, Australia)	15
Grinding media wear and its effect on the flotation of sulfide minerals K. Adam, K. A. Natarajan (and I. Iwasaki (Minneapolis, Minn. U.S.A.)	39
Electrochemical flotation of sulfides: reactions of chalcocite in aqueous solution G. W. Walker, J.V. Stout, III, and P. E. Richardson (Avondale, Md., U.S.A.)	55
Electrochemical flotation of sulfides chalcocite - ethylxanthate interactions P. E. Richardson, J. V. Stout, III, C.L. Proctor and G. W. Walker (Avondale, Md., U.S.A.)	73
Thermodynamic calculations on sulfide flotation systems: I. Galena-ethyl xanthate system in the absence of metastable species M. D. Pritzker and R. H, Yoon (Blacksburg, Va., U.S.A.)	95
The role of amino acid on the xanthate adsorption at the water-mineral interface K. Takahastii and T. Wakamatsu (Kyoto, Japan)	127

Factors affecting the flotation recovery of molybdenite from porphyry copper ores S. Raghavan and LL. Hsu (Tucson, Ariz, U.S.A.)	145	S.A.) Sulfidization and flotation of chrysocolla and brochantite S. Raghavan, E. Adamec and L. Lee (Tucson, Ariz, U.S.A.)	163 173
Effect of humus organics on the flotation recovery of molybdenite R. W. M. Lai, L C. Stone and B.E. Rimmasch (Salt Lake City, Utah, U.		interparticular phenomena in the flotation of hematite fines A. Pindred and J. A. Meeoh (Kingston, Ont. Canada)	193

Engineering And mining Journal

JANUARY 1984

Mining investment 1984	33
Ranchers end - silices Escalante silver deposit	48
Australian manganese: Gemco	57
Australian tin: Renison	59
Commercial production of U ₃ O ₈ * begins at Key Lake	13
Peru's Tintaya copper expansion progresses despite delays	18
Recovery in US-Canadian mining varies by sector	15
Inco hqs become a leaner, more flexible cost - efficient competitor: Baird	18

FEBRUARY 1984

Copper from the Swedish Arctic	29
The comeback of California placers	36
Inco Limited dredges Thompson overburden	42
Australian mineral sands	47
SF« adds a new dimension to mine ventilation analysis	50
How gassy noncodl mines can simulate methane flow	51
Tecnomin 84: A trade fair for technology transfer	12

Plans advance for ERGO-Dagga recovery project	13
Argentina backs development of mineral potential	15
Tanzanian phosphate operation at 100,000 mt/yr	16

MARCH 1984

Average annual metal prices 1983	35
Average weekly metal prices 1983	37
Average annual metal prices 1925-1983	39
Aluminum	47
Antimony	96
Asbestos	88
Barite	92
Beryllium	97
Bismuth	98
Cadmium	98
Chromium	53
Cobalt	54
Columbium	70
Copper	41
Diamonds	89
Fluorspar	93
Germanium	99
Gold	72
Gypsum	95
Iron and steel	49
Kaolin	95
Lanthanides	107

Lead	43	Trona	91
Lithium	103	Tungsten	55
Magnesium	48	Uranium	62
Manganese	57	Vanadium	60
Mercury	100	Vermiculite	96
Molybdenum	52	Zinc	44
Nickel	51	Zirconium	
Phosphate	80	US producers ask ITC for copper	
Platinum and palladium	78	import quotas	15
Potash	86	How strong is government influence	
Selenium	105	over metal production?	17
Silver	76	Nevmont's Gold Quarry and Utah tax	
Sulphur	81	ruling brighten US scene	19
Tantalum	71	Australian iron pre may spur first	
Tin	58	Chinese overseas venture	23
Titanium	67		

Mine Ventilation Society Of South Africa

JANUARY 1984

Longwall Lighting by W. H. Lewis, J. Peay, J. C. Yingling and G. R. Bockosh	1
25 Years Ago	8
Controlling Dust and Gas in the Face Area: Operating Experience Under Ultra Low-Seam Conditions by S. P. Daft	9
Retirement: D.F.H.; Grave	12

FEBRUARY 1984

The Determination of Operating Points for Fans Partially in Series or Parallel using Energy and Mass- low Equations by A. E. Hall	13
Chamber of Mines Examination Results	19
Some Factors to be Considered in Water Management by D.P.M. Ven- ter	20

Views from the Mines	21
Suggested Answers to Past Exami- nation Questions by J.H. Steyn	22
Registration of Professional Tech- nologists (Engineering)	24
25 Years Ago	24

MARCH 1984

Protection with Sionôdust Barriers or Coal Conveying Roads by P-J- Yssel	25
Some Factors to be Considered Water Management by D.P.M. Ven- ter	28
Virgin Rock Temperature Measure- ments Using Thermistors and a Di- gital Read Out System by C. S. Porter	31
Suggested Answers to Past Exami- nation Questions by J. H. Steyn	34
25 Years Ago	36

Geophysics

JANUARY 1984

Modeling the effect of static errors in areal seismic data caused by glacial erosion over carbonate reefs 1
J. S. Kotcher, G. H. F. Gardner, and J. A. McDonald

An analysis leading to the reduction of scattered noise on deep marine seismic records 17
C. J. Tsai

Radiation from a downhole air gun source 27
M. W. Lee, A. H. Balch, and K. R. Parrott

Cross-hole seismic surveys: Applications for studying subsurface fracture systems at a hot dry rock geothermal site 37
M. Fehler and C. Pearson

Accommodating lateral velocity changes in Kirchhoff migration by means of Fermat's principle 46
J. A. Carter and L. N. Frazer

The relationship between «direct discrete» and «iterative, continuous» one-dimensional inverse methods 54
S. H. Gray

Electromagnetic modeling of three-dimensional bodies in layered earths using integral equations 60
P. E. Wannamaker, G. W. Hohmann, and W. A. San Filippo

Does draping aeromagnetic data reduce terrain-induced effects? 75
V. J. S. Giauch and D. L. Campbell

Response of a current loop antenna in an invaded borehole 81
W. C. Chew

Discussion on: «Analysis of error due to presence of gaps in the measurement of rock samples in a coaxial line» (F.S.C. Hiang and L. C. Shen), by Ramesh P. Singh with reply by author 92

FEBRUARY 1984

The signature of an air gun array: Computation from near-field measurements including interactions — Practical considerations 105
L. Hatton, and T. Haugland

Refinements to the linear velocity inversion theory 112
F. G. Hagin and J. K. Cohen

The characteristics of reflection traveltimes for some layer models 119
B. S. Byun

Migration of seismic data by phase shift plus interpolation 124
J. Gazdag and P. Sguazzero

A two-way nonreflecting wave equation 132
E. Baysal, D.D. Kasloff, and J.W.C. Sherwood

Response of a normal resistivity tool in a borehole crossing a bed boundary 142
G. J. Zhang and L. C. Shen

Inversion of horizontal loop electromagnetic frequency soundings 150
P. K. Fullagar and D. W. Oldenbourg

Thermoelectrical self potential anomalies and their relationship to solid angle subtended by the source region 165
D. V. Fitterman

True and apparent spectra of buried polarizable targets. 171
D. Guptasarma

Effect of Well casings on surface electrical surveys	177
J. S. Holladay and G. F. West	
A microcomputer based system for small-scale geophysical surveys	189
W. T. C. Soweituttts alnd R. W. I. Mason	
Positivity of the coincident loop transient electromagnetic response	194
D. Guptasarma	
On-line movies of reflection seismic data with description of a movie machine	195
R. Ottolini, C. Sword, and J. F. Ciaer- bout	
Discussion on: «Microwave properties of saturated- reservoirs» (J. N. Lange), by J. Korringa and R.J.S. Brown with reply by author	201

MARCH 1984

Optimum suppression of coherent signals with linear moveout in seismic data	215
M. Simaan and L P. Love	
Poststack estimation of three-dimensional crossline statics	227
P. S. Schultz and A. Lau	
The migration of common midpoint slant stacks	237
R. Ottolini and J.F. Claerbout	
Traveltime inversion of offset vertical seismic profiles — A feasibility study	250
L. R. Lines, A. Bourgeosi, atnd J. D. Covey	
Survey design for multicomponent electromagnetic systems	265
J. C. Macnae	
Semblance processing of borehole acoustic array data	274
C. V. Kimball and T.L. Marzetta	
Evaluation of an observational met-	

hod for estimation of remanent magnetization	282
C. C. Schnetzler and P. T. Taylor	
Induced polarization time-domain equipment and some model studies over thin dikes of finite strike extent	291
R. K. Majumdar ,and S. Dutta	
Sound speed and attenuation measurements in gassy sediments in the Gulf of Mexico	297
T. S. Edrington and T, M. Calloway	
Automatic fitting of gravity anomalies using two-dimensional models	300
A. Montalvo	
Simulating true amplitude reflections by stacking shot records	303
P. Hirbral	
New three-point formulas for inductive coupling removal in induced polarization,	307
J. H. Coggon	
Discussions on: «Airborne gravity is here!» (S. I. Hammer), by N. C. Steenland with reply by author	310
On: «Comparison of apparent resistivity functions for transient electromagnetic methods (A.P. Raiche), by J. Macnae and Y. Lamontagne with reply by author	312
On: «Effect of surface polarization on resistivity modeling» (D. Guptasarma), by K. Duckworth With reply by author	314

APRIL 1984

Seismic geohistory analysis — A case history from the Canning Basin, Western Australia	333
M. E. Middleton	
Complex seismic trace analysis of thin beds	344
J. D. Robertson and H. H. Nogqmi	

interactive interpretation of seismic data	353	Noise correlation lengths in remote reference magnetotellurics	433
A. C. Gerhardstein and A. R. Brown		P. M. Maxton, R. R. Koch, and J. Clarke	
Anisotropy and dispersion in periodically layered media	364	Three-dimensional terrain corrections in resistivity surveys	439
K. Helbig		H. T. Holcombe and G. R. Jiracek	
An experimental test of P-wave anisotropy in stratified media	374	Heat flow in the Uinta Basin determined from bottom hole temperature (BHT) data	453
P. J. Melia and R. L. Carlson		(D. S. Chapman, T. H. Keho, M. S. Bauer and M. D. Picard)	
Predictive deconvolution and the zero-phase source	379	Algorithm for error adjustment of potential field data along a survey network,	467
B. Gibson and K. Lajmer		P. K. Mittal	
Rise times of attenuated seismic pulses detected in both empty and fluid-filled cylindrical boreholes.	398	Discussions	
D. P. Blair		On: «Airborne gravity is here!» (S. Hammer), by A. T. Herring with reply by author	470
The horizontal loop electromagnetic response of a thin plate in conductive earth: Part I — Computational method	411	On: «Airborne gravity is here!» (S. Hammer), by W. C. Pearson with reply by author	473
J. E. Hanneson and G. F. West		On: «Acoustic reciprocity — A paradox» (E. Eisner), by F. A. Dahlen and R.I. Odom with reply by author	479
The horizontal loop electromagnetic response of a thin plate in a conductive earth: Part II — Computational results and examples	421		
J. E. Hanneson and G. F. West			

Geophysical Prospecting

FEBRUARY 1984

Shear Waves by an Explosive Point Source: The Earth Surface as a Generator of Converted P-S Waves	1	On the Origin and Interpretation of Self-Potential Anomalies	51
J. Fertig		K. T. Kilty	
A Three-Dimensional Numerical Bottom - Hole Temperature Stabilization Model	18	The Classification of Physico-Geological Models of Mineral Deposits	63
F. W. Jones, M. Rahman and Y. Leblanc		G. S. Vafkhromeyev and A. S. Baryshev	
Two Structural Models for Western Flank of the Brabant Massif	37	A Method for Calculating IP Anomalies for Models with Surface Polarization	79
F. de Meyer		L. Eskola, E. Eloranta and R. Puranen	
		Detectability of an Intermediate Layer by Perpendicular and Vertical Coplanar Electromagnetic Sounding System Employing Different Primary Excitations	88
		R. K. Verma and K. Mallick	

A Digital Linear Filter for Resistivity Sounding with a Generalized Electrode Array D. J. O'Neill and N. P. Merrick	105	On the Equalization of the Transformerless Seismic Streamer Response M. H. Safar	228
Geoelectrical Model Calculations for Two - Dimensional Resistivity Distributions E. Mundry	124	A Hybrid Method for Wave Field Computation V. Shtivelman	236
The Use of Two - Electrode and Schlumberger Filters for Computing Resistivity and EM Sounding Curves A. T. Başokur	182	L'Egalisation Spectrale: Un Moyen d'Améliorer la Qualité des Données Sismiques F. Coppens et J. L. Mari	258
More Comments on «A Theorem for DC Regimes and Some of its Consequences» by A. Roy D. S. Parasnis	139	Interpretation of Landsat MSS Data in an Iron — Ore — Bearing Zone in Goa, India Y. V. S. Murshy and K. Mallick	282
Reply to Comments by D. S. Parasnis A. Roy	142	Généralisation et Optimisation de la Méthode des Différences Finies pour la Modélisation en Magnéto-tellurique (MT) D. Doucet et Pham van Ngoc	292
APRIL 1984		A Modified Mode of Operation for the Turam Electromagnetic Exploration System with Benefits for Deep Exploration K. Duckworth and A. R. Bajys	317
Obituary: A. van Weelden	157	On the Interpretation of Airborne Electromagnetic Data for the Two Layer Case E. Mundry	336
Tutorial: A Review of Least-Squares Inversion and its Application to Geophysical Problems L. R. Lines and S. Treitel	159	Comment on «A Simple and Exact Method of 3-D Migration - Theory» by H. Jakubowicz and S. Levin R. H. Stolt	347
Anisotropy due to Bedding — A Computer Study F. K. Levin	187	Reply to Comment by R. H. Stöly H. Jakubowicz and S. Lewin	350
On the Possibility of Seismic Exploration using Surface Torque Source and Related Topics M. Kuhn and V. Drach	198		