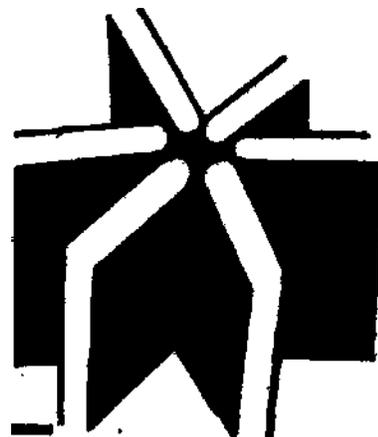


# SÜRELİ YAYINLAR



## JANUARY 1982

### Orchard VaHey Mine

- 20 A modern underground coal mining operation in Colorado Is described, with particular reference to environmental factors.

### Sydvaranger's New Mill

- 30 A large grinding mill with peripheral motor has started up successfully at this Norwegian iron ore producer's plant.

### Flotation Machines

- 35 A review of current types of flotation equipment, from mechanical cells to items utilising new Ideas.

### Nickel Resource Analysis

- 61 A survey, with discussion, of the Western World's nickel producers.

## FEBRUARY 1982

### Araxa Niobium Mine

- 134 This Brazilian mine is the western world's largest source of niobium, an important constituent of high strength low alloy steels.

### Feeder Breakers

- 149 Machines to provide a sized and constant feed onto conveyors are finding new applications at surface and underground mines.

### Tin Promotion

- 156 The activities of the International Tin Research Institute in promoting the use of tin are described.

### Nepal

- 161 The mineral industry in Nepal is described, together with nie work being carried out by the Mineral Exploration Project.

### Large Scale Underground Mining

- 167 A reader's comment on our September 1981 article on this subject.

## MARCH 1982

### Berjuntai

- 200 Tin dredging operations at this important Malaysian producer.

### Bulldozers

- 211 Essential machines at most surface mines and often underground, bulldozers must be built for strength and reliability.

### Metal Deposit Origins

- 226 Interpretation of satellite imagery plus a speculative idea on the origins of metal deposits.

### Mine Financing

- 229 There Is always money for good projects — the problem is in matching the risk to the reward.

### Correspondence

- 235 A reader comments *on* "Data Reliability in Ore Reserve Assessments" - Mining Magazine, October 1981.

### APRIL 1982

#### Dizon

- 268 One of the newest and most modern mines in the Philippines this copper-gold project uses autogenous grinding.

#### Hydraulic Drills

- 292 The number of manufacturers of hydraulic percussive drills continues to grow and new types are offered.

#### Heap Leaching Simulation

- 296 The author invites co-operation in developing improved forecasting of results of heap and dump teaching.

### Large Scale Underground Mining

- 307 A reply by the author of this article (September 1981) to comments appearing in the February 1982 issue.

### MAY 1982

#### Hungary Turns to Coal

- 358 Rand D helps overcome difficult geology, indifferent quality

#### Polish Coal

- 363 Long-term plans for Poland's important coal industry are outlined.

### World Mining Congress

- 369 The 11th in the series, this Congress taking place in Belgrade, Yugoslavia is previewed. A Mining Show is being held in Zagreb immediately after the Congress.

### Correspondence

- 379 Author's reply to a comment on ore reserve assessments', Mining Mag., October, 1981.

### Perseverance Mine

- 381 A prospecting case history for this Zimbabwe NI producer.

### Ore Sorting

- 393 Radiometric sorters have proved very effective at Buffelsfontein gold/uranium mine, S, Africa.

### Lochaber Smelter

- 399 Recently modernised, on time and within budget.

### JUNE 1982

- 448 Beisa, the R.S.A.'s first primary uranium mine, with gold as a by-product, was officially opened in March. Here are details of the mine and processing plant.

### Tunnelling 82

- 458 A summary of exhibitors at the tunnelling conference in Brighton

### Brazilian tin

- 461 The tin deposits of Central Goias have unusual geological features and definite economic potential

### Tunnelling by Machine

- 469 Road headers and full face *borers* have increasing applications in mine development



### JANUARY 1982

### Mechanized Masua

- 36 This is a major Sardinian base metal mine where trackless mining has attained a sophisticated level, including the use of remote controlled load-haul-dump units. John Chadwick has the report from the Mediterranean

## Acapulco Mining Convention and Show

- 40 Don Pazour recently attended this important bi-annual event in Latin America. Delegates viewed equipment and attended technical sessions

## Special Focus: Service Vehicles in the Mining Industry

- 43 Known by many names, these machines can be used for a wide variety of tasks in today's mines, John Chadwick has researched the field, and presents his findings

## Interview with Alex Sutulov

- 52 This internationally known consultant, mineral economist, and writer sat down in our offices recently, and talked about one of his favorite subjects, molybdenum

## FEBRUARY 1982

### Blasthole Drills

- 33 Ready reference specifications, photographs, and an analysis of blasthole drilling today are all in this comprehensive report by John Chadwick

### Drilling for Profit

- 40 A companion piece to the International Guide, this feature tells you how to obtain maximum production at minimum cost through good management. Roy Moore of Reed Mining Tools, Inc. is the author

### Borehole Surveying

- 42 Increased efficiency in exploration and mining is obtained by accurate surveying. Randy Cobbley of Eastman Whipstock, Inc. describes the latest technology

### Gobait Today and Tomorrow

- 48 A generally optimistic view prevailed at a recent international cobalt conference, held in Brussels, Belgium. John Chadwick was there, and has filed this report

### World Mining Congress

- 53 The 11th edition of this uniquely important convention will be held in Belgrade, Yugos-

lavia in just a few short months. George Argall, who is on the Congress' Organizing Committee, has all the details in a pre-Congress outline

## MARCH 1982

### Special Focus: Slurry Pumping and Handling

- 46 In this feature, by Vic Cabrera, and the following four features, WORLD MINING takes an in-depth look at this topic. In addition, the Production Equipment Catalog, beginning on page 97, is devoted exclusively to slurry pumping equipment

### Pumping For Less Money

- 52 Jan Lidin of Sala International explains how greater efficiency in pumping can be attained, while lowering costs at the same time

### Prolonging Valve Life

- 54 The myriad problems that can beset valves, thereby bringing operations to a halt, can be prevented. Curtis Oarkson of The Clarkson Company presents his views

### New Slurry Pump Technology

- 59 Higher efficiencies and longer lives are being achieved today, as new ideas become operating reality. Jon Fatzinger of ASH Pump/ASH Molded explains

### Selecting and Maintaining Hose

- 62 Capping off the Special Focus, Otaries Artus of The Gates Rubber Company describes in detail steps that should be taken when considering slurry hose

### Rapid Open Pit Design

- 66 Flexibility, versatility, and simplicity are the keys. Rudolf Kvapil, John McMorran, and Mark Dotson have the facts and figures

### Mineral Processing Congress

- 71 The fourteenth meeting of the Congress will be held in Toronto; Canada and it promises to be a meeting not to be missed. George Argall reports.

## APRIL 1982

### Saving Energy in Mining

- 38 Energy conservation is being seen more and more as the "fifth fuel". John Chadwick outlines the many steps that can be taken to reduce energy consumption. In today's mines, in the first feature of this WORLD MINING Special Issue

### Saving Energy in Mineral Processing

- 44 Complementing Chadwick, Don Pazour investigates the philosophies and techniques involved in cutting energy costs once the ore has been taken out of the ground for metal and mineral recovery

### Electric LHD's Today

- 49 Focusing on a specific instance, WORLD MINING describes a new Swedish operation, where electric LHD's are proving that can cut operating costs and improve the working environment at the same time

### The Big Burgher Pit

- 52 Authors Dan Nillson, Art Ettlinger, and Karl Burgher study in detail the many ways to reduce operating costs at this hypothetical open pit *copper mine*. Their findings have meaning for actual operating mines, too

### Articulated Haulers

- 57 Again zeroing in on a specific energy-saving topic, WORLD MINING asked Max Richler of Atlas Hoist and Body, Inc. to describe energy savings achieved through the use of articulated haulers. His findings are presented here

## MAY 1982

### Southeast Asia Today

- 41 Some \$ 5,400,000,000 in capital spending is planned in the near future in Southeast Asia. WORLD MINING takes a look at the region in *the* entire feature section of this month's Special Issue

### Offshore Tin Mining

- 42 John Chadwick says that Natai Jetty, north

of Phuket, is the most interesting mining area he has ever visited. The illegal offshore tin miners of past days have now been given a mining area of their own. This report covers the small dredge operations, and also looks at one of the major mining operations in the area

### Gopeng Consolidated

- 46 This mine, near Ipoh, Malaysia, has always been known as the largest gravel pump mine in the world. Chadwick found that this is no longer strictly true-Gopeng has in fact largely moved away from conventional hydraulic mining to earth moving techniques

### Mining Terms of Southeast Asia

- 50 Miners in Southeast Asia have a language all their own. A working knowledge of it is quite valuable to anyone interested in this part of the world

### Burma

- 51 This country was once an important producer of lead, tin, tungsten, and silver, and its promising mineral potential may again be realized. Chadwick has the facts and figures

### Pou Sin

- 54 Gravel pump mines produce a great deal of tin in Southeast Asia. Chadwick reports on this small operation that typifies the situation today

### Ertzberg East

- 56 The ore tonnage mined at the end of 1981 exceeded planned capacity. George Argall tells why

## JUNE 1982

### Carolin gold mine starts up

- 42 Western Canada's largest gold mine has exceeded designed production in a matter of weeks. Plans are to increase production to 300 ounces of gold per day. Kelson Collins, Rod Samuels, and John Bogert, all of Carolin Mines Ltd, provide all the details about this new operation

#### Diesel emissions underground

- 48 In Sweden, Diesel exhaust in underground mines, especially from Diesel LHD's, is of serious concern. The University of Lulea has exhaustively studied this problem, and has come up with recommendations that every underground miner should consider. Ove Rehnberg, Per-Arne Lindqvist, Anders Sundgren, Michael Norlund, and Bengt Schmidt-bauer have the report

#### Mining in India

- 57 The Indian mining industry has been growing since independence, and today produces 64 commodities, worth well over \$2,500,000,000 annually. N.V. Eswar outlines the past, and tells of future prospects for his country in the world of mining

#### Open pit bench blasting

- 64 Lothar Buchta is a recognized expert in the field of blasting. In this article, he combines theories and practical field experience in explaining how open pit bench blasting can be improved

## MIMNG ENGINEERING

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## CANADANMNING JOURNAL

### JANUARY 1982

#### Mineral exploration trends and developments in 1981

- 22 Worldwide mineral exploration activity rose slightly fast year despite poor base metal prices. The search for glod was a particularly busy area, but uranium exploration continues to decline. Peter Hood of the Geological Survey of Canada has compiled a comprehensive overview of new technology and where it is at work. This article is a regular feature of CM J- the state of the art study of geophysics and geochemistry by an acknowledged authority in this field. What's new in airborne geophysical surveys and techniques begins on page 23. Developments in ground survey techniques start on page 35.

1982 Prospectors Convention-You've come a long way, PDA

- 63 This year marks the 50th anniversary of the Prospectors and Developers Association and a special celebration is planned Next March 7-10 the PDA will take a look at the exploration industry's past, present and future. Programs for the technical sessions and social events begin on page 64 Look for the preview of coventton exhibits which starts on page 67.

### FEBRUARY 1982

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- 19 Minerals in the bureaucracy: the role of EMR's Mineral Policy Sector, by Dr C.G. Miller
- 23 The Canadian mineral industry: review and outlook, by L. Tibbo
- 32 Canadian mineral production
- 34 Regional mineral developments, by P, Andrews
- 46 Canada's non-fuel mineral trade and the international scene, by V. Schneider
- 53 Canadian reserves of seven metals, by W. La ugh lin
- 57 Mineral transportation, by G. Bokovay
- 61 Principal Canadian nonferrous and precious metals producers in 1980, with highlights for 1981

#### Nonferrous metals

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#### Ferrous metals

Iron ore, by M. Boucher, p. 104. Additive, refractory and reactive metals, by D. Law-West and D. Fong, p. 109. Iron and steel, by C. Cajka, p. 116.

#### Non-metallics

Asbestos, by O. Vagt, p. 122. Sulphur, by B. Boyd, p. 125 Potash, by G. Barry, p. 128. Construction materials, by D Storehouse, p. 133. Other industrial minerals, p. 136.

## **Fuels**

Coal, by J. Aylsworth, p. 138. Uranium, by R. Whimans, p. 142. Petroleum and natural gas., by R. Thomas, p. 151.

## **MARCH 1982**

### **Innovative solutions discussed at CMP meeting**

24 The recent meeting of the Canadian Mineral Processors In Ottawa presented many ideas on how to get the most out of a mill — whether the mineral be anything from gold to oil sands.

### **Tanco's rare metal concentrator**

40 Process design has been continuously updated at this mill which produces the only tantalum concentrate in Canada

### **New Brunswick mine receives the first "Scandinavian" grinding mills installed in North America**

49 This mill has a unique shape, rubber linings and rests on hydrodynamic bearings.

### **Final report: immobilization of U-Th-Ra tailings in mine wastes**

S3 Laboratory results have been promising for methods of containing radioactive tailings and maintaining a clean environment.

### **New hydrometallurgical process shows promise with low grade silver ores**

56 Developed in the US, the inventors of this process are looking for joint ventures to prove its worth on a commercial scale.

### **Largest quake since 1869 hits New Brunswick**

61 Earthquakes always shake people up, but this one caused no harm to the mining community in this Maritime province.

### **Optimum cut-off grades in underground mining**

65 Where does one draw the line on mining certain ore profitably? Here are some thoughts on what criteria should go into the decision.

## **APRIL 1982**

### **Devco aims for 95 per cent recovery at Donkin colliery**

21 The Donkiif-Morien project will create the largest coal mine In Nova Scotia's history. This coal could be the feedstock for a synthetic fuel industry in the province.

Coal transport, handling improved at Devco  
35 New rail equipment, upgraded storage and handling facilities, and an improved international shipping pier will soon handle 5 million tons of coal annually.

### **Prospectors celebrate 50th anniversary**

41 Fifty years of accomplishments by the PDA were reviewed at this year's convention and delegates were also given a glimpse into the mine of the future. Selected papers from the meeting follow.

### **SO The Montauban gold project: breaking new ground in geology and financing The Pinson mine: a Carlin type gold deposit**

61 Midway, an analysis of a new massive sulphide discovery

66 Applications of microcomputing devices to a field exploration environment advantages and pitfalls

71 Accomplishments in exploration geochemistry: a Canadian perspective

### **Nuclear fuel management tests move underground**

83 Atomic Energy Canada is planning a research mine to learn more about the behavior of previously undisturbed granitic terrain in southeastern Manitoba.

## **MAY 1982**

### **VSE readies for next rush**

31 With last year's boom in stock activity in Vancouver, the VSE geared up to handle the volume.

### **Bachelor Lake gold mine on stream debt free**

39 A public share offering of Bachelor Lake Gold Mines raised f 10 million — enough to put the mine into production and some left over for working capital.

### **Benefits of buying NaCN in semi-bulk containers rather than drums**

47 Safer handling, less waste and a reduction of costs are possible with Du Pont's Flo-Bin system.

### **Mill changes, new mines ahead for Cyprus Anvil**

52 With extensive mine improvements in preparation for mining the Grum and Vangora lead-zinc deposits.

Avoid downtime: checkpoints of heavy equipment maintenance

59 Operators need not put up with breakdowns and unexpected maintenance.

Northeast BC coal undeterred by winter cold

62 To meet delivery dates in mid- 1983, developers of the Quintette and Bui I moo se coal deposits have worked hard through the winter.

New generation of noise dosimeters in Canadian mines

71 Equipment tested by Canmet in Elliot Lake provides hardcopy printout of noise exposure of workers.

How compressor heat recovery saves energy

77 Total energy consumption in plants can be reduced. Here are some practical tips from Atlas Copco.

## JUNE 1982

Crusher isolation to keep Key Lake mill Dust free

20 About a mile of four inch pipe will virtually eliminate dust in the mill of this new uranium producer.

Potash markets weaken, Canadian mines trim output, await recovery

25 Canadians poised for upswing

Lanigan potash expansion has computer controlled bores

29 Lanigan is the biggest single production shaft potash mine in the world,

39 Eastern potash industry born as PCA readies first producer in New Brunswick

Hemlo gold decision near

'47 Corona Resources' property, now being evaluated.

CDDA members discuss offshore, geothermal drilling techniques

49. The Canadian Diamond Drillers trade ideas.

New feature! Full color mining literature review

S7 Twelve informative pages containing dozens

4ft

of free information sources to meet all your mining needs.

Anik satellite broadcasts TV entertainment to remote worksites

70 Workers in isolated mine sites enjoy home comforts.

PVF wire rope cuts shovel downtime at Asbestos Corp.

73 The search for high strength, reliable wire rope may be over with the plastic filled valley type.

Eklund Drilling tests Carlin type gold Deposits

75 Eklund is using a method claimed to be 90 per cent cheaper than diamond drilling.

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Mining investment 1982

49 An update and review of capital projects taking shape around the world.

US Bureau of Mines develops portable crusher for underground hardrock mines...

72 As a result of successful testing on the surface, underground production testing of the prototype has been scheduled to start this year.

Blasting with MSHA

76 Misunderstanding the distinction between "loaded" and "charged" botes can mean MSHA violations and loss of valuable working time.

Equity Silver on line with leach plant

78 Details on Equity's new custom-designed and highly automated teaching plant, which removes troublesome antimony and arsenic from high-silver, gold-bearing copper concentrate.

Modernization extends to most A lean plants

85 Modernization programs to improve the environment, working conditions, and energy efficiency are underway at Al can's six Canadian smelters.

#### Newfoundland

93 Can new mines be found to replace declining output at base metal and asbestos mines? Details on exploration efforts in the province and closeups of four important mines are reviewed.

### FEBRUARY 1982

#### Gold geology basics

66 For those new to gold prospecting, here's an introduction to auriferous placer and hydrothermal ore deposits.

#### Hard work makes things go at a small Colorado mine

74 Hendricks Mining Co. Cross mine in Caribou, Colo., is proof that small-scale mining is still possible in the US.

#### Giant and Con underpin Yellowknife economy

79 Two gold mines form the industrial base of Yellowknife, capital of Canada's Northwest Territories.

#### Managing political vulnerability

86 In an in-depth interview, Dr. Warnock Davies, consultant to multinational corporations, explains how responsiveness to social and political variables can reduce the risks inherent in foreign mining investment.

#### Computer assistance speeds model making

96 Details on a computer plotter that eliminates the laborious drawing task associated with the creation of 3-D geologic models.

#### Trolley assist for haulage trucks

100 An overhead electrical power system can conserve diesel fuel and improve haulage economics.

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63 Recent developments are making initiation quieter and permit deck loading on a single downline.

#### Heap leaching gold and silver ores

68 Small mining companies are finding new life through the application of heap leaching cyanidation techniques.

The Interior Department's view of energy and minerals under the Reagan Administration

78 In an In-depth interview. Deputy Assistant Secretary for Energy and Minerals William Perry Pendley suggests that the mining industry, while seeking economies at the USBM and USGS.

Maintenance cost control

89 Sound maintenance practices can reduce costs, improve work quality.

Rip detection Cor conveyor belting

95 The "Sentre Rip Detection System" made by B F Goodrich has been proving its value in production situations at several mining operations.

MAY 1982

Questa goes underground.

63 Motycorp's \$200 million project in Ouesta, New Mexico will produce 20 million tb/yr of molybdenum concentrate for 20 years.

Custom copper concentrates

72 A round-table discussion with Asarco's top management sheds light on the politics and economics behind Japan's smelting of copper concentrates produced in the US.

Retrofitting process controls to the Climax mill

76 Successful automation of Climax Molybdenum's concentrator required a complex balancing of hardware, software, and personnel.

A continuous area monitoring and alarm system

84 The US Bureau of Mines has developed a monitoring system for radiation levels in underground uranium mines.

What's ahead for 1982 mining graduates? ..

92 This year's crop of graduates faces a gloomy job market and an uncertain future.

Thermal energy recovery for deep mines

98 Mine refrigeration water can be used to generate power via a turbine at the bottom of long, vertical water pipelines.

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**JANUARY 1982**

**Zimbabwe's industrial minerals-optimism for the future**

- 19 A review of the production of the major industrial minerals of Zimbabwe and the principal companies engaged in their exploitation is presented together with a complete tabular summary of production volumes and values for the UDI period spanning 1966 to 1980. Although production of gold by far outstrips the value of other mineral production for 1980 the country is a leading producer of asbestos and lithium of which the former mineral has consistently provided substantial revenue for the country

#### Magnesium oxide from brine in the Netherlands

- 35 The 1981 'Industrial Minerals' Annual Dinner and Seminar was held on November 10th on the theme, "New industrial minerals ventures—project planning and mineral planning". This paper on the development of Billiton's magnesia from brines project at Veendam is the first paper from the meeting to be published and will be followed by the others in subsequent issues

#### Making the most of sulphuric acid

- 45 A report on the fifth international sulphur conference held in London in November 1981. Synopses of two of the papers concerned with trade and raw materials are also presented.

#### Freights: Weakness to continue into 1982

- 47 Despite the promise of stronger freight rates in early 1981, the year's subsequent events only served to depress the freight market. As a result, market conditions at the end of 1981 were in direct contrast to one year earlier and the indications are that the weak market will continue into 1982.

### FEBRUARY 1982

#### Industrial minerals of Finland

- 23 Following December's series of articles on Sweden, Norway, and Denmark, the review of minerals in the Nordic countries is completed with this article of Finland's industrial minerals. The country has a varied mining industry; the production of talc, feldspar, and wollastonite are especially important on world markets, and there is also important output of silica, limestone, chromite, phosphates, and ilmenite.

#### Garnet—cutting into filtration

- 35 A review of the producers of garnet indicates a total world production capacity of around 84,000 tpa although actual production probably falls far short of this figure at around 37/38,000 tpa. In spite of this, new capacity is to come on stream in the USA and output from Australia is set to rise significantly

#### IM Annual Dinner/Seminar Papers Silica Sand Fuller's Earth Fluorspar Barytes/fluorspar/lead

- 43 The 1981 IM Dinner and Seminar was held on November 10 on the theme, "New industrial minerals ventures—project planning and mineral planning". Last month's issue carried a paper presented by Mr. P. Bromberg on the development of Billiton's magnesia from brines project in the Netherlands. This month the four remaining papers from the project planning section of the meeting—'The Eaton Hall silica sand project' by Mr. H. Wainsley, 'The Baulking fuller's earth project' by Mr. D. Silberry, 'The Swiss Aluminium Mining project at Weardale' by Mr. G. Hughes, and 'The Brassington barytes/fluorspar/lead project' by Mr. R. Sprinkel—are published. The papers from the mineral planning session will appear next month

#### Freights: Slow start, no trend yet

A slow start to the year as the market gloom that prevailed at the end of 1981 still persists. Rates have remained easy and the freight market has not had much of a chance to show any kind of a trend since the turn of the year

### MARCH 1982

#### Asbestos—a versatile mineral under siege

- 19 With the numerous changes which have taken place in the asbestos mining industry in recent years this article reviews the 6.6 tpa capacity industry against a backdrop of severe recession in the developed world and the ever-present anti-asbestos fervour in the minds of the general public, legislative bodies, and the purveyors of alternative materials

#### Industrial minerals of Ireland

- 39 For the first time IM looks at the mineral industry of Ireland. Although Ireland is an important producer of seawater magnesia and barytes, the non-metallic sector has been overshadowed by the base-metal effort

**IM Annual Dinner/Seminar—Accent on planning**

- 57 This concludes the publication of papers presented at the 1981 IM Annual Dinner/Seminar held in London last November. The papers published this month—'Planning—the mineral operator's view' by Mr. D. Matthew, 'The role of the DoE in mineral planning' by Mr. P. Overall, 'The county planning authority's role' by Mr. M. Millmore, and 'The view of Industrial minerals development from the Department of Industry—made up the mineral planning session of this established annual event

**A US cement scenario, 1981-86**

- 71 A review of a recent report written by Robert Roy, an economist with the Portland Cement Association entitled 'US Cement Consumption Forecast'

**Freights: Looking over the horizon**

- 73 Many observers believe that 1982 may have to be written off in freight market terms and thoughts have been projected to likely developments in the future

**APRIL 1982**

**Diatomite—growth in the face of adversity**

- 47 Despite the overall impression of status quo in the diatomite industry with MarvHe Products retaining its leading position in the USA and CECA dominating in Europe, developments in Canada, new capacity in Australia, closures in Denmark, and increased output in Brazil provide an evolving scenario for this 1.6 m. tpa industry.

**Minerals for animal feedstuffs—plenty of food for thought**

- 71 Although minerals constitute only a relatively small part of the diet of animals, their presence is vital to the animal's health. This article reviews the role of minerals in animal feedstuffs and principally examines the macro and trace minerals added for nutritional purposes, although also considered are those substances added as binders, anti-caking agents, and growth promoters

**Bauxite and kaolin grogs of the SE USA**

- 93 Four companies—C-E Minerals, Harbison-Walker Refractories, A.P. Green Refractories, and Didier Taylor Corp.—are actively

engaged in extracting refractory clay in the Alabama/Georgia region of the USA. This article reviews current production in this 2 m. tpa capacity industry

**Japanese iodine—a geological review of the country's deposits**

- 101 This article by O. Fukuta and N. Fuöii of the Geological Survey of Japan reviews the current status of the iodine industry in Japan and describes in considerable detail the geological nature and geochemical features of the country's main iodine deposits as well as indicating other potential sources of iodine outside Japan

**US industrial minerals in 1981**

- 117 A summary of the US Bureau of Mines preliminary reports on how the country's industrial minerals fared through 1981

**Freights: Rates sink to further depths**

- 125 There has been a further easing in many freight rates, and it appears that there is no indication of a turn-round from the downward path

**MAY 1982**

**Kaolin—low growth markets put emphasis on quality**

- 17 For the USA and Western Europe the general trend for kaolin is one of market maturity with an anticipated slower growth in printing and writing paper consumption, depressed conditions in the ceramics industry, and a fairly static situation in paints, rubber, and polymers. This article reviews the world production of kaolin, looks at planned new projects, world trade, and examines current market conditions in Western Europe and the USA

**The outlook for printing and writing papers in Western Europe**

- 41 Of particular relevance to this issue with its emphasis on kaolin markets is English China Clay's recent report on the European paper market. Presented here is a summary of the main conclusions presented in the 1980-85 forecast

**Potash • optimism prevails despite market gloom**

- 45 The potash market is currently in a situation of oversupply. The article looks at the producers, any recent developments, two of the larger companies involved in the industry, markets, and future trends

#### Steetley Minerals restructuring for future growth

- 52 Following the Steetley Company's reorganizations all of the Group's industrial minerals and agricultural activities are now controlled by its subsidiary - Steetley Minerals. This profile reviews the current operations of Steetley subsidiaries with interests in the industrial minerals field

#### JUNE 1982

#### Fluorspar — falling prices as capacity leads demand

- 25 1981 saw the fluorspar industry forced back on its heels in the face of economic recessions coupled with news of increasing levels of output from some countries. This article reviews market developments over the last few years, looks at current prices, and highlights the major world fluorspar producers

#### North American lime — feeling the heat in recession

- 51 With its strong dependence on the steel industry the North American lime industry is clearly suffering greatly from the current low levels of production in the steel industry and the situation is also compounded by similar conditions in other consuming industries such as chemicals, glass, and const-

ruction. This article considers lime production in the USA, Canada, and Mexico, including a review of the different kilns used in lime burning

#### Technology and uses of barium and strontium compounds

- 65 This paper was presented by J. Massone of Kali-Chemie AG at the recent 5th Industrial Minerals International Congress in Madrid. Since pre-prints of the paper were not available at the meeting it is reproduced here. The author considers current manufacturing techniques and market conditions for barium and strontium chemicals

#### Zaire's diamond industry — Sozacom coping without the CSO

- 70 Many predicted disaster for Zaire when it decided to remove its production from the aegis of the Central Selling Organisation. However, in this contributed article by Jan Mayman, a freelance mining journalist, it is reported that sales contracts are guaranteed until 1985 at least

#### Freights: Rates slacken after brief recovery

- 73 The former pattern in freight markets, particularly in the Atlantic trade, resulting from Soviet time charter activities in grain and more buoyant US coal exports would now appear to have slackened. Rates did advance during this period, but have now eased and a new decline is feared

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