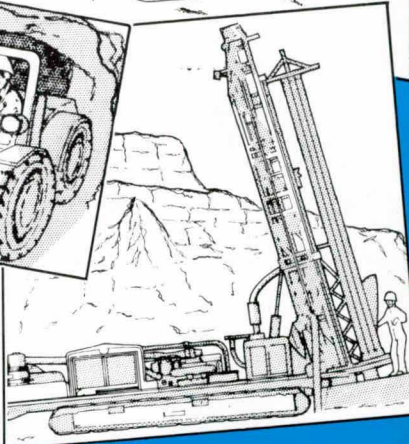
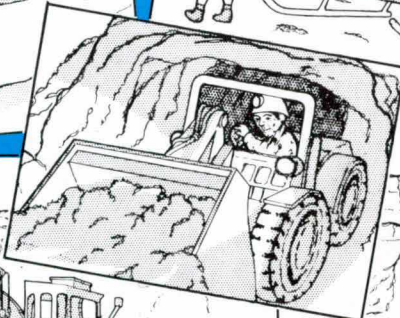
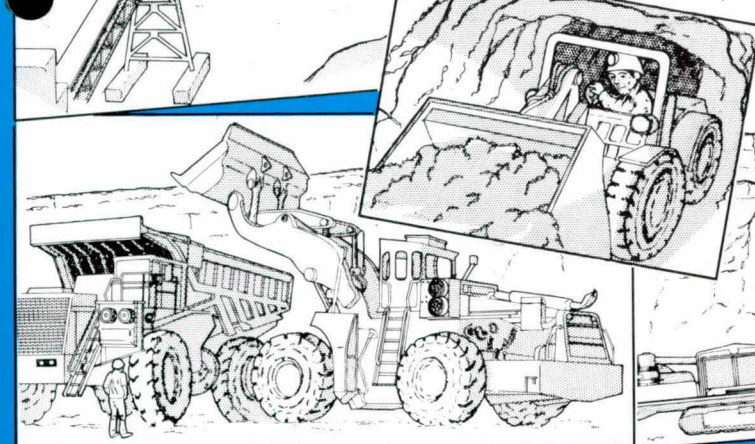
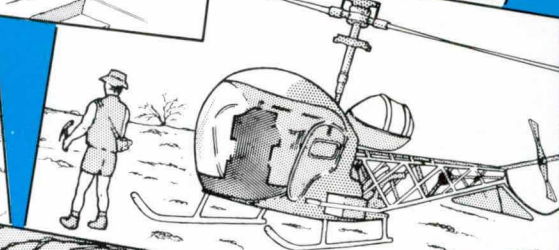
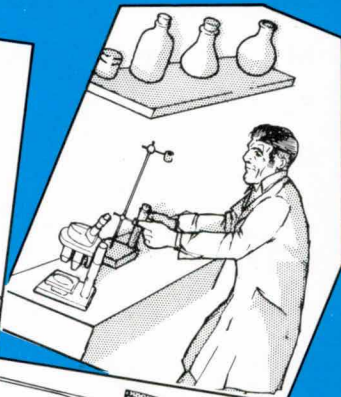
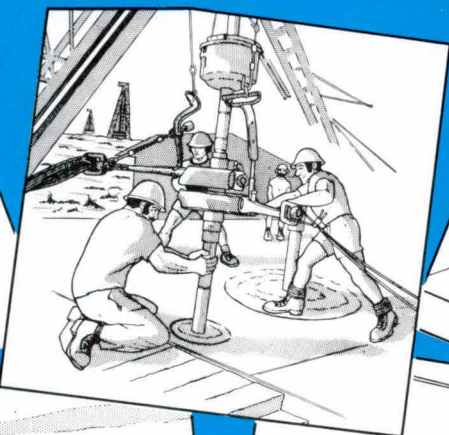




MINERAL INDUSTRY QUARTERLY

NUMBER 2
QUARTER ENDING APRIL 30, 1976



S.A. MINERAL PRODUCTION

In the Number 1 issue, details of South Australian mineral production for 1974 were recorded. The following is a brief summary of 1975 production which will be reviewed in greater detail in the Annual Report of the Director of Mines for the year 1975/76, to be issued later this year.

The ex-mine value of minerals produced during the calendar year 1975 was \$129 670 000, almost the same as that of 1974.

Though the output of copper metal was up 60% from that of the preceding year, the price realised was down 7%. However, a recovery in the price of copper is evident in this quarter.

Iron ore output was down 2% and though the output of zinc ore was up 40%, the value of sales rose only 18%. Salt production was 18% lower than that of 1974.

The tonnage and return on most other mineral commodities, including coal, and natural gas sales were generally a little higher.

MINING ACTIVITY

Kanmantoo Mine

Broken Hill South Ltd. announced on 23rd February that the scale of operations at the Kanmantoo open cut copper mine would be phased down and the mine and plant placed on a care and maintenance basis in June. The decision has been made because continuing losses were being incurred. Mining would resume when economic conditions had recovered substantially. The Directors predict that on present trends this may not be until well into 1977.

Since mining began in 1970 over 3½ million tonnes of ore have been recovered from the pit which is about 100 metres deep.

Cessation of operations will involve loss of work for 150 men; 35 employees were stood down on 5th March. Underground development which was preparing for production of the ore bodies near the pit, has been terminated.

Burra Mine

Operations at the Burra copper mine have been scaled down by Samin Ltd. by reduction from seven to five days a week and the workforce cut by 20 per cent. Production of copper concentrate in the 3 month period to April totalled 377 tonnes compared with 670 tonnes in the previous quarter and 538 tonnes in the immediately preceding quarter.

Iron Ore, Whyalla

Though the BHP Co. Ltd. steel output from Whyalla fell from 66 000 tonnes in January to 47 000 tonnes in February the steelworks are again operating at full capacity, following a revival in export orders. The No. 1 blast furnace had been banked in November, 1975 because of a drop in export orders but both furnaces are again in operation.

A contract to supply 750 000 tonnes of iron ore pellets worth \$16 million over three years has been signed between BHP and the Pohang Iron and Steel Co. Ltd. of South Korea. The first shipment of 50 000 tonnes left Whyalla early in March.

Andamooka Opalfield

Following geological mapping at Andamooka in 1975, a programme of subsidised mining has been devised to assist miners in prospecting areas beyond the present limit of operations.

The details of the subsidy scheme were presented to a well attended public meeting at Andamooka on 8th April, 1976, for implementation on 3rd May, 1976.

The miner will be required to peg a claim in the normal manner and sign an agreement following approval of the site by a Departmental geologist. To attract subsidy payment the miner is required to sink a shaft to the opal level and drive horizontally for 12 m. On completion of this operation, the miner is paid a lump sum at the rate of \$6 per vertical metre of shaft and \$3 per horizontal metre of drive.

All depths to level and geological data are recorded and will be available for public inspection. The results will also be utilised in a geological survey of the Cretaceous opal-bearing rocks which is now in progress.

Nephrite Jade, Cowell

The Director of Development has made funds available for the sampling of nephrite jade and development of mining techniques in the Cowell area. Stage 1, involving the controlled blasting of overburden to expose a face of jade, has been completed. Initially, charges were fired to form a platform near the lower end of the lens selected for testing and three rows of three charges at 1.2 m spacing and 1.5 m deep were fired. Each charge comprised about 0.5 kg of ANFO explosive, and L series delayed-action electric detonators were used.

There was no fracturing of samples of jade from the main lens, although some material directly below one blast hole was damaged.

A cut about 3 m wide with a near vertical face of nephrite jade about 6 m long and up to 1 m deep has been exposed for stage 2 experimental sampling and cutting.

MINERAL PROCESSING

Broken Hill Assoc. Smelters Ltd., Port Pirie

Australian Mining and Smelting Ltd. has announced plans to improve handling of sulphur dioxide emissions from the lead smelters at Port Pirie (one of the largest smelters of this type in the world) at a cost of \$9 million.

A new stack 205 metres high will replace the existing 61 metre stack. The capacity of the existing sulphuric acid plant will be expanded and planned changes in flues, fans and baghouses will minimise air pollution at the works.

A process for the continuous removal of copper from lead has been developed and operated on a pilot scale at the Port Pirie works.

In conjunction with a Belgian group, Hoboken, a major new pilot plant for the development and testing of pyrometallurgical processes to remove bismuth has also been commissioned.

Adelaide Brighton Cement Co. Ltd., Birkenhead

The group's Birkenhead works are undergoing an \$18 million expansion which will make it the largest single production cement unit in Australia. A new kiln which will double the work's existing capacity is expected to be on stream later this year.

Additional limestone will be needed to meet plans to raise cement production in the future and the possibility of dredging shells and lime sand to supplement supplies of limestone from Klein Point is being assessed. The company is engaged in sampling the floor of St. Vincent Gulf, in water up to 18 metres deep, several kilometres off Outer Harbor to determine suitability of the lime sand for cement manufacture.

MINERAL EXPLORATION

During calendar year 1975 reported expenditure on 133 Exploration Licences totalled \$3 860 989 which was comparable with that of the previous year; drilling was generally down on that of 1974 and included - diamond drilling, 12 160 m; non-cored, 78 280 m and auger, 51 270 m.

EXPLORATION LICENCES

Tabulated below are Licences which have been granted or have expired during the last three months.

Exploration Licences granted February, March, April, 1976

Number	Licensee	Area (km ²)	Term
229	Endeavour Oil Co. N.L.	1 829	6 months
230	Aquitaine Australia Minerals P/L and Fox Mining and Exploration P/L.	208	12 months
231	Western Mining Corporation Ltd.	2 165	12 months
232	" " " "	2 755	12 months
233	" " " "	2 439	12 months
234	Endeavour Oil Co. N.L.	2 123	4 months
235	Utah Development Co.	140	12 months
236	Petromin N.L., Oilmin N.L., Transoil N.L. & Western Uranium Ltd.	1 035	24 months
238	Sedimentary Uranium N.L.	1 968	12 months
239	Northland Minerals Ltd.	142	12 months
240	Utah Development Co.	103	12 months
241	Dampier Mining Co. Ltd.	1 233	12 months
242	Amoco Minerals Co. Australia	56	12 months
243	Bridge Minerals Pty. Ltd.	332	12 months

Exploration Leases surrendered or expired

Reports which have been placed on open file during the quarter include the following:

S.M.L.	Lessee	Envelope No.	Locality	Remarks
621	Blacker Motors Pty.Ltd.	1757	Warrow	Kaolin
654	Nixon Investments Pty.Ltd.	1885	Clinton	Wax in brown coal
669	Blacker Motors Pty.Ltd. & Exploration Drilling Pty. Ltd.	1940	Warrow	Kaolin, drilling
E.L.	Licensee	Envelope No.	Locality	Remarks
35	Cultus Pacific N.L.	2232/I-II	Lorna Doone	Oxidised copper
58	Exploration Drilling Pty. Ltd.	2298/I-II	Warrow	Kaolin
59	Pacminex (Operations) Pty. Ltd.	2305	Frome Downs	Sedimentary uranium, partial relinquishment
102	International Nickel Aust. Ltd.	2364/I-II	Bimbowrie	Base metals
138	Santos Ltd. & Compagnie Miniere et Nucleaire	2524	Tirrawarra	Sedimentary uranium, drilling
159	International Nickel Aust. Ltd.	2500/I-II	Ethiudna	Base metals
171	Mines Administration Pty. Ltd. & Teton Exploration Drilling Co. Pty.Ltd.	2531	Pioneer Dam	Sedimentary uranium, Frome Embayment
174	Mines Administration Pty. Ltd. & Teton Exploration Drilling Co. Pty. Ltd.	2532	Furlough Dam	Sedimentary uranium, Frome Embayment

177	Getty Mining Pty. Ltd.	2682/I-II	Tarcoola	Uranium
179	Cultus Pacific N.L.	2549	Lorna Doone	Oxidised copper
184	Australian Selection (Pty.) Ltd.	2556/I-II	Northeast of Coober Pedy	Coal, drilling
185	Uranerz (Aust.) Pty.Ltd.	2252/I-II	Cummins	Sedimentary uranium
186	CSR Limited	2720	Pandurra	Copper, partial relinquishment
189	Mines Administration Pty. Ltd., Teton Exploration Drilling Co. Pty.Ltd. & Carpentaria Exploration Co. Ltd.	2586	Mundaerno Hill	Sedimentary uranium, drilling, Frome Embayment
121	Mines Administration Pty. Ltd., Teton Exploration Drilling Co. Pty. Ltd. & Carpentaria Exploration Co. Ltd.	2399	Mundaerno Hill	Sedimentary uranium, drilling, Frome Embayment
191	Loch Shiel Pty. Ltd.	2542	Mt. Hope	Kaolin
198	Australian Copper Mines (Qld.) Ltd.	2611	The Needles	Copper
214	Shell Development (Aust.) Pty. Ltd.	2663	Wilkinson Lakes	Tertiary lignite
224	Dampier Mining Co. Ltd.	2698	Parakylia	Phosphate in Cambrian carbonates

By arrangement with principals of Mines Exploration Pty. Ltd., data derived during exploration of the Mootooroo copper mine and environs since 1962 has been placed on open file in Envelope 2080. Data includes quarterly progress reports, geological plans, cross-sections through diamond drill holes and geophysical and geochemical survey results derived during tenure of SML's 44, 52, 64, 79, 105, 150, 179, 285, 285A, 572, 698 and E.L. 73.

AUSTRALIAN MINERALS AND ENERGY COUNCIL

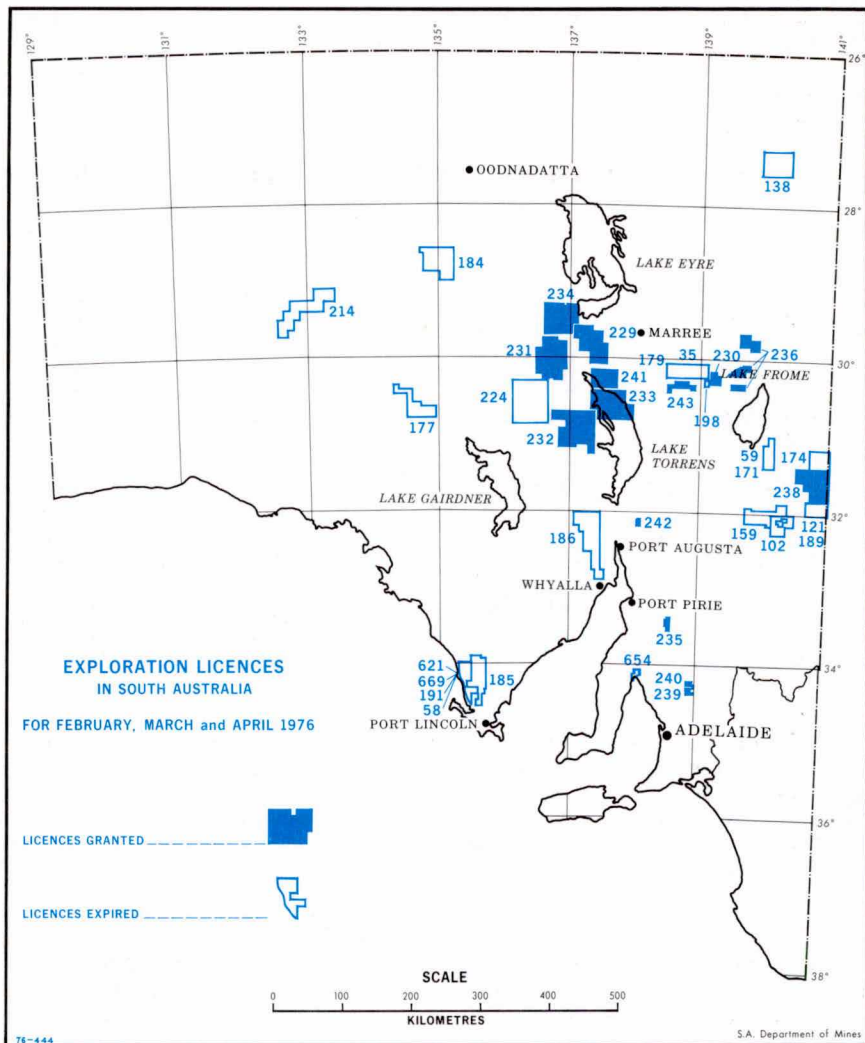
At a meeting of State and Federal Ministers of Mines and Energy held in Canberra on 9th April the terms of reference of the Australian Minerals Council were widened to include consultation on research and development of national energy resources.

PETROLEUM NEWS

Exploration

The President of the Australian Petroleum Exploration Association (Mr. D.J. McGarry) told the annual conference held in Adelaide from 4th to 7th April, that at least \$300 million a year in overseas funds were required to expand petroleum exploration to an acceptable level.

The drilling vessel "Regional Endeavour" owned by Drillships Ltd. and chartered by Atwood Oceanics Ltd. has been idle and anchored off Ardrossan since the completion of Gemini 1 for Outback Oil N.L. in the Polda Basin in November, 1975. The Seamen's Union has refused to allow the vessel out of Australian waters to proceed on a proposed contract voyage to Israel unless it is manned by an all-Australian crew of 50. The Regional Endeavour was an iron ore carrier before it was converted into a drill ship two years ago and is valued at \$25 million.



Cooper Basin Development

The Moomba gas field was isolated by flooding during February. Trucks were unable to reach the field for several weeks and drilling operations and field construction work were suspended. Supplies were flown in while the Strzelecki track was closed.

Big Lake 10 was spudded on 3rd February and the rig was placed on extended stand-by on the 12th while awaiting delivery of fuel that had been delayed by flooding. Drilling operations resumed on the 3rd March and reached total depth of 2 609 m on 16th March for completion as a gas production well.

Moomba 19 was spudded on 3rd April and reached total depth of 2 505 m on 30th April. It has been completed as a gas storage well - the first of its kind in Australia.

Moomba-Sydney pipeline

Completion has been delayed, through industrial problems on a section of line remaining to be completed in New South Wales, and heavy rain in the Moomba area.

The gas production plant was connected to the first section of the natural gas pipeline in April. Valve tie-ins and hydrostatic testing on this section of the line are expected to be completed by Saipem Australia Pty. Ltd. in about two months. Construction of the remaining section of line at the Sydney end is continuing and supplies of natural gas are expected to be flowing to the Sydney market late this year.

Cooper Basin liquids

Dow Chemical (Australia) Ltd. has confirmed continued interest in the possibility of a petrochemical complex at Redcliff.

Other alternatives are also being considered by the South Australian Government.

Delhi International Oil Corporation in its report for 1975 year to December 31st disclosed proved and probable liquid hydrocarbon reserves in Cooper Basin of 300 430 000 bls. - these liquids comprise about 70.5% ethane, butane and propane, the balance being oil. Wells, plant, trunk lines and facilities estimated to cost \$160 million over a period of 4 years would be required when contracts are entered into for the sale of liquids.

Delhi has an Exploration Licence covering Lake Torrens, for evaluation of salt resources which could be developed in conjunction with a caustic chlorine plant, to provide chlorine feedstock for a petrochemical plant and caustic soda for the alumina industry.

THE ESSINGTON LEWIS MEMORIAL LECTURE

The 1976 Lecture, arranged by the Adelaide Branch of the Australasian Institute of Mining and Metallurgy, was presented by Dr. R.K. Warner, Chief, Production Division, Uranium Branch, Australian Atomic Energy Commission at the Australian Mineral Foundation on 31st March. Dr. Warner's address was entitled "The Australian Uranium Industry".

The Australian uranium industry may be regarded as having its beginnings in South Australia since uranium ore was first mined for its radium content at Radium Hill and Mount Painter, following discovery in 1906 and 1910, respectively.

Dr. Warner reviewed the historical background of discovery and subsequent development of the South Australian deposits; Rum Jungle, El Sherana and others in the Northern Territory and Mary Kathleen in Queensland. During the period 1954-1971, some 9 200 tonnes of yellowcake, U_3O_8 , were produced from plants at five locations. Capital investment in the uranium, mining and treatment operations amounted to about \$50 million, and export of the product earned some \$164 million.

Commonwealth Government initiatives in the late 1960's which encouraged renewal of uranium exploration programmes by private industry throughout Australia resulted in the discovery of significant deposits at Nabarlek, Ranger, Koongana and Jabiluka in the Alligator Rivers areas of the Northern Territory, near Lake Frome in South Australia, and at Yeelirrie in Western Australia.

Based on company announcements, Australia's uranium resources now amount to almost 380 000 tonnes U_3O_8 . This quantity is derived from the results of detailed drilling programmes and also includes provision for estimated additional ore at known deposits; Australian resources recoverable in a cost range up to \$US10/lb U_3O_8 at June, 1975 amounted to 19% of those in the Western World.

Dr. Warner discussed the world supply and demand position, price of uranium, the nuclear fuel cycle markets for Australian uranium and future development of the industry. He concluded that "the basis for a major uranium industry in Australia has been established by the recent discoveries of significant uranium resources. The immediate priority should be the development of new mining and

milling projects The production of uranium concentrate in Australia at a level of some 19 000-22 000 tonnes U_3O_8 /annum seems to be obtainable by 1985 in terms of market opportunities". By that time rather more than half of the production of U_3O_8 might be converted to UF_6 for export and a capacity for enrichment established. The uranium industry has the potential to become the largest single earner of export income in Australia, he said.

Dr. Warner's paper was published in the April issue of "Atomic Energy in Australia: and copies have been produced as a 'separate' for distribution by the Adelaide Branch - copies are available on request to the Secretary.

RECENT PUBLICATIONS

Quarterly Geological Notes

No. 58 - Issued for April, 1976 contains the following articles:-

J.B. Firman - Limestone at the base of the Pleistocene sequence in South Australia.

R.G. Nelson - The Mulgathing Trough.

J.G. Olliver and J.A. Reed - Drillhole intersections of Eocene sediments, northern margin of Willunga Sub-Basin.

Bulletin

Bulletin No. 39 - Crawford, A.R., 1965. The Geology of Yorke Peninsula, has been reprinted and is now available. Price \$5.

Reports

Listed below is a selection of reports which have recently been compiled by officers of the Geological Survey.

Groundwater

- 76/4 J.D. Waterhouse - Callington and Strathalbyn Districts. Water supply scheme - Groundwater resource assessment.
- 76/13 W.R.P. Boucaut and R.G. Shepherd - A summary of the groundwater basins of South Australia.
- 76/30 X.P. Sibenaler - Eyre Peninsula groundwater survey Uley South Basin - Progress Report No. 4 - aquifer evaluation.
- 76/37 A.F. Williams and J.W. Holmes - A novel method of estimating the discharge of water from mound springs of the G.A.B. Central Australia.
- 76/41 S.R. Barnett - Carpenter Rocks town water supply bores, 1, 1A and 2 completion report

Geochemistry

- 76/3 G.F. Whitten, R.G. Wright and R. South - Geochemical exploration in the Earea Dam, Glenloth mining fields.
- 76/49 R.P. Schlichting - Geochemical survey of the Gawler 1 63 360 sheet - completion report.

Industrial Minerals

- 76/12 J.G. Olliver and D.C. Scott - Mt. Chambers Barite Deposit.
- 76/52 D.C. Scott and J.G. Olliver - Mt. Coffin Barite Deposit.

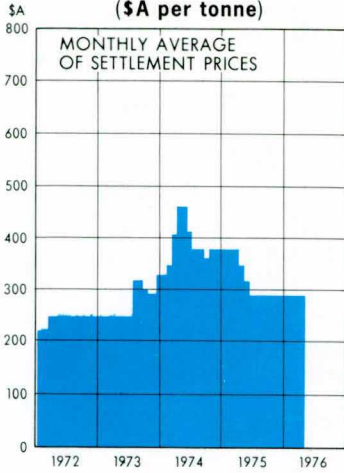
Engineering

- 76/37 G.H. McNally - Engineering soils survey Stuart Highway, Coober Pedy area (4 mile diggings to vermin proof fence).
- 76/42 B.J. Taylor and G.H. McNally - Proposed Dam silt traps - seismic profiles and engineering geology.

Regional Geology

- 76/29 M. Benbow - A stratigraphic section across the Umberatana Group - Wilpena Group boundary near Horrocks Pass in the Wilmington area.

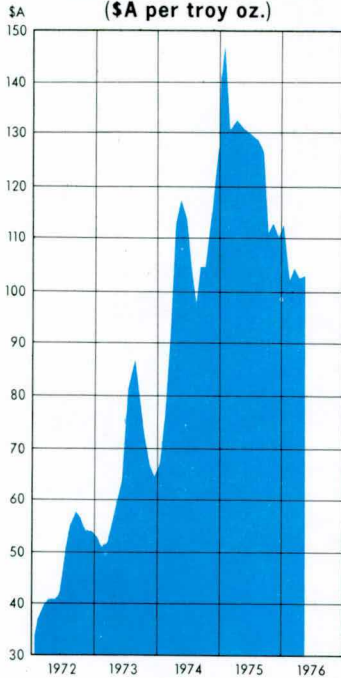
**AUSTRALIAN LEAD PRICE
(\$A per tonne)**



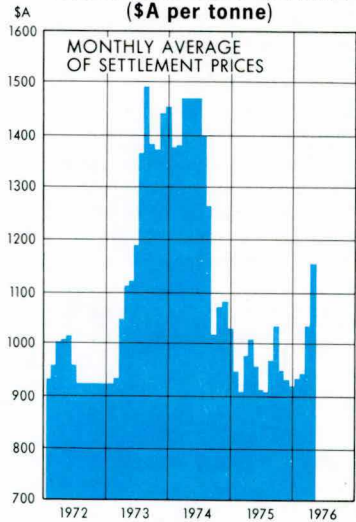
**AUSTRALIAN ZINC PRICE
(\$A per tonne)**



**AUSTRALIAN GOLD PRICE
(\$A per troy oz.)**



**AUSTRALIAN COPPER PRICE
(\$A per tonne)**



WATER RESOURCES ACT, 1976

On March the 4th, the Water Resources Act, 1976, was assented to by the Governor. It is intended to provide for assessment and management of the State's water resources, both surface and underground and replaces several separate Acts which had become inadequate, particularly with respect to maintenance of water quality, and broadens the philosophy of management to enable the most beneficial use of the water resource. Control of construction of water wells throughout the State will be exercised through a system of licensing of all private drillers.

A principal aim of the Act is to avoid future problems by correct management, rather than taking drastic remedial action after a problem of over-utilisation or pollution has occurred. Public involvement with resource management will be ensured by the formation of regional advisory committees. The South Australian Water Resources Council will be formed to advise the Minister about broad aspects of the Act, as well as individual matters, in concert with the regional advisory committees.

Mineral and petroleum exploration drilling are exempted from certain requirements of the Act, but exploration tenements will include conditions where appropriate, to ensure maintenance of water quality. The act will come into operation on 1st July, 1976. Operators of current exploration tenements should check with the Department of Mines if they are uncertain of the new requirements.

THE ENVIRONMENT

A seminar on "Landscaping and land use planning as related to mining operations", arranged by The Adelaide Branch of the Australasian Institute of Mining and Metallurgy at the Australian Mineral Foundation during the period 29th March-2nd April, was attended by 185 delegates. The appearance of the principal speakers who included Mrs. Jean Verschuer, Mrs. Sheila Haywood, Mr. Karl Dean and Mr. Noel Lothian was made possible through use of the research provisions of the Extractive Areas Rehabilitation Fund.

During the five day Seminar, 21 papers were presented and field inspections were made to mining and quarrying operations near Adelaide.

The Minister of Mines and Energy, in opening the Seminar, revealed that over \$1.26 million has been paid into the Extractive Areas Rehabilitation Fund to date, of which \$1.2 million has been committed to approved rehabilitation projects including \$600 000 already paid out of the fund for work completed.

The key-note addresses by four invited specialists indicate the broad range covered by the Seminar. These were:-

- . Mrs. Sheila Haywood - Landscape Consultant, London spoke on "The Mineral Scene - Choice and Opportunity".
- . Mr. Lothian, Director of the Botanic Gardens, Adelaide presented a paper on "Rehabilitation of Mining Areas with particular reference to the establishment of plant growth".
- . Mr. Karl Dean, a Consultant from Salt Lake City, Utah spoke on "Stabilisation Methods for the Reclamation of Tailing Ponds", and
- . Mrs. Jean Verschuer, Landscape Architect from Perth concluded the Seminar with a paper on "Landscape Architecture - Policy into Practice".

Each of these papers provided a broad summary of the present state of the art and thus gave a suitable background for the specialised papers presented by other delegates.

The main themes to emerge from this Seminar are the necessity for efficient pre-planning; adequate public discussion; definite Government ground-rules, based perhaps on test cases and major enquiries; thoughtful mining operations and plant design to minimise disturbance to the environment; careful con-

sideration of eventual land use, water conservation and contouring; replacement and conditioning of top soil or root medium; and research into methods of efficient and effective regeneration of native and exotic species in various environments.

The papers, bound in book form are available from The Treasurer, Adelaide Branch AIMM, PO Box 97, Glenside at a cost of \$10.00

ACCIDENTS

An analysis of accident reports in the mining industry and subsequent investigations over the past two years reveals a spate of vehicular accidents, two of which resulted in fatalities. In both these cases poor vehicle control appears to have been the cause. A recent incident when a truck went over a quarry face was due to a faulty brake air line connection. The fact that the driver was wearing a hard hat was probably a significant factor in saving his life.

It is of course, mandatory for accidents to be reported in accordance with the Mines and Works Inspection Regulations. It is known however, that many near-miss accidents, which could result in injury or loss of life, occur which are not reported and hence the results of any subsequent investigations are not made known. It is in the interests of all mining operators to report such incidents together with subsequent findings so that a progressive evaluation of the most common reasons for accidents can be made and this information relayed to all concerned.

While human error is sometimes the main cause, some accidents occur as a result of negligence on the part of a manager and/or contractor in not directly supervising or delegating responsible authority for the proper inspection and maintenance of all equipment and accurately recording such in the Inspection Record Book.

BLINMAN MINE

Departmental officers have been concerned for some time that the old workings of the Blinman Mine were a potential danger to visitors.

The mine area has now been reserved from operations of the Mining Act, 1971 and a cyclone mesh safety fence erected by the Department around the open cut to prevent casual access.

The Blinman Mine had a chequered history and was worked at intervals by a number of companies from discovery in 1862 until 1918 over which time about 200 000 tons of copper ore were recovered for the production of about 10 000 tons of copper metal.

IT HAPPENED 100 YEARS AGO

"As we have long since intimated, writes the "Wallaroo Times", the low price of copper and the high price of mining materials were certain to affect the staple industry of the Peninsula. Last week the services of 14 miners were dispensed with and of course under such circumstances there is a drooping tendency in wages". (from "The Advertiser", May 11th, 1876).

PEOPLE IN THE INDUSTRY

Colin Branch formerly Head of the School of Applied Geology, South Australian Institute of Technology, has been appointed Chief Geologist, Operations, Geological Survey of South Australia.

Bill Boucaut, formerly Supervising Geologist, Engineering Division, has been appointed Chief Geologist, Services, Geological Survey of South Australia.

Rob Robson, formerly attached to Hematite Petroleum Ltd. has been appointed Petroleum Engineer in the Department of Mines.

David Seymour, Aminco & Associates has established an office at 11 Mary Street, Unley.

Don Esdaile, Western Mining Corporation has transferred from Kalgoorlie to Adelaide.

Jim Coleman, Mining Engineer formerly with Utah Development Co. at Saraji (Queensland) has been appointed to undertake planning studies with the Electricity Trust of South Australia.

Sergio Caplygin, previously employed as a Mining Engineer with New Broken Hill Consolidated Ltd. has joined the staff of Quarry Industries Ltd.

Peter Simpson, Geologist, Carpentaria Exploration Co. Ltd., has transferred to the Adelaide office.

Esso Australia Minerals has opened a regional office at 12 Greenhill Road, Wayville.

It is with regret that we record the following deaths:

R.W. Boswell, Chairman of the Australian Atomic Energy Commission. He was a former Director of the Weapons Research Establishment at Salisbury.

Roger Ayliffe, who graduated at Adelaide University following service in the Royal Australian Navy and was employed throughout his career by the Broken Hill Pty. Co. Ltd. at Whyalla.

George Twiss, former Manager, Pipelines Authority of South Australia.

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