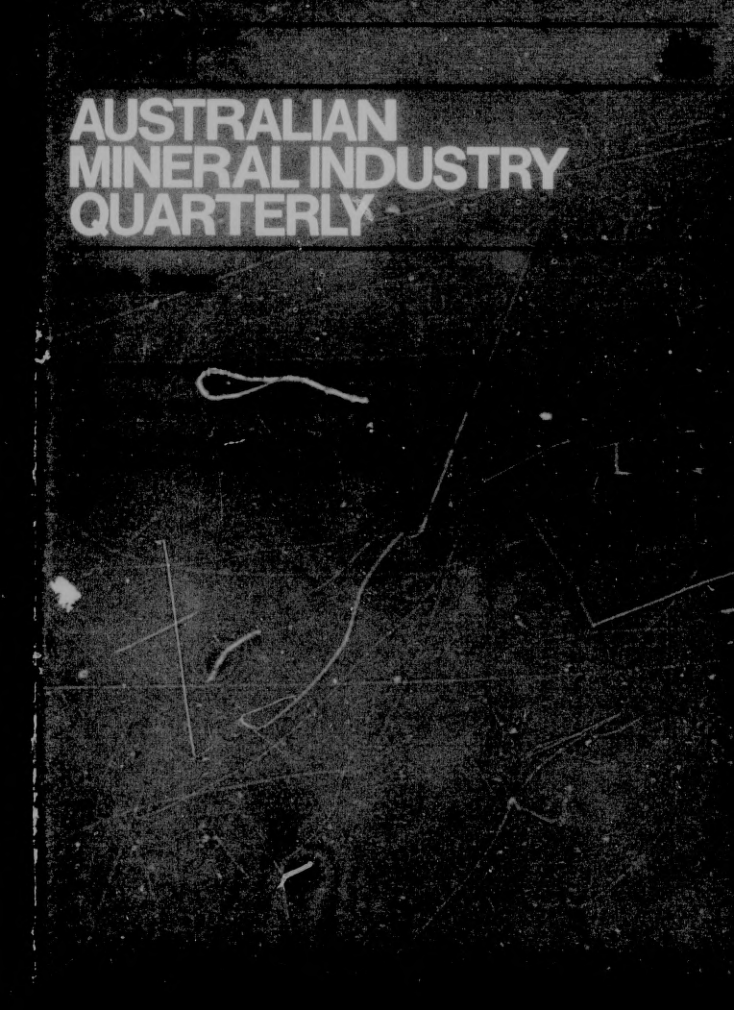


AUSTRALIAN MINERAL INDUSTRY QUARTERLY



The *Australian Mineral Industry Quarterly* reviews developments in mineral and fuel commodities in Australia, and records statistics of production, imports, and exports. Most numbers also contain a review article on a particular commodity or more general topic. A cumulative index of articles in Volumes 1-29 was published in Volume 30, No. 1.

The 'Commodity review' in No. 1 of each volume reviews developments that took place in the quarter ended 31 March of the designated year, and No. 1 of each volume is published in August of that year. The 'Commodity reviews' in Nos. 2 and 3 cover the quarters ended 30 June and 30 September, and Nos. 2 and 3 are published the following November and February. 'Commodity review' in No. 4 deals with developments for the year as a whole, and No. 4 is published the following May. Except for the Summary Tables, statistics tables in Part 2 of each volume relate to the quarters immediately preceding those covered in Part 1.

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AUSTRALIAN MINERAL INDUSTRY QUARTERLY

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS
and AUSTRALIAN BUREAU OF STATISTICS

Volume 33 (1980), Number 2

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DEPARTMENT OF NATIONAL DEVELOPMENT AND ENERGY
MINISTER: SENATOR THE HON. J. L. CARRICK
SECRETARY: A. J. WOODS

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS
DIRECTOR: R. W. R. RUTLAND
ASSISTANT DIRECTOR, MINERAL RESOURCES BRANCH: J. WARD

AUSTRALIAN BUREAU OF STATISTICS
AUSTRALIAN STATISTICIAN: R. J. CAMERON

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Part 1



Quarterly Review

Bureau of Mineral Resources, Geology and Geophysics, Canberra, Australia

COMMODITY REVIEW

Mineral Economics Section, BMR

Fuels

BLACK COAL

Mine production of raw black coal for the three months to June 1980 was an estimated 22.5 million tonnes (Mt), 10 percent below the corresponding figure for 1979 but 5 percent higher than production in the previous quarter. Compared with the previous quarter, saleable coal production rose by 6 percent to 17.8 Mt.

Production of both raw and saleable coal declined in New South Wales and Queensland from the June quarter 1979, because of industrial disputes in the first half of the period: raw coal production in New South Wales fell by 9 percent to 11.3 Mt (9.0 Mt saleable coal), and in Queensland by 10 percent to 9.9 Mt (7.4 Mt saleable).

Consumption of black coal in the June quarter of 1980 was 8.5 Mt, the same as in the June quarter 1979 but slightly less than in the March quarter 1980. Increased consumption in electricity generation in New South Wales and Queensland and for alumina production in Queensland was balanced by a decline in consumption by the iron and steel industry.

Exports of black coal reached 11.1 Mt in the June quarter, an increase of 6 percent over the June quarter of 1979 and 2 percent higher than in the March quarter of 1980. Exports to Japan remained steady at 7.5 Mt when compared with the March quarter 1980 but were slightly lower than in the June quarter of 1979. Shipments from New South Wales to Japan were 3.6 Mt and from Queensland 3.9 Mt.

Strong international demand for Australian coking and steaming coal continued throughout the quarter and several new sales agreements were concluded. Coking coal sales negotiated

included: MIM Holdings Ltd and Japanese steel mills, approximately 14 Mt; the Warkworth Consortium and the Japanese steel mills, 5 Mt; and Oaky Creek joint ventures and Ensidesa of Spain, 4 Mt. Steaming coal agreements were concluded between Wambo Mining Corp. and Japanese companies for 0.35 Mt/year rising to 0.44 Mt/year, between Warkworth Consortium and Mitsubishi Mining & Cement Co. (a consortium partner) for 5 Mt, and between AAR Ltd and Onoda Cement of Japan for 2 Mt of Yarrabee anthracite.

Federal Government approval was given for foreign equity holdings of 43.2 percent in the Hail Creek project in Queensland and 49 percent in the Birds Rock project in New South Wales. The Hail Creek ownership is AAR Ltd 44 percent, Esso Exploration & Production Australia Inc. 25 percent, IOL Petroleum 25 percent, Marubeni Coal Pty Ltd 4 percent, and Sumisho Coal Development Pty Ltd 2 percent. The Birds Rock ownership is Elcom Collieries Pty Ltd 51 percent, Taiheiyō Coal Development Pty Ltd 34 percent, Mitsui Coal Development (Australia) Pty Ltd 7.5 percent, and C. Itoh & Co. 7.5 percent.

Japanese equity in the Mount Arthur steaming coal project in New South Wales was increased to 15 percent during the quarter. The new ownership will be Elcom Collieries 50 percent, Ampol Mining Pty Ltd 17.5 percent, Picon Exploration Pty Ltd 17.5 percent, EPCD of Japan 12.5 percent, and Mitsui Coal Development (Australia) Pty Ltd, 2.5 percent.

In April Leighton Holdings Ltd announced that the indicated reserves of the Black Hill deposit near Muswellbrook, NSW, are 36 Mt. Reserve estimates of 1100 Mt (measured and inferred) were announced by the German Creek Consortium in June.

The Queensland Government decided in June to build a new coal loading facility, at Hay Point. The new facility, which will have an initial capacity of 8 Mt/year, should be in operation by the end of 1983. Provision has been made for expansion to annual capacities of 12 Mt and 20 Mt/year as required.

White Industries Ltd, through its subsidiary G. B. White (Qld) Pty Ltd, was awarded an Authority to Prospect over a highly prospective area east of Blair Athol in central Queensland. The area extends north and south of Clermont and covers part of the Wolfgang Basin.

The Clinton coal loading facility at Gladstone and the Gregory mine were officially opened in early May. The Clinton facility currently has the capacity to handle 10 Mt/year.

M. B. HULEATT

URANIUM

Production at Mary Kathleen in the June quarter 1980 was 212.1 tonnes of U_3O_8 , 1 percent less than in the June quarter 1979 and a 36-percent increase on the 155.7 tonnes produced in the March quarter 1980, when output was adversely affected by mechanical problems and an industrial stoppage.

Queensland Mines Ltd announced on 11 June that construction of the uranium mill at Nabarlek had been completed and that although commissioning of the plant was still in progress, the production of uranium had begun and the plant was operating at full capacity.

The end of the month *Nuxco* Immediate Delivery price fell from US\$38.00/lb U_3O_8 in March to US\$32.00 in April and was US\$31.50 as at 30 June 1980.

Western Mining Corporation Ltd announced on 1 May that the Joint Venturers in the Olympic Dam Project (WMC 51%; BP Australia 49%) had decided to sink an exploration shaft about 400 m north of drill hole RD19, initially to a depth of about 500 m, for further detailed exploration and to obtain large samples for metallurgical testing.

Pancontinental Mining Limited announced in their report for the June quarter that exploration had recommenced at Turree Creek in Western Australia. Radiometric anomalies have been confirmed along a fault zone over a distance of seven kilometres and further evaluation by trenching and drilling will be undertaken to assess the importance of the anomalies. The joint venture constructed access tracks and drill pads preparatory to a drilling

program scheduled to commence in August. This is a joint project of Pancontinental, Power Reactor & Nuclear Development Corporation of Japan, and Trend Exploration Pty Ltd.

D. J. PERKIN

Metals

ALUMINIUM

Production of primary aluminium during the June quarter of 1980 was 73 077 tonnes, 10.6 percent higher than in the June quarter of 1979 (66 053 tonnes). The three domestic smelters operated at full capacity throughout the fiscal year 1979-80, and output for the year was a record of 283 006 tonnes.

Exports of unwrought aluminium during 1979-80 totalled 55 047 tonnes, valued at \$68.45 million, of which 16 700 tonnes valued at \$23.11 million was shipped during the period January-June 1980. Exports during the June 1980 quarter were 7735 tonnes, valued at \$11.43 million. The marked fall-off in the rate of exports over the fiscal year reflects a buoyant domestic demand influenced by 1979 shortages, rather than a reported development of an oversupply situation on world markets in the early part of 1980.

Imports during 1979-80 totalled 2960 tonnes, so that apparent consumption of primary aluminium for the fiscal year was 230 919 tonnes. Comprehensive statistics on changes in stocks at smelters and fabrication plants in Australia are not available, and actual consumption can only be estimated. However, as statistics published by the International Primary Aluminium Institute indicated a net decrease of only 3000 tonnes at fabricators in Australia and New Zealand during the period July 1979-June 1980, it is likely that actual consumption was fairly close to the apparent consumption figure. The net decrease in stocks over the period January-June 1980 was 7000 tonnes, indicating that actual consumption in Australia was probably somewhat higher than the apparent consumption of 129 741 tonnes during this period.

Production of alumina during the June quarter of 1980 was 1 842 519 tonnes, resulting in a record 7 484 472 tonnes for the fiscal year, 5.1 percent higher than in 1978-79. Output during the first half of 1980 of 3 679 907 tonnes indicates that production for the calendar year will be of the same order as the 1979-80 figure.

Increased prices for primary aluminium products were announced by the three domestic producers as from 1 April 1980. The price for 99.5% ingot was increased from \$1385 to \$1545/tonne. Prices of other aluminium products were also increased, by between 9.5 and 11.5 percent.

In late April, Alcan Australia Ltd confirmed its decision to proceed with a third potline at Kurri Kurri, which would increase the smelter's capacity to 136 000 tonnes/year by early 1983, following the current expansion to 90 000 tonnes by 1981. Cost of the additional expansion has been estimated by Alcan as \$130 million. The expansion will enable more ingot to be exported, and the company reported that a contract had already been negotiated with Nippon Light Metals Co. Ltd (an Alcan associated company) for 24 000 tonnes/year.

In June, Alcan Queensland Ltd announced its decision to go ahead with the first stage of its planned new smelter at Gladstone. Capacity of this stage would be around 100 000 tonnes/year, and it would be commissioned late in 1983 at a cost of at least \$250 million.

A. J. GOURLAY

COPPER

Mine production for the three months to June 1980 was 65 801 tonnes, about 40 percent more than in the previous quarter. This was mainly accounted for by higher production at Mount Isa (by about 60 percent) as well as at Mount Morgan, Tennant Creek, and Woodlawn. Production decreased at Cobar, Mount Lyell, and Mount Gunson.

At Tennant Creek production of copper-gold ore from the Warrego mine and copper ore from the Gecko mine is being increased, to bring the mines into full production by the second half of 1980 when the smelter is to be recommissioned.

Total blister production (primary and secondary, including anode production) increased to 47 520 tonnes, 17 percent more than in the previous quarter, because of higher primary output at Mount Isa and increases in both primary and secondary output at Port Kembla.

Refined copper output (primary and secondary, excluding toll-charge scrap) increased to 37 765 tonnes, 5 percent more than the previous quarter; increased primary output at both Townsville and Port Kembla more than offset decreases in secondary refined copper.

Demand for copper was weak during the quarter. The recession in USA slowed trading,

resulting in a build-up of stocks both on the London Metal Exchange (LME) and on the New York Commodities Exchange (Comex). LME stocks rose to 122 650 tonnes, the highest level since December 1979, and Comex stocks rose by 8332 tonnes in May to a level of 281 751 tonnes at the end of June.

Copper prices reflected the lack of demand. The LME spot price for copper wirebar was \$961.00/tonne at the beginning of the quarter. It fell to a low of \$835.50 on 16 June and was \$859.50 at the end of the quarter.

The US producer price followed similar trends. It opened the quarter at 91.0 US cents/lb, fell to a low of 88.0 US cents on 17 June, and closed the quarter at 90.00 US cents.

The Mount Isa Mines copper price was \$2060/tonne on 1 April; it fell to \$1740 on 25 June, where it remained for the rest of the quarter.

Mareeba Mining NL shipped the first ore from its Dianne copper mine, north Queensland, during April. The shipment—7633.4 tonnes of ore grading 27.7% Cu, 37 g/t Ag, and 7.4 g/t Au—will be used in Japan as a direct smelter feed. A similar-sized shipment is expected in July.

Golden Grove Mining NL announced in April that the partners in the Golden Grove venture, WA, are considering sinking a shaft on the Gossan Hill deposit to aid comprehensive underground testing. The deposit has been estimated to contain 13.5 Mt of 3.6% Cu and 19 ppm Ag. Drillholes at depth have intersected zinc and silver mineralisation. The work program at Golden Grove is being managed by Esso Exploration & Production Australia Inc.

Pacific Copper Ltd entered into a joint venture in July with BMI Mining Pty Ltd to determine the feasibility of developing the Cadia copper-gold prospect near Orange, NSW.

Western Mining Corporation Ltd (WMC) continued drilling on its Olympic Dam prospect, in South Australia, and by the end of the quarter eleven drills were working on an 800-m grid, with follow-up closer drilling in areas of interest. Preparatory work also commenced on the exploration shaft which is to be sunk about 400 m north of drill hole RD19. The shaft will go to an initial depth of 500 m, giving access to the mineralisation for metallurgical testing and further exploration.

At Benambra, Vic., WMC completed five drillholes during the quarter, four of them on the Currawong Prospect. Diamond-drillhole No. 55 in the Currawong No. 2 lens intersected 10.7 m of 2.0% Cu, 1.09% Pb, 4.9%

Zn, 51 g/t Ag, and 2.5 g/t Au. WMC is to undertake further drilling to evaluate the significance of the high gold values.

The Ministers for Trade & Resources, Industry & Commerce, and Business & Consumer Affairs announced in July the Government's decision on the Industries Assistance Commission's report on export controls applicable to copper-bearing materials. They said the Government had accepted the intent of the IAC's recommendations in respect of the export of copper ores and concentrates, and blister and refined copper. Provision for export control of these materials would be retained but blanket approval for their export would be granted on request. In regard to scrap, the IAC recommended removal of the export ban and its replacement by an export duty of 10 percent. Because of circumstances prevailing in some other countries the Government had serious doubts that the proposed export duty would achieve the necessary degree of export control. In addition an export duty on scrap would have major policy implications and significant administrative difficulties. The Government has therefore decided that copper and copper alloy scrap should continue to be subject to the current embargo arrangements.

N. D. KNIGHT

GOLD

Production of gold in the June quarter is estimated by BMR to have been 4448 kg, a decrease of 5 percent both on the same quarter for 1979 and on the preceding quarter.

Refined gold exports were 2724 kg, valued at \$43.5 million.

Following the record price rises and subsequent steep falls in the first quarter, prices in the second quarter were more stable and showed an overall upward trend. The opening price on the London Bullion Market for the quarter was US\$501.50/oz. There was an immediate fall to US\$491.25 on 3 April, but this was the lowest price for the quarter. Prices fluctuated throughout April, reaching a maximum of US\$552.00 on the 25th and closing the month at US\$519.25. In May, prices generally fluctuated around US\$510.00; however, by the end of the month an upward trend had been established and the month's high of US\$531.40 was set on 30 May. Throughout the first three weeks of June prices moved in the US\$550-630/oz range. The last week of June saw prices firm, moving from US\$617.50 on 25 June to close at US\$662.50 on 30 June.

The Perth Mint gold price opened the quarter at \$448.05 and fluctuated in April and

May; a low of \$448.05 was recorded on 26 May and a high of \$501.26 on 9 April. The price at the end of May was \$464.65, and at the beginning of June it rose strongly to \$497.35. Following the London market trend, prices moved in the \$497-\$550 range for most of the first three weeks of June and then showed strong rises in the last week to close the quarter at \$568.15.

The International Monetary Fund conducted the final sales of its four-year program during this quarter. There was a clearance of 440 000 oz at the April sale, at an average price of US\$484.01/oz. The final sale held in May saw the disposal of 443 200 oz at an average price of US\$504.90/oz.

Hill 50 Gold Mines NL announced that the Morning Star mine at Mount Magnet, WA, was to be reopened and the Mount Magnet treatment plant was to be rebuilt. Proved and probable reserves at the Morning Star mine exceed 400 000 tonnes, averaging 9.85 g/t. It is expected that mining will also be undertaken at the nearby Saturn leases.

North Kalgurli Mines Ltd have delineated an along-strike extension of 500 m of the main and eastern lode system at the Fimiston mine, WA. The extension contains narrow mineralised zones with grades of up to 8 g/t.

Peko Wallsend Ltd announced in June that it intends to treat tailings dumps at its Mount Morgan mine in Queensland. The dumps reportedly contain 40 Mt of material with an average grade of 1.08 g/t and the company expects to recover some 460 000 oz of gold using a carbon-in-pulp technique.

Exploration activity continued strongly throughout the quarter; numerous significant gold intersections were reported and several joint-venture agreements concluded.

Samantha Exploration NL reported that a drilling program undertaken by Getty Oil Development Co. at Mount Rawdon, Qld, had indicated reserves assaying 2 g/t. Getty reportedly consider the prospect has a maximum open-cut potential of 15 to 20 Mt of ore.

Other significant gold mineralisation reported includes discoveries at the Mount Redcliffe prospect near Leonora, WA, being explored by Southern Goldfields Ltd and Newmont Pty Ltd; Australian Consolidated Minerals Ltd's Big Bell prospect near Cue, WA; Consolidated Exploration NL's Marble Bar prospect; and gold and silver mineralisation, reported by Aikane Exploration (Terrigal) NL, below the London open-cut mine near Parkes, NSW.

M. B. HULEATT

IRON ORE

Both production and exports of iron ore increased during the June quarter, mainly reflecting improved demand. Discussions continued on proposals for developing additional resources in the Pilbara region for export.

Iron ore production increased to an annual rate of 96 Mt. Production was 33 percent higher than in the corresponding period of 1979. Increases were recorded at most centres including an 80-percent rise at Mount Tom Price and Paraburdoo mines to 10.4 Mt and a 36-percent increase at Mount Whaleback to 6.1 Mt.

Exports of iron and iron ore pellets increased by 12 percent to 22.2 Mt. Increased shipments to Japan (up 15% to 15.6 Mt), Republic of Korea (up 63% to 1.1 Mt), Taiwan Province (up 82% to 0.7 Mt), and the Philippines (up 6% to 0.5 Mt) more than balanced a decrease in exports to Europe (down 11% to 3.3 Mt), and mainland China (down 6% to 1.3 Mt). Shipments of pellets fell by 68 percent to 1.0 Mt, mainly because of the closure of pellet plants at Dampier in February and Cape Lambert in April 1980. Exports of all products rose by 25 percent compared with the preceding March 1980 quarter.

The average f.o.b. price of iron ore exported during the June quarter rose to \$14.77/tonne from \$13.18/tonne in the March quarter 1980, following price increases negotiated early in the year.

Further talks were held between Japanese steel mills and Pilbara iron ore developers over proposals for mining and exporting iron ore from deposits which have yet to be exploited. The talks concerned proposals for development of deposits at Area C midway between Newman and Tom Price and at West Angela 120 km west-northwest of Newman. Proposals for the development of deposits at Area C by the Goldsworthy Partners are for initial production and export of ore at a rate of 10 Mt/year. Cliffs Robe River Iron Associates plan mining 15 Mt/year of ore from the West Angela area and blending it with ore mined at Panawonica, resulting in an increase in production and export capacity to 30 Mt/year. A proposal was placed before the Japanese by CRA Ltd for the longer-term development of Pilbara iron ore resources. The proposal includes plans for construction of a new transport route between the Hamersley and Newman rail lines and a new port.

CSR Ltd held discussions with the Government of Western Australia on proposals for

development of pisolitic limonite deposits at Yandicoogina Creek 90 km northwest of Newman.

The Mount Newman Joint Venturers announced during the period that the project's ore handling facilities at Port Hedland are to be modified and upgraded to improve working conditions and plant efficiency at a cost of \$25 million. The most substantial cost items are associated with alterations to the No. 1 tertiary crusher building.

R. PRATT

IRON AND STEEL

Iron and steel production and shipments during the June quarter continued to be adversely affected by industrial disputes in the coal mining industry and consequent coal shortages. Most seriously affected was the Port Kembla steelworks where major plant was inoperative during much of the period, including three blast furnaces, No. 2 open-hearth steel-making shop, the slab mill and the hot strip mill. Major operations resumed at the steelworks on a reduced scale at the beginning of June.

Production of pig iron by The Broken Hill Proprietary Co. Ltd and its subsidiaries was 1.35 Mt, a 29-percent decrease on the June quarter 1979. Raw steel output by BHP decreased by 19 percent to 1.59 Mt. Output at Newcastle increased by 16 percent to 548 000 tonnes but fell by 7 percent at Whyalla to 303 000 tonnes and by 37 percent at Port Kembla to 741 000 tonnes. Production of marketable steel products by BHP decreased by 6 percent to 1.35 Mt. Domestic despatches of steel products fell by 4 percent to 1.05 Mt and exports fell by 20 percent to 222 000 tonnes. Exports of pig iron, which are mainly from Kwinana, decreased by 24 percent to 123 000 tonnes valued at \$15 526 000. The main markets were mainland China (48 392 tonnes), Bangladesh (30 760 tonnes), Japan (27 484 tonnes), and Taiwan Province (9694 tonnes).

Prices of iron and steel products sold by BHP were increased by a weighted average of 8.86 percent on 2 June to offset increased production costs caused by rises in wages and salaries, energy and transport costs, and raw materials prices. The last increase in prices of iron and steel products, of 5.25 percent, took effect on 26 November 1979.

John Lysaght (Australia) Ltd announced in June that it will construct a fourth coil paint line at Westernport, Vic. The new number-4 line will coat aluminium and tinplate as well

as sheet steel and will have a capacity to coat from 120 000 to 180 000 tonnes of coil/year. The new line is scheduled to be completed early in 1982 and will cost \$25 million.

Steel output by members of the International Iron & Steel Institute decreased by 6 percent to 118 Mt in the June quarter. Decreased production by EEC (down 2 percent to 36.6 Mt) and USA (down 27 percent to 24.8 Mt) was offset by increased output in Japan (up 5 percent to 29.3 Mt) and by other member countries (up 4 percent to 27.3 Mt). Steel orders in USA have declined substantially since March. Following the slight recovery in the March quarter in USA, production rates continued to fall in the June quarter; capacity utilisation fell below 60 percent. The recession in the US steel industry has caused the retrenchment of some 50 000 employees since mid-1979.

R. PRATT

LEAD AND ZINC

Australian mine production of lead in lead and mixed lead concentrates in the second quarter of 1980 totalled 108 252 tonnes, slightly below output for the June quarter 1979 but 20 percent more than for the previous quarter. Mine production of zinc in zinc and mixed zinc concentrates decreased by 9 percent to 124 080 tonnes compared with the same quarter of 1979, but was 17 percent greater than in the preceding quarter. Increased production was reported from most mines.

Production of lead in lead bullion in the second quarter of 1980 totalled 44 937 tonnes, slightly more than in the June quarter 1979 and 15 percent higher than in the March quarter 1980. Increased output was reported at both the Mount Isa and Cockle Creek smelters.

At Port Pirie, Broken Hill Associated Smelters Pty Ltd, the only domestic producer of primary refined lead, continued to operate at slightly less than full capacity throughout the quarter. Output of total refined lead, including production of secondary refined lead, totalled 58 509 tonnes, 7 percent below the June quarter 1979, but slightly more than for the March quarter 1980.

All zinc smelters and refineries operated at about 80-90 percent of capacity throughout the quarter. Output of primary refined zinc totalled 72 175 tonnes, 6 percent less than for the same quarter in 1979, but a little more than for the March quarter 1980.

Demand for lead was weak for most of the period. Both North America and Europe experienced mild winters, resulting in decreased

demand from the battery industry. US lead sales were also adversely affected by a recession in the car industry. Stocks accumulated, London Metal Exchange (LME) stocks reaching 25 575 tonnes on 20 June, the highest since September 1979. However, towards the end of the quarter there were signs of a firming in demand in response to the long-awaited purchases by USSR which, in 1979, had helped bolster the market.

The LME spot price for lead rose from its closing level for the March quarter of £462/tonne to a high of £491/tonne on 9 April, despite the resumption of deliveries from the Britannia Metals Northfleet refinery; it fell progressively from this date to close the quarter at £331/tonne. The US producer price fell steadily from 50.52 US cents/lb on 1 April to 34.36 US cents/lb on 30 June. Many US lead producers have moved away from the quoted list price to sell on the basis of the *Metals Week* average—widely believed to be more stable than a free-market quotation. The *Metals Week* average price was 48 US cents/lb for the first week of the quarter, falling to 34 US cents/lb for the week ending 27 June. In Australia the domestic price fell from \$1050/tonne on 1 April to \$750/tonne on 30 June.

Demand for zinc eased throughout the quarter, and the European producer price, at which most of the world's zinc is traded, fell from US\$825 to US\$780/tonne. The level of stocks has fallen about 30 percent since early this year, but this has been interpreted simply as a shift of stocks from producers to consumers, who bought when the price began to move upwards early in the year.

On the LME, zinc prices fluctuated during the quarter, but fell overall from £318/tonne on 1 April to £293/tonne on 30 June. In Australia the domestic price for g.o.b. zinc fell from £745/tonne on 1 April to £695/tonne on 30 June.

Australian Mining & Smelting Limited (AM & S), which owns the Zinc Corporation Limited (ZC) and New Broken Hill Consolidated Limited (NBHC) mines at Broken Hill, announced in April that it would undertake a major new exploration program in the Broken Hill district. A total of \$10 million will be spent over five years, with the aim of locating major additional deposits of lead-zinc-silver mineralisation. AM & S announced that on present indications the ZC/NBHC mines have remaining lives of between 17 and 26 years unless new reserves can be located.

North Broken Hill Holdings Ltd continued development work designed to bring the Fitzpatrick Lode, in the deep section of the North Mine, into production. Work was well advanced and will enable production to be maintained at the mine, which faced lower production in the short term.

E.Z. Industries Ltd announced in June the letting of a \$20 million contract to Allied Construction Pty Ltd and Thyssen Mining Constructions of Australia Pty Ltd for the first major work on the lead-zinc-silver deposit at Elura, NSW. The work will include construction of a decline and sinking of a shaft. The whole project including the mine and treatment plant is expected to cost about \$160 million and is due to be completed by December 1982.

N. D. KNIGHT

MINERAL SANDS

Mineral-sand markets were buoyant during the first half of 1980 and substantial price gains were registered for titaniferous and zirconium products. Overseas, the TiO_2 pigment industry which had operated at 60-70 percent of capacity in the early part of 1979 achieved near full production in the first half of 1980. Demand for titanium sponge continued to outstrip supply, and plans were announced for expanded production capacity in USA, Japan, and Europe. US quotations for bagged rutile, f.o.b. eastern US ports, were increased by US\$30-50 to the range US\$425-450/short ton; the price of titanium slag, f.o.b. Sorel, Quebec was raised US\$5 to US\$115/long ton; and prices for TiO_2 pigments were increased 4 cents to \$0.63/pound for rutile pigment and to \$0.57/pound for anatase pigment. As from April 1980, contract prices for Japanese titanium sponge were increased to the range US\$6.50-\$8.00/pound, about double the contract rate in 1979. The London *Metal Bulletin* quotation for ilmenite bulk concentrates, min. 54% TiO_2 , f.o.b. Australia was increased from \$17-19/tonne to \$20-22/tonne, and standard zircon concentrates quoted at \$A50-60/tonne f.o.b. Australia in the latter half of 1979, had firmed to \$65-75/tonne by mid-1980.

Ilmenite

Production of ilmenite concentrates, the bulk from Western Australia, was about 334 000 tonnes in the June quarter, increasing production in the first half of 1980 to 623 000 tonnes, compared with a total of 1 150 465 tonnes in 1979. Shipments to domestic TiO_2 pigment producers were well maintained and

exports in the June quarter were recorded as 360 449 tonnes compared with 285 288 tonnes in the March quarter, and a total of 931 705 tonnes including leucocene in 1979. The average unit export value for the January-June 1980 period of \$21.5/tonne compares with the unit value of \$20.2/tonne for 1979 exports.

At Capel, WA, Associated Minerals Consolidated Ltd reactivated its semi-commercial synthetic rutile plant, closed down in 1975, and by the June quarter, the company's full production capacity of 58 000 tonnes/year was in use. The beneficiation plants use high- TiO_2 ilmenite concentrates from operations at Eneabba, and secondary ilmenite produced at the Capel plant.

In April 1980, Associated Minerals acquired the operating plant and mining lease of Titanium Enterprises at Green Cove Springs, south of Jacksonville, Florida. Annual output of 25 000 tonnes each of rutile and zircon, 50 000 tonnes of ilmenite, and quantities of leucocene, staurolite and monazite is planned for the project. The ilmenite is reported to be particularly suitable as a feedstock for the synthetic rutile process developed by Associated Minerals.

Rutile

Production of rutile concentrates from the east coast improved substantially in the June quarter and domestic production of 78 000 tonnes for the quarter compares with 69 358 tonnes in the March quarter. Production of 147 000 tonnes for the six months to June 1980 compares with a total of 278 901 tonnes in 1979. Exports have been maintained at a high level (98 000 tonnes in the June quarter), and 188 000 tonnes of rutile concentrates was exported in the first half of 1980 compared with a total of 318 000 tonnes in 1979; the unit values of exports for the two periods were \$267/tonne and \$218/tonne, respectively.

Improved production from large-scale dredging operations on North Stradbroke Island, Qld, and expansion of production capacity for rutile at Eneabba, WA, are expected to maintain a high level of rutile output in the short to medium term at least and so take advantage of the underlying persistent world shortage of natural rutile.

Zircon

Zircon production increased to a record 120 000 tonnes in the June quarter, to maintain the 1979 annual rate of about 450 000 tonnes. Heavy exports of zircon concentrates continued, and in the first half of 1980 zircon exports were recorded as 262 000 tonnes com-

pared with a 1979 total of 479 440 tonnes. Despite a general firming in prices, the unit value of exports in the January-June 1980 period (\$68.3/tonne) was down slightly on the unit value in 1979, and reflects an increasing percentage of standard-grade zircon in total zircon exports.

Large stocks of zircon, a feature of the mineral sands industry in recent years, have now been largely liquidated; renewed consumption of zircon for refractories and foundry applications, particularly in Japan, has stabilised the industry considerably and resulted in firmer zircon prices.

J. WARD

NICKEL

Both mine production and exports of nickel increased substantially in the June quarter compared with the same period of 1979. Free-market nickel prices decreased.

Australian mine production of nickel increased 3 percent to 17 038 tonnes because output of nickel in concentrates by Agnew Nickel Co. Pty Ltd at Agnew, WA, more than doubled to 2383 tonnes, and output of nickel in ore at Greenvale, Qld, by Queensland Nickel Pty Ltd increased by 3 percent, to 7153 tonnes. Output of nickel in concentrates mainly by Western Mining Corporation Ltd in the Kambalda district, WA, fell by 13 percent to 7502 tonnes.

The value of nickel exports increased by almost 80 percent to \$110.8 million because of improved demand and higher prices. The value of nickel matte and nickel oxide sinter exports increased by 94 percent to \$72.1 million; the value of nickel metal exports in powder and unwrought forms increased by 56 percent to \$38.7 million. The total value of nickel exports was 25 percent higher than in the March quarter of 1980.

An easing in demand for nickel during the quarter was reflected by a fall in the European free-market nickel price from a maximum of US\$2.90-3.25/lb in mid-April to US\$2.75-2.90 by the end of June. The producer price of cathode nickel remained unchanged at US\$3.45-3.50/lb.

Drilling by Metals Exploration Ltd and Outokumpu Oy at the old Wannaway mine confirmed that the Wannaway lode remains open at depth. A decision to proceed with a test mining program after additional drilling and metallurgical testing has been completed is to be made later in the year.

Metals Exploration announced that it had decided to proceed with a project to reduce

fuel oil consumption at Yabulu nickel refinery. The project, which involves the installation of a new coal-fired boiler, conversion of ore dryers to coal firing, and installation of coal handling facilities, will cost \$45 million and take 2½ years to complete.

R. PRATT

TIN

Mine production of tin-in-concentrates in the June 1980 quarter was 2900 tonnes, 11 percent less than the unusually high total of 3276 tonnes produced in the June quarter 1979.

Production of primary refined tin was 5 percent higher than in the June 1979 quarter, totalling 1354 tonnes. In addition about 100 tonnes of secondary tin was produced in the quarter.

Decreased consumption of tin in tinplate more than outweighed increased consumption for solder manufacture, and total consumption in the June quarter fell to 670 tonnes, compared to 763 tonnes in the June 1979 quarter.

Exports of tin-in-concentrates, mainly to Malaysia, increased by 11 percent to 1821 tonnes. Exports of refined tin, 372 tonnes, were 114 percent more than the abnormally low total of 174 tonnes exported in the June 1979 quarter. No tin or tin concentrates were imported.

Early in the quarter the Newmont Pty Ltd/ICI Australia Ltd/Endeavour Resources Limited/Pelsart Resources NL joint venture, which is testing the Grampians prospect near Emmaville, NSW, reported that previously announced drill-indicated mineralisation consists of 4 769 000 tonnes averaging 0.2% Sn, 0.1% Cu, and 5.5 g/t Ag in a proposed north pit with an overburden ratio of 3.3:1, and 12 215 000 tonnes averaging 0.16% Sn, 0.03% Cu, and 4 g/t Ag in a proposed south pit with an overburden ratio of 2.3:1.

Aberfoyle Limited announced that drilling at its Ardlethan mine had located two additional areas of tin mineralisation, which will be tested further, respectively 150 m and 250 m below the bottom of the main open pit.

The Metals Exploration Ltd/CRA Limited/Comstaff Pty Ltd/Preussag Australia Pty Ltd joint venture announced that drilling at Mount Bischoff, in northwest Tasmania, had located a new zone of tin mineralisation about 100 m west of the promising mineralised zone previously tested.

Greenbushes Tin NL commissioned an electric smelter at Greenbushes, WA, in May. The smelter, which has a capacity of 2000 tonnes/year of concentrates, produces a tant-

alum-rich slag amenable to further treatment to recover the tantalum and columbium as their respective oxides.

The Penang tin price hovered above MS2300/pikul (1 pikul = 60.48 kg) during April, then in mid-May fell to a new level about MS2160, where it remained for the rest of May and June. The price was below the ceiling (MS2145/pikul) of the International Tin Council's buffer-stock price range for four days in mid-June; this was the first time since September 1979 that it had fallen into the buffer-stock price range. Monthly averages for the Penang price were April MS2319; May MS2225; June MS2159.

The Australian price for primary refined tin, which is based on the Penang price, fluctuated about \$16 400/tonne for most of April, then fell along with the Penang price to remain generally at a level between \$15 600 and \$15 300 in late May and June.

The LME cash price for standard-grade tin, after fluctuating about £7700/tonne in April, trended generally downwards in May to fluctuate about £7300/tonne during June.

The United States Federal Emergency Management Agency, which replaced the Federal Preparedness Agency, recommended new objectives, effective from 1 May, for the US strategic stockpile. The objective for tin was increased to 42 000 long tons (42 674 tonnes) from the objective of 32 499 long tons (33 021 tonnes) set in 1976. The new objective leaves a surplus of 158 477 long tons (161 021 tonnes) of tin in the stockpile; Congress has authorised sale of 30 000 long tons (30 482 tonnes) of this surplus plus a contribution of up to 5000 long tons (5080 tonnes) to the International Tin Council Buffer Stock under the terms of the Fifth International Tin Agreement.

I. R. McLEOD

TUNGSTEN

Australian production of tungstic oxide (WO_3) in concentrates was 126 405 metric-tonne units (mtu) in the June quarter of 1980, about 20 percent more than in the June quarter of 1979 and 50 percent more than in the March 1980 quarter. Increases were recorded at all established mines—King Island, Tas., Mount Carbine and Sunnymount, Qld, and from Kara, Aberfoyle, and Storeys Creek, Tas.

At Kara, the concentrator operated on a three shift, five-day-week basis. Increases in output were mainly the result of installation of new electrical equipment in the mill which now uses the State's hydro-electric power. The mine continued to be the subject of detailed feasi-

bility studies carried out by McIntyre Mines (Australia) Pty Ltd. The studies and a reassessment of ore reserves were expected to be completed by September.

The new Oakleigh Creek mine in central Tasmania began operating in June and, despite mechanical problems with the primary crusher, a two shifts/day operation started on 9 June. The first shipment of 16 tonnes of high-grade concentrate is expected in August. The mine is jointly owned by Serem (Australia) Pty Ltd (33 1/3%), Triako Mines NL (25%), Buka Minerals NL (25%), and Aquitaine Australia Minerals Pty Ltd (16 2/3%).

Feasibility studies on the Mount Mulgine deposit in Western Australia neared completion during the quarter. Development of the deposit, which is covered by a joint venture between Minefields Exploration NL and the Australia & New Zealand Exploration Co. (ANZECO), will be by one of four options covering milling rates of between 5000 and 10 000 tonnes/day. Included in these options is the possibility of upgrading the concentrates on-site to ammonium paratungstate (APT). A final decision is expected to be made before the end of the September quarter.

Aberfoyle Ltd announced in June that operations at the Aberfoyle and Storeys Creek mines were currently non-profitable and that profitability in the longer term depended on the possible development of the Lutwyche vein system. A decision on the future of the area is expected later in the year.

The US General Services Administration (GSA) held its monthly auctions of stockpile material during the quarter. The prices realised at the auctions were below the London Metal Bulletin (LMB) quotations at the time of the auctions.

The LMB quotation for standard-grade wolframite at the beginning of the quarter ranged from US\$149.00/mtu to US\$144/mtu; by the middle of the quarter it had fallen to between US\$137.50 and US\$144.00 and it was US\$143.00-146.50/mtu at the end of June.

The International Tungsten Indicator fell from around US\$141.73/mtu in the first half of April to US\$139.82/mtu in the first half of June, rising again to US\$143.85/mtu in the second half of June.

Price fluctuations during the quarter were probably in response to purchases during April by Eastern European countries at prices below the prevailing LMB low, followed by China's decision not to sell in early June, when the quotation fell below US\$140.00/mtu.

N. D. KNIGHT

METAL, ORE, AND CONCENTRATE PRICES

compiled by R. M. Weber

(All European prices, and US prices for copper, lead, tin, and zinc, are obtained from the London *Metal Bulletin*; the remaining US prices are obtained from *Metals Week* and *American Metal Market*. Australian prices are obtained from various sources)

MONTHLY AVERAGE BASE METAL PRICES

	Copper	Tin	Zinc	Lead
Australia (\$/tonne)				
April 1980	1 965.26	16 282.05	741.84	1 018.42
May 1980	1 854.54	15 895.22	715.00	868.18
June 1980	1 795.23	15 497.90	695.00	759.52
UK (LME, £/tonne)				
April 1980	937.65	7 680.79	320.25	438.49
May 1980	889.37	7 455.26	300.46	309.56
June 1980	858.85	7 373.33	290.26	316.19
USA (US cents/lb)				
April 1980	93.77	758.76	38.50	46.15
May 1980	93.59	788.96	38.50	38.00
June 1980	91.64	782.61	38.50	36.14

MAXIMUM AND MINIMUM BASE METAL PRICES 1 APRIL TO 30 JUNE 1980

	Copper	Tin	Zinc	Lead
Australia (\$/tonne)				
Maximum	2 060.00	16 712.00	745.00	1 050.00
Minimum	1 740.00	15 309.00	695.00	750.00
UK (LME, £/tonne)				
Maximum	990.00	7 800.00	348.50	491.00
Minimum	835.50	7 240.00	282.00	301.00
USA (US cents/lb)				
Maximum	97.00	829.00	39.50	52.00
Minimum	89.00	740.00	37.50	34.00

METAL PRICES AS AT END OF JUNE 1980

(Prices shown are for the last trading day of the month; where prices are not set daily, the date of latest change is shown. Some prices are nominal, being subject to negotiation between producer and purchaser. Commonwealth Trading Bank currency exchange (telegraphic transfer buying) rate \$A1.00 = US\$1.1600)

Aluminium				
Australia				
	\$1545/tonne (3.4.80)			
	Domestic ingots 99.5% c.i.f. capital cities, lots of 10 000 kg or more			
Europe				
	\$815/tonne (1.2.80)			
	UK producer, 99.5%, delivered			
USA				
	70-72 cents/lb (19.6.80)			
	<i>Metals Week</i> , US market			
Antimony				
Australia				
	\$3900/tonne (3.1.77)			
	1-tonne lots, delivered capital cities			
Europe				
	\$3250-3300/tonne (30.6.80)			
	European free market, 99.6%, \$/tonne, warehouse			
USA				
	153-157 cents/lb (22.5.80)			
	<i>Metals Week</i> , New York dealer, 99.5-99.6% metal, c.i.f. port			
Bismuth				
Australia				
	\$418-437/kg (26.6.80)			
	Based on LME price			
	\$456-484/kg (5.6.80)			
	Based on <i>Metals Week</i> , New York dealer price			

Europe		\$8220-2.30/lb (26.6.80)
	European free market, 1-ton lots in warehouse	
USA		\$2.40-2.55/lb (5.6.80)
	<i>Metals Week</i> , New York dealer, 99.99% min.	
Cadmium		\$6.50/kg (29.1.80)
Australia		Minimum 1-tonne lots, delivered Melbourne
Europe		\$8210-2.25/lb (19.6.80)
	European free market, c.i.f., sticks	
USA		\$2.30-2.40/lb (26.6.80)
	<i>Metals Week</i> , New York dealer, 99.95% min.	
Cobalt		\$38.70/kg (6.2.79)
Australia		Ceramic oxide 70% Co, delivered Melbourne
Europe		\$8520.00-22.75/lb (26.6.80)
	European free market, 99.5% in warehouse	
USA		\$25.00/lb (1.2.79)
	<i>Metals Week</i> , shot, cathode, 250 kg	
Copper		\$1740.00/tonne (25.6.80)
Australia		Mount Isa Mines Ltd price; electrolytic wirebar basis; c.i.f. main Australian ports
Europe		\$859.50/tonne (30.6.80)
	LME, cash, midday, electrolytic wirebar	
USA		90-91 cents/lb (20.6.80)
	Cathodes, delivered	
Gold		\$568.15/troy oz, \$18.26/g (30.6.80)
Australia		Perth Mint selling price, min. 400-oz bars
Europe		US\$662.50/troy oz, (30.6.80)
USA		\$653.50/troy oz, (30.6.80)
	<i>Metals Week</i> , Handy & Harman sellers' price, 400-oz bars, 99.95%	
Lead		\$750.00/tonne (4.6.80)
Australia		99.97-99.99% f.o.b., f.o.a., Port Pirie
Europe		\$331.00/tonne (30.6.80)
	LME, cash, midday	
USA		34-36 cents/lb (12.6.80)
Mercury		nominal
Australia		US\$385.00-395.00/ask (30.6.80)
Europe		European free market, c.i.f., \$/flask, min. 99.99%
USA		US\$385.00-395.00/ask (19.6.80)
	<i>Metals Week</i> , New York dealer, 20-plus flasks	
Nickel		\$6.55-6.64/kg (30.6.80)
Australia		Australian currency equivalent of <i>Metals Week</i> producer cathode price, last trading day of month
Europe		US\$2.75-2.90 (30.6.80)
	European free market, c.i.f., Europe	
USA		\$3.45-3.50/lb (28.2.80)
	<i>Metals Week</i> , major producer, cathode, 99.97% f.o.b.	

Pig iron

<i>Australia</i> ..	\$151.50/tonne (2.6.80)
	Foundry, c.i.f. State capital city ports
<i>Europe</i> ..	£113.50/tonne (30.12.79)
	Foundry, phosphorus 0.12-1.00% ex-basing points, UK
<i>USA</i> ..	\$191.00/short ton
	f.o.b., No. 2 Foundry (Birmingham)

Platinum

<i>Australia</i> ..	nominal
<i>Europe</i> ..	£182.50/roy oz. (6.6.80)
	UK & Empire refined, delivered
<i>USA</i> ..	\$420.00/roy oz (19.12.79)
	<i>Metals Week</i> , major producer, f.o.b. refinery

Selenium

<i>Australia</i> ..	—
<i>Europe</i> ..	US\$8.00-9.25/lb (30.6.80)
	European free market price, c.i.f.
<i>USA</i> ..	\$9.00-9.50/lb (24.4.80)
	<i>Metals Week</i> , New York dealer price, commercial-grade 99.5% min.

Silver

<i>Australia</i> ..	\$388.48/kg (2.6.80)
	Minimum lots 320 kg, f.o.b., f.o.t. Port Pirie
<i>Europe</i> ..	709.40pence/roy oz. London Spot (30.6.80)
<i>USA</i> ..	16.48 cents/roy oz. (30.6.80)
	<i>Metals Week</i> , Handy & Harman, commercial bar form, 99.9% min.

Tin

<i>Australia</i> ..	\$15 572.00/tonne (30.6.80)
	Spot, minimum 1 tonne, ex-smelter
<i>Europe</i> ..	£7350.00/tonne (30.6.80)
	LME, cash, midday
<i>USA</i> ..	774.785 cents/lb (30.6.80)
	New York
<i>Penang</i> ..	\$52150.00/pikul (30.6.80)
	Ex-smelter

Zinc

<i>Australia</i> ..	\$495.00/tonne (1.6.80)
	EZ Industries, Prime Western, 98.5%, 15 tonnes and over
<i>Europe</i> ..	£293.00/tonne (30.6.80)
	LME, cash, midday
<i>USA</i> ..	37.50-39.50 cents/lb (11.2.80)
	Prime Western, delivered

ORE AND CONCENTRATE PRICES AS AT END OF JUNE 1980

(Prices shown are for the last trading day of the month; where prices are not set daily, the date of latest change is shown. Some prices are nominal, being subject to negotiation between producer and purchaser. Prices quoted will vary according to grade and possible impurities, and in many cases with the size of the parcel)

Antimony

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$23.50-25.00/mtu
	Lump sulphide ore, 60% Sb, c.i.f.
<i>USA</i> ..	—

Beryl

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$36.00-40.00/mtu
	Cobbed lump, minimum 10% BeO, c.i.f.
<i>USA</i> ..	\$75.00-85.00/mtu (26.12.79)
	10-12% Be, imported c.i.f. Philadelphia

Chromite

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$130.00-135.00/tonne
	Turkish lumpy, minimum 48% Cr ₂ O ₃ , 3:1, f.o.b.
<i>USA</i> ..	\$110.00/tonne (1.6.79)
	Turkish lumpy, minimum 42% Cr ₂ O ₃ , 3:1, f.o.b.

Columbium (niobium)

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$10.00-13.00/lb
	Columbite, minimum 65% combined Nb ₂ O ₅ +Ta ₂ O ₅ , 10:1, c.i.f., \$/lb of pentoxide content
<i>USA</i> ..	\$10.00-12.00/lb (8.11.79)
	10:1, Nb ₂ O ₅ :Ta ₂ O ₅ . Dealer and producer quotation priced on basis of combined pentoxide content, c.i.f. US ports

Manganese

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$1.70-1.73/mtu
	Metallurgical, minimum 48-50% Mn, maximum 0.1% P, c.i.f.
<i>USA</i> ..	\$1.38-1.42/mtu
	Producer selling agents and dealer quotation c.i.f. US ports, min. 48% Mn

Molybdenum

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$10.31/lb (28.2.80)
	Mo in MoS ₃ concentrate, f.o.b. Climax, minimum 85%
<i>USA</i> ..	\$16.31/lb (27.2.80)
	95% MoS ₃ , considered nominal, cost of container extra

Monazite

<i>Australia</i> ..	nominal
<i>Europe</i> ..	\$A350-400/tonne
	Concentrate, minimum 60% ReO ₃ +thoria, f.o.b., f.i.d. Australia
<i>USA</i> ..	nominal

Tantalum

<i>Australia</i> ..	nominal
<i>Europe</i> ..	US\$114.00-121.00/lb
	Ore, minimum 60% Ta ₂ O ₅ , c.i.f.
<i>USA</i> ..	\$115.00-120.00/lb (17.4.80)
	Dealer quotation: about 60% combined Nb ₂ O ₅ +Ta ₂ O ₅ , depending on grade and size of lot

Tin (cassiterite)

<i>Australia</i> ..	\$136.61/mtu
	Concentrate, 70%, delivered Sydney
<i>Europe</i> ..	Returning charge/tonne:
	£205-235, 70-75% Sn (including deduction)
	£275-325, 30-65% Sn (including deduction)
	£310-360, 20-30% Sn (including deduction)
<i>USA</i> ..	—

Titanium conc.—ilmenite

<i>Australia</i> ..	nominal
<i>Europe</i> ..	\$A17.00-19.00/tonne
	Bulk concentrate, minimum TiO ₂ , f.o.b. Australia
<i>USA</i> ..	\$55.00/long ton (26.12.79)
	54% TiO ₂ , imported f.o.b. Atlantic ports, shipload quantities

Titanium conc.—rutile

<i>Australia</i> ..	nominal
<i>Europe</i> ..	\$A320.00-350.00/tonne
	Concentrate, 95-97% TiO ₂ , bagged, f.o.b., f.i.d. Australia
	\$A290.00-330.00/tonne
	Bulk conc., 95-97% TiO ₂ , f.o.b., f.i.d. Australia
<i>USA</i> ..	\$425.00-450.00/short ton (26.12.79)
	96% TiO ₂ , f.o.b. cars Atlantic and Great Lakes ports

Tungsten conc.—wolframite

<i>Australia</i> ..	\$123.27-126.29/mtu WO ₃
	Based on LME price, minimum 65% WO ₃
<i>Europe</i> ..	US\$143.00-146.50/mtu WO ₃
	Standard, min. 65% WO ₃ , c.i.f.
<i>USA</i> ..	\$127.03-128.37 (18.6.80)
	GSA domestic, based on units of WO ₃
	\$127.89-128.85 (5.6.80)
	GSA export, based on units of WO ₃

Uranium—oxide

<i>Australia</i>	—
<i>Europe</i>	US\$37.00-42.00/lb (13.7.79)
	Concentrate, contract basis, f.o.b. mine
<i>USA</i>	\$32.00/lb (30.4.80)
	American Metal Market—Nuexco, immed. delivery, US

Uranium—hexafluoride

<i>Australia</i>	—
<i>Europe</i>	US\$38.00-43.00/lb (13.7.79)
<i>USA</i>	—

Zircon

<i>Australia</i>	nominal
<i>Europe</i>	\$A50.00-60.00/tonne
	Sand, 66-67% ZrO ₂ , standard, f.o.b., f.i.d. Australia
	\$A75.00-85.00/tonne
	Premium, maximum 0.1% TiO ₂ , f.o.b., f.i.d. Australia
<i>USA</i>	\$155.00/short ton (1.5.80)
	Ore, Australia, 65% ZrO ₂ , bulk, c.i.f. Atlantic ports

Copper ore (Australia)

The price paid for ores is related to the market price for copper, less charges listed below. The basis of price determination is variable: details are obtainable from the two smelters—The Electrolytic Refining & Smelting Company of Australia Pty Ltd, Port Kembla, NSW, and Mount Isa Mines Ltd, Mount Isa, Qld.

	ERS	Mount Isa
<i>Metal deduction or copper content deduction</i>	1.3 units of copper/tonne of ore (a)	1.3 units of copper/dry tonne of ore
<i>Receiving, sampling, assaying, smelting charge/tonne</i>	\$30.00 (material natural state)	\$11.30 (dry ore)
<i>Converting, refining, realising charge/unit of copper paid for</i>	\$2.50	\$1.70
<i>Gold refining charge/gram of gold paid for</i>	8 cents (b)	5 cents (c)
<i>Silver refining charge/gram of silver paid for</i>	2 cents (d)	1.45 cents (e)
(a) Payment at 96% of the ERS refined copper price, after metal deduction.		
(b) ERS gold deduction: 0.002 kg gold/dry tonne of material, and 2.5% of the balance of gold metal contained in material.		
(c) Mount Isa gold deduction: from the gold content of each parcel of ore delivered, 2 g gold/tonne of ore will be deducted; payment for 97.5% of the excess is based on the Australian Gold Producers monthly average price.		
(d) ERS silver deduction: 0.03 kg silver/tonne of material and 8% of the balance of silver metal contained in material.		
(e) Mount Isa silver deduction: from the silver content of each parcel of ore delivered, 60 g silver/tonne of ore will be deducted; payment for excess is based on average London Bullion Brokers cash price for silver.		

Part 2 Quarterly Statistics

Australian Bureau of Statistics, Canberra, Australia

PREFACE

by R. J. Cameron

Australian Statistician

Statistics included in this Part relate to Australian production of and overseas trade in minerals and mineral products. In the main, the data relating to mineral production consist of official statistics of Mines Departments (and equivalents) of the several States and the Northern Territory Department of Mines & Energy. These statistics have been supplemented as necessary by data obtained from the Energy Economics Branch of the Department of National Development & Energy and from the Bureau of Mineral Resources, including information collected by BMR from mines and treatment plants.

The presentation of data in this Part is arranged to assemble under the one heading all statistics in respect of each particular mineral. Summary tables showing production of selected major minerals and metals are shown on page 93 and include details where available for the June quarter 1980.

The fundamental concept of Australian mineral production statistics is that quantities and values of individual minerals are reported in terms of the products in the form in which they are despatched from the locality of each mine. This involves the inclusion in the mining industry of ore-dressing and certain elementary smelting of metallic minerals (e.g., in the case of gold) and miscellaneous treatment of non-metallic minerals where these operations are carried out in an associated plant at or near the mine. For example, in the case of a metal mine, the output is recorded as ore when no treatment is undertaken at the mine or as a concentrate where ore-dressing operations are carried out in an associated plant in the locality of the mine.

The particulars of quantities of minerals produced have been compiled on this basis as far as practicable. This has involved some rearrangement of official statistics published by Mines Departments (and equivalents) for certain States. Actual output of the mineral product (as defined in the preceding paragraph) has generally been reported, but in some cases it has been necessary to include despatches from the mine (or reported sales) as distinct from production in deriving the total for Australia. In addition to the basic quantity data, particulars of contents of metallic minerals are shown and in general represent total contents (as determined by assay) for each metal which is a 'pay metal' or 'refiners' prize' when present in the particular mineral.

The data exclude construction materials (sand, gravel, building stone, etc.) and some particulars for non-metallic minerals which are not at present available.

Quarterly values of output statistics are not available because of delays in realisation of values of several important minerals. Calendar-year statistics of the value of output of individual minerals are published each year in the *Australian Mineral Industry Annual Review*. Fiscal-year statistics are published by the Australian Bureau of Statistics in the *Bulletin Mineral Production* (Catalogue No. 8405.0).

I extend my thanks to State Departments of Mines and their equivalents, Statisticians of the several States, and the Department of National Development & Energy who have supplied information used in the preparation of these tables.

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Metric units and conversion factors

Imperial Unit	Metric Unit	Conversion factors	
		Imperial to Metric: multiply by	Metric to Imperial: multiply by
Mass			
troy (fine) ounce	kilogram	0.0311035	32.1507
pound	kilogram	0.453592	2.20462
short ton	tonne	0.907185	1.10231
long ton	tonne	1.01605	0.984207
long ton unit	metric ton unit	1.01605	0.984207
Volume			
cubic foot	cubic metre	0.0283168	35.3147
barrel	cubic metre	0.158987	6.28981

Terms and symbols

	—: nil
tonne: metric ton (2204.6 lb)	..: less than half the unit shown
unit: metric ton unit (22 046 lb)	n.a.: not available
	n.a.p.: not available for publication
*: subject to revision	n.e.l.: not elsewhere included
	n.y.a.: not yet available

Statistics of smelter and refinery production exclude secondary metal (i.e. metal recovered from scrap) unless otherwise specified.

All import and export values are expressed in Australian currency and are generally f.o.b. port of shipment. A more detailed description of the method of valuation is quoted in the *Overseas Trade Bulletin*, Catalogue No. 5409.0.

Any discrepancies between totals and sums of components in the tables are due to rounding.

Note: Enquiries concerning the mineral statistics contained in Part 2 may be made by telephoning Mr Les Wright, Canberra (062) 49 9556.

ALUMINIUM

					1978	1979*	1979*			1980*
							June	September	December	March
PRODUCTION										
Mine production										
Minerals produced										
Bauxite	tonne				24 292 511	27 585 039	6 483 592	7 063 791	7 435 743	6 579 409
Alumina (Al ₂ O ₃ content)	tonne				10 392 851	11 785 251	2 762 289	3 038 009	3 217 417	2 752 937
Production: States (Al ₂ O ₃ content)										
New South Wales	tonne				1 465	1 249	307	353	350	306
Victoria	tonne				1 077	1 562	990	—	572	—
Queensland	tonne				4 442 239	5 171 550	1 210 494	1 316 247	1 510 099	1 060 196
Western Australia	tonne				3 692 528	4 281 679	1 019 200	1 060 480	1 096 960	1 102 028
Northern Territory	tonne				2 255 542	2 329 211	531 298	660 929	609 436	590 407
Total contained alumina	tonne				10 392 851	11 785 251	2 762 289	3 038 009	3 217 417	2 752 937
Smelter and refinery production										
Alumina	tonne				6 775 675	7 414 606	1 817 845	1 911 047	1 893 518	1 837 368
Refined aluminium	tonne				263 361	269 575	66 053	68 103	70 288	71 538
IMPORTS										
Bauxite	tonne				6 515	16 036	8 226	3 716	977	5 223
Value	\$'000				700	1 673	1 117	282	70	429
Alumina	tonne				3 524	4 210	946	969	1 309	1 246
Value	\$'000				1 866	2 148	506	434	732	590
Aluminium and aluminium-base alloys										
Unworked shapes	tonne				344	4 330	2 176	537	642	750
New Zealand	tonne				1	3 314	2 001	302	87	137
U.K.	tonne				339	249	129	77	25	93
U.S.A.	tonne				1	628	26	61	516	508
Other	tonne				3	139	20	97	14	12
Value	\$'000				710	6 046	2 960	900	1 000	1 390
Plates, sheets, strips and circles	tonne				933	2 030	453	710	582	142
Value	\$'000				2 576	5 945	1 369	1 955	1 862	559
Pipes and tubes	tonne				76	220	46	13	98	32
Value	\$'000				294	1 703	225	715	488	132
Bars, rods and angles	tonne				1 048	2 649	385	409	1 628	601
Value	\$'000				1 861	4 972	610	724	2 817	1 254
Foil	tonne				1 588	2 505	419	416	578	228
Value	\$'000				4 922	5 683	1 319	1 462	1 890	715
Powder	tonne				450	901	168	223	264	261
Value	\$'000				759	1 583	302	431	494	483
Wire, single-strand, uncovered	tonne				102	1 079	115	169	755	183
Value	\$'000				308	1 943	301	256	1 249	448
Scrap (including re-melt)	tonne				1 337	1 463	219	427	498	461
Value	\$'000				1 388	2 001	248	859	581	534
EXPORTS (a)										
Alumina (b)	'000 tonnes				6 250	6 476	1 654	1 670	1 664	2 064
Value	\$'000				671 306	775 396	200 403	200 976	206 092	298 842
Aluminium and aluminium-base alloys										
Unworked shapes	tonne				80 019	75 999	11 761	20 068	18 279	6 612
Hong Kong	tonne				905	2 187	571	588	437	579
Japan	tonne				57 410	38 990	6 570	10 787	8 706	2 580
Philippines	tonne				7 136	8 875	2 672	2 247	2 569	1 430
Thailand	tonne				3 343	2 327	806	268	565	906
Other	tonne				11 225	23 621	1 342	6 199	6 002	1 117
Value	\$'000				74 676	85 947	13 203	23 734	21 543	9 124
Plates, sheets, strips and circles	tonne				2 830	9 987	2 692	1 819	4 550	4 776
Value	\$'000				4 703	17 788	4 455	3 740	7 933	6 915
Pipes and tubes	tonne				159	434	125	160	6	24
Value	\$'000				392	988	254	384	25	29
Bars, rods and angles	tonne				156	1 316	469	425	232	943
Value	\$'000				313	2 103	681	601	409	1 156
Foil	tonne				1 470	2 534	781	681	674	722
Value	\$'000				2 220	4 101	1 222	1 120	1 178	1 460
Powder	tonne				98	310	77	109	62	110
Value	\$'000				202	388	77	156	85	124
Wire, single-strand, uncovered	tonne				33	774	752	11	8	7
Value	\$'000				96	1 114	1 047	18	34	25
Scrap (including re-melt)	tonne				8 002	10 481	3 030	2 263	2 194	3 959
Value	\$'000				5 017	8 180	2 440	2 041	1 919	3 551

(a) Details of exports of bauxite are not available for publication. (b) Country details not available for publication.

ANTIMONY

		1979*				1980*	
		1978	1979*	June	September	December	March
PRODUCTION							
Mine production							
Mine's produced							
Antimony ore	tonne	231	—	—	—	—	—
Antimony content	"	36	—	—	—	—	—
Antimony concentrate	"	(a) 1 428	1 411	342	357	334	220
Antimony content	"	(a) 964	960	228	242	229	149
Antimony content of minerals produced							
Antimony ore	tonne	36	—	—	—	—	—
Antimony concentrate	"	(a) 964	960	228	242	229	149
Lead concentrate	"	519	598	167	150	135	105
Lead-zinc concentrate	"	—	—	—	—	—	2
New South Wales	"	1 495	1 558	395	392	364	256
Victoria	"	24	—	—	—	—	—
Western Australia	"	n.a.p.	—	—	—	—	—
Total contained antimony	"	(a) 1 519	1 558	395	392	364	256
IMPORTS							
Antimony metal	tonne	87	51	5	20	19	—
Value	\$'000	100	138	13	58	53	—
EXPORTS(b)							
Antimony ores and cons	tonne	3 040	3 041	371	490	212	385
Value	\$'000	2 653	2 827	426	547	277	546

(a) Excludes antimony concentrates produced in Western Australia. (b) Exports of antimonial lead alloy are included with refined lead and are shown on page 80.

ASBESTOS

		1979*				1980*	
		1978	1979*	June	September	December	March
PRODUCTION							
Mine production							
Chrysotile	tonne	62 744	79 121	15 980	22 463	27 234	19 979
New South Wales	"	62 744	79 121	15 980	22 463	27 234	19 979
IMPORTS							
Chrysotile	tonne	30 107	16 683	4 192	5 467	3 472	4 742
Canada	"	28 459	16 264	3 991	5 369	3 390	4 648
Others	"	1 646	399	201	98	82	94
Value	\$'000	14 363	8 036	2 154	2 838	1 751	2 490
Amosite	tonne	8 490	5 205	729	1 035	1 873	362
South Africa	"	8 490	5 205	729	1 035	1 873	362
Others	"	—	—	—	—	—	—
Value	\$'000	3 543	2 347	308	488	883	159
Other types	tonne	3 464	1 054	1	135	860	135
Value	\$'000	1 472	430	2	25	383	32
EXPORTS							
All types and grades	tonne	37 094	49 756	7 751	12 550	19 380	13 998
Value	\$'000	16 829	15 844	3 050	3 466	5 827	4 786

CADMIUM

				1978	1979*	1979*			1980*
						June	September	December	March
PRODUCTION									
Mine production									
Cadmium content of minerals produced									
Lead concentrate	tonne	69	99	19	30	33	25		
Lead-zinc concentrate	tonne	—	—	—	—	—	4		
Zinc concentrate	tonne	1 459	1 695	418	477	456	358		
New South Wales	tonne	914	1 117	289	353	310	246		
Queensland	tonne	426	429	104	105	128	98		
Tasmania	tonne	188	188	44	49	51	43		
Total contained cadmium	tonne	1 528	1 794	437	507	489	387		
Refinery production									
Refined cadmium	tonne	747	804	202	166	235	244		
EXPORTS									
Cadmium and cadmium alloys—									
Unwrought	tonne	641	524	187	80	137	239		
Value	\$'000	2 359	2 657	1 064	449	645	1 324		
Worked shapes and sections	tonne	10	34	5	13		32		
Value	\$'000	36	159	29	62	2	176		
Waste and scrap etc.	tonne	93	67	2	1	2			
Value	\$'000	50	82	15	15	20			

COAL

				1979*				1980*
				1979*	June	September	December	March
PRODUCTION								
Mine production								
Black coal								
Bituminous		'000 tonnes	74 094	76 774	19 507	19 053	20 375	17 022
Sub-bituminous	..		5 733	6 367	1 498	1 697	1 741	1 680
New South Wales	..		50 679	50 867	12 425	12 949	13 969	10 836
Queensland (a)	..		24 936	27 626	7 470	6 560	6 821	6 654
South Australia	..		1 585	1 677	351	437	485	430
Western Australia	..		2 404	2 735	699	743	777	732
Tasmania	..		224	238	61	61	64	51
Underground	..		42 203	42 102	10 627	10 581	11 170	8 642
Open cut	..		37 624	41 041	10 379	10 169	10 946	10 061
Total	..		79 827	83 142	21 005	20 750	22 116	18 793
Brown coal (lignite)	..		32 860	32 597	8 485	9 465	7 692	7 134
Victoria	..		32 860	32 597	8 465	9 465	7 692	7 134
Coal products								
Metallurgical coke	..		4 543	4 725	1 179	1 185	1 174	1 051
Brown coal briquettes	..		1 129	1 157	289	324	310	256
IMPORTS								
Coal	..	tonne	22 696	16 016	503	10 812	788	392
Value	..	\$'000	1 105	1 606	147	1 033	179	107
Coke (incl. petroleum coke)	..	tonne	126 415	148 124	46 227	24 109	38 252	30 498
Value	..	\$'000	13 114	15 193	4 127	2 756	3 975	3 471
EXPORTS								
Black coal	..	'000 tonnes	37 538	40 452	10 514	9 527	11 086	10 864
Japan	..		24 890	26 803	7 575	6 514	7 036	7 492
Other	..		12 648	13 651	2 939	3 014	4 050	3 372
Value	..	\$'000	1 465 635	1 590 324	419 042	371 049	433 932	431 611
Brown coal (lignite)	..	tonne	24 465	50 909	37	34 412	16 436	38 588
Japan	..		29 916	50 279	—	34 261	16 018	31 549
Other	..		1 549	628	37	149	420	7 309
Value	..	\$'000	532	2 024	14	1 477	529	1 749
Coke	..	tonne	211 744	96 305	1 855	26 539	24 709	42 351
Value	..	\$'000	6 153	3 081	142	845	666	1 698

(a) Saleable coal; excludes washery rejects.

COPPER

			1979*				1980*	
			1978	1979*	June	September	December	March
PRODUCTION								
Mine production								
Minerals produced								
Copper ore (a)		tonne	30 085	11 765	290	290	290	1 050
Copper content		"	3 575	1 228	30	30	30	70
Silver content		kilogram	16 407	5 501	55	55	55	—
Copper concentrate		tonne	754 441	837 841	222 525	208 863	201 788	172 761
Copper content		tonne	203 502	218 961	58 517	53 747	51 699	44 558
Gold content		kilogram	1 547	1 359	373	352	363	358
Silver content		"	26 742	35 664	9 637	9 493	8 923	8 723
Lead content		tonne	527	2 314	611	966	681	533
Zinc content		"	1 217	3 291	986	1 207	757	995
Copper precipitate		tonne	51	—	—	—	—	—
Copper content		"	37	—	—	—	—	—
Copper content of minerals produced								
Blismuth concentrate		tonne	706	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
Copper ore (a)		"	3 575	1 228	30	30	30	70
Copper concentrate		"	203 502	218 961	58 517	53 747	51 699	44 558
Copper precipitate		"	37	—	—	—	—	—
Copper-iron concentrate		"	451	446	96	81	172	107
Lead concentrate		"	4 321	4 512	1 269	1 290	1 218	1 254
Lead-copper concentrate		"	3 530	3 369	837	771	866	685
Nickel concentrate		"	4 762	3 094	737	828	804	668
Silver concentrate		"	14	—	—	—	—	—
Zinc concentrate		"	1 193	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
New South Wales								
Queensland		"	14 258	17 781	4 322	4 823	4 917	4 749
South Australia		"	162 701	171 985	47 152	42 918	37 612	32 161
Western Australia		"	12 631	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
Tasmania		"	4 782	3 094	737	828	804	668
Northern Territory		"	23 908	22 485	5 637	4 125	6 834	5 034
Total contained copper		"	222 111	234 735	62 382	57 815	55 435	48 031
Smelter and refinery production								
Blister copper (b)		"	164 395	166 260	44 228	41 651	37 128	39 196
Refined copper		"	152 621	137 689	33 458	38 071	32 868	32 684

IMPORTS

Copper—								
Unrefined copper		tonne	1	—	—	—	—	10
Value		\$ '000	1	3	—	1	2	26
Refinery shapes		tonne	10	228	—	1	227	—
U.K.		"	6	—	—	—	—	—
Others		"	4	228	—	1	227	—
Value		\$ '000	20	103	—	3	100	—
Bars, rods, angles and tees		tonne	51	107	60	4	6	11
Value		\$ '000	130	249	164	11	18	25
Plates, sheets and strips		tonne	48	60	3	19	35	9
Value		\$ '000	89	148	8	46	85	31
Pipes and tubes		tonne	424	365	49	73	112	95
Value		\$ '000	534	845	192	226	367	191
Wire		tonne	30	76	9	55	2	8
Value		\$ '000	150	220	97	42	16	30
Powder		tonne	189	167	45	45	36	42
Value		\$ '000	481	521	142	120	145	155
Scrap		tonne	442	377	77	61	121	319
Value		\$ '000	278	294	67	33	136	581
Copper-base alloys—								
Pigs, ingots and blocks		tonne	120	263	18	39	200	—
Value		\$ '000	98	389	18	58	285	—

COPPER

		1979*				1980*	
		1978	1979*	June	September	December	March
IMPORTS (continued)							
Copper-base alloys—continued							
Rolled, drawn and extruded shapes	tonne	2 505	5 505	867	1 814	1 845	793
Value	\$'000	4 349	7 698	2 064	1 591	1 916	1 976
Wire	tonne	377	361	62	96	123	139
Value	\$'000	984	1 343	245	426	420	449
Scrap	tonne	427	732	129	86	364	264
Value	\$'000	269	690	80	61	435	254
EXPORTS							
Copper—							
Copper concentrate	tonne	108 316	150 499	30 496	22 960	51 194	33 040
Japan	"	102 723	129 360	29 312	21 631	46 782	21 072
Other	"	5 593	21 139	1 184	1 329	4 412	11 968
Value	\$'000	30 983	64 901	12 420	11 746	26 500	27 950
Copper matte	tonne	4 504	6 886	—	1 508	3 002	3 799
Value	\$'000	1 867	5 347	—	739	2 968	7 215
Copper-lead dross	tonne	5 002	2 665	974	367	388	2 048
Value	\$'000	3 108	4 265	1 350	1 086	1 149	3 732
Slags and residues	tonne	—	267	—	140	127	—
Value	\$'000	—	258	—	79	159	—
Blister copper	tonne	4 144	28 756	8 257	4 796	14 992	1 791
Germany, F.R.	"	4 144	303	—	303	—	—
Japan	"	—	4 871	1 265	1 493	1 402	497
Other	"	—	23 582	6 992	3 000	13 590	1 294
Value	\$'000	8 786	51 527	17 648	3 856	28 073	5 640
Refinery shapes	tonne	60 065	46 978	16 684	10 775	11 074	13 965
E.E.C. (c)	"	33 951	23 455	9 125	4 300	5 730	7 618
U.K.	"	19 367	14 159	4 504	3 462	3 751	3 455
Other	"	6 747	9 364	3 055	3 073	1 593	2 892
Value	\$'000	68 480	81 193	30 176	18 336	20 539	31 467
Bars and rods	tonne	14 973	24 130	6 116	4 758	7 100	3 958
Value	\$'000	18 961	40 645	11 048	8 629	11 925	8 976
Angles, shapes and sections	tonne	5 056	74	17	15	26	27
Value	\$'000	5 866	215	46	49	78	74
Plates, sheets and strips	tonne	2 736	2 199	574	491	865	743
Value	\$'000	4 498	5 115	1 367	1 162	1 991	1 957
Tubes and pipes	tonne	2 094	2 902	602	690	913	256
Value	\$'000	3 953	6 905	1 380	1 699	2 253	699
Wire	tonne	175	1 030	144	337	402	693
Value	\$'000	273	1 973	299	639	802	1 513
Scrap	tonne	139	12	—	—	—	—
Value	\$'000	106	28	22	—	6	—
Copper-base alloys—							
Refinery shapes	tonne	158	435	213	75	106	7
Value	\$'000	262	679	281	127	198	31
Bars and rods	tonne	3 027	3 480	615	599	784	362
Value	\$'000	3 826	6 089	988	958	1 212	669
Angles, shapes and sections	tonne	85	95	42	10	22	16
Value	\$'000	154	193	82	26	46	35
Plates, sheets and strips	tonne	268	589	156	135	219	94
Value	\$'000	546	1 284	369	334	398	267
Tubes and pipes	tonne	144	254	65	43	70	39
Value	\$'000	338	629	185	140	200	142
Wire	tonne	104	151	64	17	26	37
Value	\$'000	185	407	179	51	84	132
Scrap	tonne	209	336	44	80	155	82
Value	\$'000	195	628	55	135	242	110
Copper and copper-base alloys—							
Foil	tonne	—	1	—	—	1	—
Value	\$'000	3	6	—	1	4	2
Powders and flakes	tonne	97	543	—	—	506	54
Value	\$'000	119	850	2	3	797	87
Copper content of concentrates, matte, etc. exported (d)	tonne	41 418	49 155	8 439	8 919	18 262	13 395

(a) Includes cupreous ore for fertiliser. (b) Total production for refining in Australia and overseas. (c) Excludes U.K. (d) Excludes copper in blister.

GEMS

		1978	1979*	1979*			1980*
				June	September	December	March
PRODUCTION							
Opals	\$'000	51 285					
New South Wales	"	15 427					
Queensland	"	857					
South Australia	"	35 000					
Western Australia	"	—					
Sapphires	"	23 731					
New South Wales	"	3 719	n.y.a.	n.a.	n.a.	n.a.	n.a.
Queensland	"	20 012					
Other gems	"	337					
New South Wales	"	6					
Queensland	"	301					
South Australia	"	14					
Western Australia	"	17					

IMPORTS

Diamonds, gem	metric carat	76 046	68 402	17 495	13 925	21 039	43 638
Value	\$'000	34 180	32 097	8 111	5 336	10 575	15 349

EXPORTS

Opals—	\$'000						
Rough, not cut or polished		7 606	6 711	2 399	1 508	1 239	3 226
Cut and polished (a)	"	19 085	18 283	5 192	4 083	4 942	3 844
Sapphires—	"						
Rough, not cut or polished	"	8 164	15 032	4 156	4 324	3 361	2 013
Other	"	2 144	2 139	442	1 038	356	499

(a) Includes black opals.

GOLD

		1978	1979*	1979*			1980*
				June	September	December	March
PRODUCTION							
Mine production							
Minerals produced							
Gold ore	tonne	117	21	4	5	8	5
Gold content	kilogram	81	94	28	16	25	16
Gold bullion	"	20 084	n.a.	n.a.	n.a.	n.a.	n.a.
Gold content	"	16 545	14 987	3 877	3 661	3 669	3 900
Silver content	"	1 488	1 819	412	380	694	457
Gold content of minerals produced							
Bismuth concentrate	"	128	124	38	32	24	45
Copper concentrate	"	1 547	1 359	373	352	363	358
Copper ore	"	—	—	—	—	—	—
Gold ore	"	81	94	28	16	25	16
Gold bullion	"	16 545	14 987	3 877	3 661	3 669	3 900
Lead concentrate	"	303	326	75	91	86	74
Lead-copper concentrate	"	1 214	1 133	235	269	310	232
Nickel concentrate	"	—	—	—	—	—	—
Zinc concentrate	"	261	272	60	66	76	52
New South Wales							
Victoria	"	12	17	5	6	6	11
Queensland	"	607	487	109	163	134	94
South Australia	"	1	—	—	—	—	—
Western Australia	"	13 332	11 464	2 436	2 757	2 974	2 966
Tasmania	"	1 892	1 833	392	411	517	377
Northern Territory	"	3 876	4 052	1 635	1 039	796	1 128
Total contained gold	"	20 142	18 295	4 687	4 487	4 553	4 679
Refinery production							
Newly-won gold							
Australian origin	"	16 645	14 987	3 001	3 978	3 770	3 779
Overseas origin	"	1 343	1 616	300	353	536	352
Scrap							
Australian origin	"	3 090	4 210	710	1 231	1 315	1 034
Overseas origin	"	29	32	1	19	8	2
Total	"	21 106	20 844	4 012	5 580	5 628	5 168

GOLD

			1978	1979*	1979*			1980*
					June	September	December	March
IMPORTS								
Gold								
Refined forms (excl. specie, leaf and foil)		kilogram	37	1	—	—	—	19
Value		\$ '000	269	16	1	—	—	323
Unrefined bullion (gold content)		kilogram	783	405	3	398	2	606
Fiji		"	561	—	—	—	—	302
Papua New Guinea		"	81	—	—	—	—	114
Other		"	140	405	3	398	2	190
Value		\$ '000	3 674	56	8	16	19	8 542

EXPORTS

Refined forms (excl. specie, leaf and foil)	kilogram		3 636	7 274	2 917	526	688	1 576
Hong Kong			2 770	6 273	2 047	439	662	222
Japan			299	371	299	72	—	248
Singapore			1	2	—	—	—	—
New Zealand			113	14	3	3	3	13
U.K.			407	1	—	—	1	498
Other			43	610	568	11	21	595
Value	\$'000		19 732	58 570	21 832	7 163	8 778	29 243
Gold content of concentrates, blister copper, etc. exported	kilogram		2 435	3 148	1 421	476	1 030	323

GYPSUM

			1979*				1980*	
			1978	1979*	June	September	December	March
PRODUCTION								
Mine production	tonne		939 884	1 159 324	230 890	360 729	279 442	323 928
New South Wales	"	"	18 034	26 956	6 840	8 520	7 084	4 924
Victoria	"	"	107 359	131 003	39 000	24 955	25 606	122 167
South Australia	"	"	548 146	782 298	141 084	248 583	193 413	152 015
Western Australia	"	"	166 345	219 067	43 966	78 671	53 339	44 822

EXPORTS

Gypsum and anhydrite	tonne		181 040	424 678	106 392	158 736	69 874	64 295
Indonesia			29 707	148 153	33 360	46 454	48 697	47 770
Malaysia			595	41 783	41	41 483	181	115
New Zealand			84 501	63 742	36 809	15 443	5 760	—
Singapore			16 200	51 281	11 431	18 905	9 660	10 909
Other			50 037	103 975	24 751	36 451	5 576	5 501
Value	\$'000		1 696	3 328	861	1 059	622	589

IRON

			1978	1979*	1979*			1980*
					June	September	December	March
PRODUCTION								
Mine production								
Minerals produced								
Iron ore and concentrate (a) (b)	'000 tonnes		83 134	91 709	18 255	24 667	26 573	21 587
Iron content	..		52 825	58 013	11 595	15 421	16 878	13 813
Production: States, iron content								
South Australia	..		1 506	1 640	446	423	411	472
Western Australia	..		49 873	54 844	10 806	14 653	16 049	12 735
Tasmania	..		1 446	1 529	343	345	418	406
Total contained iron	..		52 825	58 013	11 595	15 421	16 878	13 813
Iron and steel								
Iron ore pellets	..		9 471	9 403	2 460	2 246	2 313	2 454
Pig iron	..		7 337	7 811	1 916	1 984	2 045	1 885
Raw steel (c)	..		7 589	8 125	1 973	2 097	2 157	2 049
Blooms and slabs	..		6 646	6 680	1 609	1 708	1 712	1 656
Tinplate	..		329	363	76	91	108	102
IMPORTS								
Iron								
Iron ore	tonne		30 731	26 400	16 293	2		14 826
Canada	..		30 721	24 894	14 789	—	—	14 823
Philippines	..		—	1 500	1 500	—	—	—
Other	..		10	5	3	2	—	3
Value	\$'000		697	678	454	1	1	336
Iron and steel								
Ferroalloys (excl. powders)								
Ferrochromium	tonne		18 730	13 835	237	7 689	4 933	5 134
Value	\$'000		7 568	6 507	186	3 406	2 401	2 697
Ferromanganese	tonne		5 033	15 758	2 242	8 438	4 720	1 272
Value	\$'000		2 629	7 694	203	3 944	3 241	833
Ferromolybdenum	tonne		191	220	22	83	79	25
Value	\$'000		1 499	3 956	330	1 860	1 447	400
Ferronickel	tonne		—	55	—	—	55	215
Value	\$'000		—	74	—	—	74	300
Ferrosilicon	tonne		6 363	7 149	489	2 270	2 503	4 528
Value	\$'000		2 894	3 649	299	963	1 562	2 376
Other	tonne		1 889	4 868	865	2 042	1 410	837
Value	\$'000		2 375	5 561	1 295	1 505	2 076	1 646
Tinplate (d)	tonne		1 290	388	—	53	84	1
Value	\$'000		497	185	—	25	42	1
EXPORTS								
Iron								
Iron ore and pellets	'0000 tonnes		75 101	78 286	19 872	16 387	22 774	17 745
Japan	..		51 813	54 473	13 517	12 591	15 701	13 021
Other	..		23 288	23 813	6 355	3 796	7 073	4 724
Value	\$'000		906 025	1 008 434	260 401	221 148	295 672	233 869
Iron and steel								
Pig iron	tonne		685 431	641 536	161 012	134 101	207 812	153 129
China (excl. Taiwan Province)	..		535 588	416 451	95 738	126 720	131 000	96 623
Japan	..		72 585	116 688	39 338	781	26 137	8 793
New Zealand	..		664	918	156	201	307	187
Romania	..		32 603	—	—	—	—	—
U.S.A.	..		14 587	—	—	—	—	29 140
Other	..		31 444	107 479	25 780	6 399	50 368	18 386
Value	\$'000		56 982	71 992	17 461	16 740	24 451	19 341
Ingot, blooms and slabs	tonne		1 013 467	604 604	160 237	139 866	132 520	94 137
Value	\$'000		132 873	104 340	26 735	23 989	27 372	15 425
Scrap	tonne		484 327	577 297	174 744	115 236	143 585	153 730
Value	\$'000		30 040	50 265	13 689	12 354	13 700	9 570
Tinplate, excl. waste	tonne		52 401	37 131	5 769	21 730	5 843	6 313
Value	\$'000		20 161	19 134	3 353	10 285	3 394	3 655
Tinplate waste	tonne		31 477	33 054	9 330	9 762	6 866	8 096
Value	\$'000		8 848	13 367	3 479	4 543	2 762	4 346
Iron content of iron ore and pellets exported	'000 tonnes		47 415	49 407	12 522	10 346	14 369	11 220

(a) Iron oxide for metal extraction. (b) Includes iron ore for pelletising. (c) Includes recovery from scrap. (d) Includes tinplate.

LEAD

				1978	1979*	1979*				1980*
						June	September	December		March
PRODUCTION										
Mine production										
Minerals produced										
Lead ore (a)	1000	1000	tonne	3 694	5 340	1 272	1 299	1 137		4 400
Lead content	1000	1000		422	706	151	172	121		240
Silver content	1000	1000	kilogram	1 041	1 509	294	331	243		260
Lead concentrate	1000	1000	tonne	613 845	665 531	171 892	166 698	165 865		151 735
Lead content	1000	1000	"	373 588	388 172	102 404	98 897	93 879		86 293
Silver content	1000	1000	kilogram	623 294	674 073	185 274	157 107	155 054		144 369
Antimony content	1000	1000	tonne	519	598	167	150	135		105
Cadmium content	1000	1000	"	69	99	19	30	33		25
Copper content	1000	1000	"	4 321	4 512	1 269	1 290	1 218		1 254
Gold content	1000	1000	kilogram	303	326	75	91	86		74
Zinc content	1000	1000	tonne	34 827	42 542	11 300	10 157	11 018		9 960
Sulphur content	1000	1000	"	52 749	60 662	15 255	15 760	16 245		13 637
Lead-copper concentrate	1000	1000	"	27 812	24 902	5 843	5 363	6 654		5 757
Lead content	1000	1000	"	6 766	5 340	1 261	1 121	1 505		1 453
Copper content	1000	1000	"	3 530	3 369	837	771	866		685
Silver content	1000	1000	kilogram	55 294	47 227	12 434	10 924	11 658		10 063
Gold content	1000	1000	"	1 214	1 133	235	269	310		232
Zinc content	1000	1000	tonne	2 834	2 817	618	624	628		700
Sulphur content	1000	1000	"	8 196	7 552	1 769	1 611	1 979		1 680
Lead content of minerals produced										
Copper concentrate	1000	1000	"	527	2 314	611	966	681		533
Copper-lead-zinc ore	1000	1000	"	998	223	—	—	—		—
Lead ore (a)	1000	1000	"	422	706	151	172	121		240
Lead concentrate	1000	1000	"	373 588	388 172	102 404	98 897	93 879		86 293
Lead-copper concentrate	1000	1000	"	6 766	5 340	1 261	1 121	1 505		1 453
Lead-zinc concentrate	1000	1000	"	—	—	—	—	—		632
Silver concentrate	1000	1000	"	80	—	—	—	—		—
Zinc concentrate	1000	1000	"	17 910	20 730	4 668	6 330	5 064		4 457
New South Wales				230 574	240 973	63 081	65 897	58 359		49 194
Queensland				146 928	154 321	40 947	35 912	36 840		39 608
South Australia				24	7	7	—	—		—
Tasmania				22 754	22 184	5 060	5 677	6 051		4 806
Northern Territory				11	—	—	—	—		—
Total contained lead				400 291	417 485	109 095	107 486	101 250		93 608
Smelter and refinery production										
Refined lead (c)				204 022	215 734	54 606	51 820	53 816		49 019
Lead content of lead bullion for export				151 964	169 469	44 357	44 416	39 673		39 103

EXPORTS

Lead concentrate	1000	1000	tonne	140 960	63 530	1 340	22 851	22 392		9 009
Belgium-Luxembourg	1000	1000	"	44 410	9 971	—	4 583	4 425		—
Japan	1000	1000	"	23 912	6 271	—	6 111	160		—
U.S.A.	1000	1000	"	24 233	12 563	1 340	1 353	1 467		5 051
Other	1000	1000	"	48 405	24 437	—	10 804	6 052		3 958
Value	1000	1000	\$'000	47 670	38 834	941	12 476	14 510		17 196

LEAD (continued)

		1978	1979*	1979*			1980*
				June	September	December	March
EXPORTS (continued)							
Lead bullion	tonne	148 423	166 248	36 873	53 729	41 875	37 441
Germany, F.R.	"	5 000	4 500	1 000	1 500	2 000	1 500
Netherlands	"	15 546	7 873	1 623	3 750	1 250	3 750
U.K.	"	117 890	143 184	33 000	46 529	32 384	28 441
Other	"	9 987	10 691	1 250	1 950	6 241	3 750
Value	\$'000	112 339	245 001	49 799	83 026	81 068	121 574
Refined lead, unworked (incl. antimonial lead) (d)	tonne	158 268	163 589	41 368	36 514	45 505	34 391
Asia—China	"	—	—	8 993	4 498	4 497	—
Other	"	—	—	24 975	6 257	6 532	9 255
Europe excl. U.K.	"	—	—	19 694	4 437	3 808	5 467
India	"	—	—	37 674	10 295	9 801	9 150
Japan	"	—	—	8 075	1 395	2 888	1 393
Middle East	"	—	—	12 809	—	7 953	—
New Zealand	"	—	—	6 516	1 881	1 315	1 129
U.K.	"	—	—	14 501	3 098	5 996	5 287
U.S.A.	"	—	—	21 357	5 032	8 163	3 628
Value	\$'000	83 750	153 466	39 008	34 431	51 011	35 269
Rolled and extruded shapes	tonne	2 259	2 181	758	346	523	300
Value	\$'000	1 514	2 332	780	298	858	370
Scrap	tonne	9 757	7 316	589	2 765	3 020	2 431
Value	\$'000	2 535	4 292	274	1 539	2 151	1 175
Slags and residues	tonne	18 133	5 446	1 418	1 612	1 769	8 467
Value	\$'000	1 863	3 704	950	1 278	1 196	4 004
Lead content of concentrates, residues, etc., exported	tonne	95 091	38 847	2 786	13 318	12 819	6 038
Lead content of lead bullion exported	"	147 101	141 243	45 662	53 062	8 979	37 212

(a) Includes lead-silver ores. (b) Product of dump re-treatment. (c) Includes lead content of lead alloys from primary sources. (d) Time series prior to 1979 is on a different basis.

LIMESTONE

		1978	1979*	1979*			1980*
				June	September	December	March
PRODUCTION							
Mine production (a) (b)	'000 tonnes	10 924	(b) 10 197	2 560	2 825	2 611	2 605
New South Wales	"	2 903	3 280	726	914	865	933
Victoria	"	2 245	2 179	508	601	556	498
Queensland	"	1 802	1 800	450	450	450	410
South Australia	"	1 890	2 130	603	494	567	550
Western Australia	"	1 365	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
Tasmania	"	718	808	273	166	172	213
Cement, Portland	"	4 993	5 243	1 302	1 377	1 359	1 232
IMPORTS							
Limestone and calcareous stone	tonne	1 320 216	1 317 225	346 680	368 344	280 604	359 291
Japan	"	1 272 471	1 269 274	322 660	344 457	280 567	333 234
Other	"	47 745	47 951	24 020	23 887	37	26 057
Value	\$'000	6 743	6 522	1 718	1 780	1 240	1 664
Calcium carbide	tonne	3 080	8 353	102	5 684	2 094	1 410
Philippines	"	3 078	5 777	102	4 272	930	1 410
Other	"	2	2 576	—	1 412	1 164	—
Value	\$'000	659	2 167	24	1 464	585	400
Cement, Portland grey	tonne	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
Cement, Portland white	tonne	17 406	14 063	3 109	3 358	3 738	3 700
Denmark	"	2 062	2 100	377	698	435	830
Japan	"	12 230	9 249	2 368	2 187	2 630	2 311
U.K.	"	1 016	804	237	110	274	92
Other	"	2 098	1 910	127	363	399	467
Value	\$'000	1 291	1 125	243	267	287	314
Cement, Portland, other	tonne	1 125	2 177	36	139	1 963	1 886
Value	\$'000	169	295	7	70	213	45
EXPORTS							
Cement, constructional	tonne	36 417	205 238	6 105	74 214	65 638	19 282
Value	\$'000	1 611	5 420	370	2 023	1 722	758

(a) Including shell and coral. (b) Excludes Western Australia.

MAGNESITE

		1979*				1980*	
		1978	1979*	June	September	December	March
PRODUCTION							
Mine production	tonne	21 350	28 138	7 590	7 514	6 607	7 878
New South Wales	"	20 280	28 138	7 590	7 514	6 607	7 588
Queensland	"	897	—	—	—	—	290
South Australia	"	173	—	—	—	—	—
IMPORTS							
Magnesite calcined, deadburned	tonne	9 790	15 477	6 218	—	2 009	3 112
Value	\$'000	1 811	3 072	1 225	—	398	815
Magnesite calcined, other	tonne	(a)	(a)	(a)	(a)	(a)	(a)
Value	\$'000	(a)	(a)	(a)	(a)	(a)	(a)
Magnesite, other	tonne	(a)	(a)	(a)	(a)	(a)	(a)
Value	\$'000	(a)	(a)	(a)	(a)	(a)	(a)
Magnesium oxide (b) —							
Electrically fused	tonne	2 912	604	164	163	182	94
Value	\$'000	715	684	187	175	219	116
Other	tonne	12 605	6 049	43	68	4 304	64
Value	\$'000	2 754	1 439	33	71	939	62
EXPORTS							
Magnesite and magnesium oxide	tonne	63 808	4 228	1 022	1 891	636	1 460
Value	\$'000	8 195	876	212	393	144	342

(a) Not available separately—included with 'Magnesium oxide—other'.

(b) Predominantly seawater magnesite and seawater deadburned magnesite.

MANGANESE

		1979*				1980*	
		1978	1979*	June	September	December	March
PRODUCTION							
Mine production							
Minerals produced							
Metallurgical-grade	tonne	1 248 922	1 666 275	311 299	287 076	577 696	686 819
Manganese content	"	608 438	793 336	146 986	138 397	272 858	325 100
Manganese content of minerals produced							
Metallurgical-grade ore	"	608 438	793 336	146 986	138 397	272 858	325 100
Other grade ore	"	8 332	—	—	—	—	—
Zinc concentrate	"	5 385	6 432	1 811	1 748	1 461	1 035
Total contained manganese	"	622 155	799 768	148 797	140 145	274 319	326 135
Production, States: metallurgical-grade ore:							
Northern Territory	"	1 248 000	1 666 275	311 299	287 076	577 696	686 819
Western Australia	"	922	—	—	—	—	—
Total	"	1 248 922	1 666 275	311 299	287 076	577 696	686 819
IMPORTS (a) (b)							
Battery grade ore	tonne	2 962	—	—	—	—	2 155
Value	\$'000	376	—	—	—	—	509
Other grade ore	tonne	—	119	17	—	34	125
Value	\$'000	—	28	4	—	9	130
Unalloyed powders and flakes	tonne	1 209	957	259	257	318	306
Value	\$'000	1 064	892	236	249	299	323

(a) Imports of ferromanganese are shown on page 76. (b) Details of exports of manganese ore are not available for publication.

MONAZITE

			1978	1979*	1979*			1980*
					June	September	December	March
PRODUCTION								
Mine production								
Monazite concentrate	tonne		14 992	16 206	3 447	4 265	3 680	3 192
Monazite content	"		13 938	14 584	3 103	3 838	3 310	2 873
Production: States, monazite content:								
New South Wales (a)	"		210	1 570	114	1 173	169	16
Western Australia	"		13 728	13 014	2 989	2 665	3 141	2 857
Total contained monazite	"		13 938	14 584	3 103	3 838	3 310	2 873
EXPORTS								
Monazite concentrate	tonne		11 600	13 154	5 488	2 300	2 572	1 459
France	"		6 643	8 433	3 527	1 714	2 060	—
U.K.	"		4 244	802	145	252	300	210
Other	"		713	3 919	1 816	334	212	1 249
Value	\$'000		2 376	3 084	1 311	549	612	429

(a) Despatches.

NICKEL

				1978	1979*	1979*			1980*
						June	September	December	March
PRODUCTION									
Mine production									
Nickel ore	tonne			1 805 933	2 081 501	435 534	547 560	485 745	479 119
Nickel content	"			28 895	33 305	6 969	8 761	7 772	6 970
Cobalt content	"			2 418	2 498	523	657	583	575
Nickel concentrate	tonne			480 118	331 553	78 746	92 009	86 525	77 630
Nickel content	"			58 973	40 018	9 596	11 313	10 501	9 639
Cobalt content	"			882	762	181	212	199	179
Copper content	"			4 782	3 094	737	828	804	668
Total contained nickel	"			85 868	73 323	16 585	20 074	18 273	16 809
IMPORTS (a)									
Pigs, ingots and blocks	tonne			2 998	695	17	378	113	16
Value	\$'000			11 719	3 375	85	1 940	637	96
Pellets, shot granulated	tonne			67	57	—	16	24	23
Value	\$'000			274	281	—	87	130	130
Electroplating anodes	tonne			7	34	11	23	—	—
Value	\$'000			57	201	65	136	—	1
Bars, rods, angles, shapes and sections	tonne			56	74	45	—	—	65
Value	\$'000			365	491	308	4	6	533
Plates, sheets and strips	tonne			1	20	12	—	7	2
Value	\$'000			15	98	53	2	32	28
Pipes and tubes	tonne			3	1	1	—	—	—
Value	\$'000			49	49	24	2	13	—
Wire	tonne			40	23	6	1	11	22
Value	\$'000			279	126	46	13	54	214
Powder	tonne			52	11	10	—	—	—
Value	\$'000			248	78	45	6	4	8
Nickel-base alloys—									
Unworked shapes	tonne			172	98	4	20	71	20
Value	\$'000			711	332	23	98	198	117
Bars, rods, angles, shapes and sections	tonne			118	286	122	46	55	109
Value	\$'000			777	1 367	168	342	439	638
Plates, sheets and strips	tonne			471	3 373	100	99	3 125	86
Value	\$'000			2 368	2 412	777	619	608	687
Pipes and tubes	tonne			49	239	9	5	214	1
Value	\$'000			518	492	141	64	137	11
Wire	tonne			106	3 270	2 088	76	145	368
Value	\$'000			872	1 764	723	613	287	650
Powder	tonne			323	42	12	10	16	18
Value	\$'000			1 027	386	115	89	139	206

EXPORTS (b)

Nickel—							
Concentrate	\$'000	4 537	—	—	—	—	—
Metal, unwrought	"	57 544	102 494	24 222	32 604	27 128	27 273
Matte and speiss	"	143 991	221 077	37 155	71 815	88 698	61 080
Powder	"	14 142	3 134	560	907	651	440

(a) Imports of ferronickel are shown on page 78. (b) Details of the quantities exported of nickel concentrate, nickel metal unwrought, nickel matte and speiss, and nickel powder are not available for publication.

PETROLEUM

			1978	1979*	1979*			1980*
					June	September	December	March
PRODUCTION (Source: Energy Economics Branch, Department of National Development & Energy)								
Petroleum production								
Crude oil	'000 m ³		25 107	25 368	6 389	6 525	6 485	5 593
Natural gas	'000 000 m ³		7 320	8 382	2 205	2 464	2 052	1 977
Refinery operations								
Input of feedstock	'000 m ³		35 995	36 850	8 914	9 957	9 387	7 860
Products								
Refinery gas (a) (b) (c)	"		106	60	13	9	13	15
Liquefied petroleum gas	"		657	642	150	175	166	145
Aviation gasoline	"		56	68	19	20	20	21
Motor spirit	"		13 825	14 020	3 627	3 570	3 623	3 517
Power kerosene	"		18	22	5	6	5	4
Aviation turbine fuel	"		2 215	2 319	531	560	642	513
Lighting kerosene	"		242	243	85	79	31	32
Heating oil	"		725	551	177	229	56	63
Automotive distillate	"		6 881	7 641	1 768	2 087	2 026	1 745
Industrial diesel fuel	"		1 458	1 190	276	323	343	179
Furnace fuel (b)	"		4 569	4 605	1 028	1 177	1 189	947
Solvents	"		219	220	44	61	61	53
Lubricating oil base stock	"		591	591	124	140	173	147
Bitumen	"		479	522	123	114	144	121
Other marketable products	"		1 076	878	244	194	185	198
Refinery fuel—								
Liquid	"		500	446	124	110	116	89
Gas and coke (a)	"		1 972	1 938	474	493	458	470

IMPORTS

Natural crudes	'000 m ³	6 427	6 137	1 044	2 017	1 654	1 418
Value	\$'000	446 325	594 423	90 122	207 229	192 282	235 601
Enriched crude and other refinery stock	'000 m ³	4 700	4 567	955	1 219	884	920
Value	\$'000	336 061	422 104	83 398	114 928	114 501	122 672
Gasoline, solvents and other petroleum spirits	'000 m ³	609	918	228	231	145	265
Value	\$'000	75 927	134 976	31 103	36 327	28 149	50 492
Kerosene and aviation turbine fuel	'000 m ³	57	179	13	54	72	53
Value	\$'000	6 869	25 948	1 539	8 370	11 014	9 006
Automotive distillate, industrial and marine diesel fuels and heavy distillates, n.e.i.	'000 m ³	803	707	157	146	221	194
Value	\$'000	72 574	96 665	17 043	21 589	40 920	39 105
Residual oils	'000 m ³	2 134	2 669	757	723	582	629
Value	\$'000	136 720	224 558	53 310	68 688	64 618	100 177
Lubricating oil	'000 m ³	43	46	20	15	4	25
Value	\$'000	9 191	11 484	3 982	3 716	1 975	7 527

EXPORTS

Natural crude	'000 m ³		113	53	53	1	—
Value	\$'000		24 237	9 010	7 342	7 141	—
Partly refined petroleum	'000 m ³	288	222	78	43	27	4
Value	\$'000	21 690	29 628	12 517	6 545	4 360	571
Gasoline, solvents and other petroleum spirits	'000 m ³	515	278	66	78	125	46
Value	\$'000	55 764	68 507	10 447	14 661	30 861	11 392
Kerosene and aviation turbine fuel	'000 m ³	302	393	124	77	67	164
Value	\$'000	30 606	53 453	15 729	12 994	11 865	15 483
Automotive distillate, industrial and marine diesel fuels and heavy distillates, n.e.i.	'000 m ³	947	741	219	142	156	205
Value	\$'000	67 072	110 874	32 841	25 719	30 136	39 943
Residual oils	'000 m ³	244	439	6	33	268	231
Value	\$'000	17 220	49 461	592	3 198	36 513	32 981
Lubricating oils	'000 m ³	237	260	102	61	57	66
Value	\$'000	41 656	57 257	18 690	14 323	16 164	19 998

(a) Fuel-oil equivalent. (b) Excludes refinery fuel. (c) For sale as fuel.

PHOSPHATE

					1979*				1980*	
					1978	1979*	June	September	December	March
PRODUCTION										
Mine production										
Phosphate rock	tonne	248 328	6 999	3 073	—	3 926	—			
Queensland	"	238 332	—	—	—	—	—			
South Australia	"	9 996	6 999	3 073	—	3 926	—			
Production of superphosphate (a)	'000 tonnes	3 481	3 987	1 123	845	1 138	1 198			
IMPORTS										
Phosphate rock	'000 tonnes	2 052	2 388	739	477	632	708			
Christmas Island (Indian Ocean)	"	606	873	160	177	161	200			
Nauru	"	1 112	1 277	421	286	364	291			
Other	"	334	967	158	15	107	217			
Value	\$ '000	70 662	89 026	28 202	17 169	22 830	22 222			

(a) Includes double and triple superphosphate and ammonium phosphate expressed in terms of single superphosphate, i.e. 22% P₂O₅ equivalent.

SALT

				1979*			1980*		
				1978	1979*	June	September	December	March
PRODUCTION									
Mine production (a)			'000 tonnes	5 766	n.a.	n.a.	n.a.	n.a.	n.a.
Victoria				n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
Queensland				150	n.a.	n.a.	n.a.	n.a.	n.a.
South Australia				679	n.a.	n.a.	n.a.	n.a.	n.a.
Western Australia				4 938	4 328	1 304	983	1 232	932
IMPORTS									
Salt, common			tonne	19 444	19 620	2 427	1 658	2 095	2 310
Value			\$'000	536	581	161	112	138	152
EXPORTS									
Salt			'000 tonnes	4 653	4 544	1 235	1 357	1 128	1 284
Value			\$'000	32 639	33 069	9 033	9 917	8 420	9 816

(a) Excludes Victoria.

SILLIMANITE (a)

					1979*			1980*		
					1978	1979*	June	September	December	March
PRODUCTION										
Mine production				tonne	568	568	194	136	110	110
South Australia				"	568	568	194	136	110	110

(a) Imports not available separately—included under clays.

SILVER

		1978	1979*	1979*			1980*
				June	September	December	March
PRODUCTION							
Mine production							
Silver content of minerals produced							
Bismuth concentrate	kilogram	120	145	27	46	40	55
Copper ore	"	16 407	5 501	55	55	55	8 723
Copper concentrate	"	26 742	35 664	9 637	9 493	8 923	457
Gold bullion	"	1 488	1 819	412	380	694	5
Silver-gold concentrate	"	13	13	4	2	3	260
Lead ore (a)	"	1 041	1 509	294	331	243	144 369
Lead concentrate	"	623 294	674 073	185 274	157 107	155 054	10 063
Lead-copper concentrate	"	55 294	47 227	12 434	10 924	11 658	1 853
Lead-zinc concentrate	"	—	—	—	—	—	—
Nickel concentrate	"	191	—	—	—	—	—
Silver concentrate	"	27 283	1 595	—	—	—	—
Zinc concentrate	"	60 651	66 515	15 407	20 808	17 571	16 043
New South Wales	"	306 936	298 439	74 433	80 438	73 174	61 644
Queensland	"	417 377	456 317	128 565	99 865	101 434	103 083
South Australia	"	—	429	429	—	—	—
Western Australia	"	1 678	1 819	412	380	694	457
Tasmania	"	86 192	76 997	19 621	18 318	18 789	16 494
Northern Territory	"	341	460	84	145	150	150
Total contained silver	"	812 524	834 061	223 544	199 146	194 241	181 828
Refinery production							
Refined silver	"	298 561	294 526	77 423	73 603	70 897	69 123
IMPORTS							
Silver							
Silver and alloys							
Fiji	kilogram	1 115	404	109	41	128	360
New Zealand	"	71	48	—	28	20	236
U.K.	"	199	39	2	9	16	96
U.S.A.	"	134	185	107	—	10	17
Other	"	559	131	—	3	92	11
Value	\$ '000	312	176	35	17	85	256
EXPORTS							
Silver, refined							
Mint bullion	kilogram	76 339	44 943	8 049	6 808	8 982	13 483
Value	\$ '000	9 917	10 451	1 820	1 683	3 927	7 889
Refined, other	kilogram	9 157	38 265	7 906	6 137	3 213	24 351
Value	\$ '000	1 530	10 106	1 609	1 739	1 829	22 077
Silver content of concentrate, matte, etc. exported							
Silver content of lead bullion exported	kilogram	166 102	147 940	12 157	31 514	19 392	8 251
	"	290 207	286 168	61 129	110 825	87 780	82 236

(a) Includes lead-silver ores.

SULPHUR

				1979*			1980*
		1978	1979*	June	September	December	March
PRODUCTION							
Mine production							
Pyrite concentrate (a)	tonne	204 724	44 910	12 707	9 363	—	—
Sulphur content	"	92 714	21 799	6 121	4 551	—	—
Sulphur content of minerals produced	"	—	—	—	—	—	—
Lead concentrate	"	52 749	60 662	15 255	15 760	16 245	13 637
Lead-copper concentrate	"	8 196	7 552	1 769	1 611	1 979	1 680
Lead-zinc concentrate	"	—	—	—	—	—	622
Pyrite concentrate	"	92 714	21 799	6 121	4 551	—	—
Zinc concentrate	"	266 517	292 245	75 343	76 009	78 976	62 014
New South Wales	"	203 813	236 451	62 858	62 473	61 733	49 806
Queensland	"	67 397	68 641	16 671	16 829	20 448	15 659
Tasmania	"	148 966	77 166	18 959	18 629	15 019	12 488
Total contained sulphur	"	420 178	382 258	98 488	97 931	97 200	77 953
Sulphuric acid production	'000 tonnes	1 870	2 074	543	438	580	584

IMPORTS

Sulphur, elemental	tonne	496 804	436 220	79 910	118 097	151 238	160 814
Canada	"	470 376	336 996	69 810	78 927	101 298	147 646
Iran	"	26 134	—	—	—	—	13 122
U.S.A.	"	109	99 038	10 047	39 051	49 940	37
Other	"	186	186	53	119	—	7
Value	\$ '000	15 548	19 805	3 333	5 443	8 075	8 899

(a) Gold content not recorded separately; included in gold content of gold bullion.

TALC (a)

				1979*			1980*
		1978	1979*	June	September	December	March
PRODUCTION							
Mine production							
New South Wales	tonne	146 954	156 870	39 186	30 158	58 482	43 564
South Australia	"	9 506	18 754	4 942	6 055	4 367	3 436
Western Australia	"	14 070	15 565	4 596	3 146	4 417	3 221
	"	123 378	122 551	29 626	18 957	49 698	36 907

IMPORTS

Talc	tonne	527	420	26	89	191	180
China (excl. Taiwan Province)	"	201	161	—	—	101	100
U.S.A.	"	236	168	15	79	45	63
Other	"	90	92	10	11	45	17
Value	\$ '000	103	85	7	25	35	33

EXPORTS

Talc	tonne	106 177	107 849	30 809	18 015	34 899	15 322
Japan	"	90 577	85 511	26 223	11 235	31 065	10 078
Netherlands	"	11 291	12 858	3 729	3 000	3 048	4 369
Other	"	4 309	9 470	857	3 780	786	875
Value	\$ '000	5 338	6 330	1 890	1 051	1 996	949

(a) Includes steatite, chlorite and pyrophyllite.

						1979*		1980*	
						June	September	December	March
PRODUCTION									
Mine production									
Minerals produced									
Copper-tin concentrate	tonne	1 894	1 983	433	387	768	547	—	—
Copper content	"	451	446	96	81	172	107	—	—
Tin content	"	47	47	9	9	18	11	—	—
Tin concentrate	"	22 898	21 874	6 160	5 536	5 591	4 838	—	—
Tin content	"	11 817	11 456	3 267	2 866	3 041	2 562	—	—
Production: States, tin content									
New South Wales	"	2 312	2 699	772	748	555	665	—	—
Victoria	"	1	—	—	—	—	—	—	—
Queensland	"	1 775	1 771	353	383	743	264	—	—
Western Australia	"	497	397	82	111	95	102	—	—
Tasmania	"	7 270	6 628	2 067	1 631	1 664	1 508	—	—
Northern Territory	"	9	8	2	2	2	34	—	—
Total contained tin	"	11 864	11 503	3 276	2 875	3 059	2 573	—	—
Smelter and refinery production									
Refined tin	"	5 129	5 423	1 293	1 386	1 524	985	—	—
IMPORTS (a)									
Refined tin	tonne	204	5	—	—	5	33	—	—
Value	\$ '000	2 701	69	—	—	69	503	—	—
EXPORTS (a)									
Tin concentrate	tonne	15 109	13 177	3 646	3 605	2 969	5 872	—	—
Value	\$ '000	67 841	83 114	28 527	21 800	18 027	25 600	—	—
Tin, unworked—									
Refined	tonne	2 079	1 621	174	620	599	401	—	—
Value	\$ '000	21 524	22 041	2 266	8 222	8 362	5 953	—	—
Alloys	tonne	67	125	8	8	6	86	—	—
Value	\$ '000	443	1 473	53	52	43	893	—	—
Tin content of all concentrates, slags, residues, etc. exported	tonne	6 992	6 467	1 646	1 869	1 510	1 985	—	—

(a) Production and overseas trade details for tinplate are shown on page 78

TITANIUM

			1979*	1979*	1980*	1980*	
			Jun	September	December	March	
PRODUCTION							
Mine production							
Minerals produced							
Ilmenite concentrate	tonne	1 254 994	1 150 465	269 145	297 563	284 631	289 205
Titanium dioxide content	"	716 755	647 082	150 110	166 891	159 544	162 033
Leucosene concentrate	"	15 103	21 773	3 956	6 071	7 335	6 932
Titanium dioxide content	"	14 650	19 441	3 516	5 406	6 550	6 191
Rutile concentrate	"	257 075	278 901	70 021	74 512	65 174	69 358
Titanium dioxide content	"	246 915	267 708	67 220	71 514	62 537	66 569
Titanium dioxide content of minerals produced							
Titanium dioxide contained in:							
Ilmenite concentrate	"	716 755	647 082	150 110	166 891	159 544	162 033
Leucosene concentrate	"	14 650	19 441	3 516	5 406	6 550	6 191
Rutile concentrate	"	246 915	267 708	67 220	71 514	62 537	66 569
Total contained titanium dioxide	"	978 320	934 231	220 846	243 811	228 631	234 793
Production: States (titanium dioxide content)							
Ilmenite concentrate (a)							
New South Wales	"	30 484	10 842	3 732	1 936	1 524	1 501
Queensland	"	25 020	1 343	357	216	374	380
Western Australia	"	675 901	654 338	149 537	170 145	164 196	166 343
Total	"	731 405	666 523	153 626	172 297	166 094	168 224
Rutile concentrate							
New South Wales	"	100 400	81 401	22 505	21 030	13 125	20 457
Queensland	"	50 408	89 227	23 516	23 773	23 648	23 719
Western Australia	"	96 107	97 080	22 199	26 711	25 764	22 393
Total	"	246 915	267 708	67 220	71 514	62 537	66 569

TITANIUM *(continued)*

		1978	1979*	1979*			1980*
				June	September	December	March
IMPORTS							
Titanium oxide—							
Anatase	tonne	45	7	2		5	1
Value	\$'000	36	12	3	2	7	4
Rutile	tonne	1 002	645	91	89	253	224
Value	\$'000	671	567	83	79	247	232
Titanium white pigment	tonne	115	131	61		70	34
Value	\$'000	121	262	84	31	146	51
EXPORTS							
Ilmenite concentrate (a)	tonne	1 000 152	911 325	243 273	229 086	264 533	285 288
Brazil	"	46 578	56 437	—	—	28 307	28 039
France	"	155 825	82 292	17 825	36 315	—	35 714
Japan	"	73 775	53 004	13 788	5 555	31 452	22 323
U.K.	"	226 732	200 854	58 380	52 660	46 447	64 557
U.S.A.	"	266 298	165 738	44 178	74 165	5 509	91 653
Other	"	230 944	353 000	109 102	60 391	152 818	43 002
Value	\$'000	16 752	18 859	4 714	5 377	4 873	6 115
Rutile concentrate	tonne	371 268	317 780	75 314	73 454	83 468	90 364
Canada	"	10 827	351	62	54	217	108
Japan	"	25 648	26 879	11 240	4 823	7 124	9 686
Netherlands	"	27 710	22 088	4 526	7 423	2 998	5 031
U.K.	"	47 596	81 422	10 079	20 055	25 108	20 128
U.S.A.	"	195 004	121 123	34 639	31 082	26 973	38 230
Other	"	64 483	65 917	14 768	10 017	21 048	17 181
Value	\$'000	69 142	69 342	15 405	17 794	19 891	23 370

(a) Includes leucocene concentrate.

TUNGSTEN

		1978	1979*	1979*			1980*
				June	September	December	March
PRODUCTION							
Mine production							
Minerals produced							
Scheelite concentrate	tonne	3 437	3 416	940	880	956	781
Tungstic oxide (WO ₃) content	unit	249 000	249 994	68 977	64 289	69 652	55 938
Wolfram concentrate	tonne	1 363	2 146	512	573	500	429
Tungstic oxide (WO ₃) content	unit	92 400	149 447	36 175	39 762	34 901	29 169
Tungstic oxide (WO ₃) content of minerals produced							
Scheelite concentrate							
Queensland	unit	—	3 217	835	1 308	974	1 166
Tasmania	"	249 000	246 777	68 142	62 981	68 678	53 401
Northern Territory	"	—	—	—	—	—	1 371
Total contained in scheelite	"	249 000	249 994	68 977	64 289	69 652	55 938
Wolfram concentrate							
New South Wales	"	—	—	—	—	—	—
Queensland	"	78 400	137 266	33 004	36 374	31 865	26 375
Tasmania	"	14 000	12 181	3 171	3 388	3 036	2 794
Total contained in wolfram	"	92 400	149 447	36 175	39 762	34 901	29 169
Total contained in tungsten minerals	"	341 400	399 441	105 152	104 051	104 553	85 107
EXPORTS							
Scheelite concentrate							
Value	\$'000	3 936	3 442	934	736	837	1 213
Wolfram concentrate	tonne	40 014	32 255	8 729	7 230	7 500	10 338
Value	\$'000	827	1 690	502	364	357	708
Tungstic oxide (WO ₃) content of concentrates exported	unit	6 642	19 010	3 766	3 304	8 602	6 068
In scheelite concentrate	"	349 772	358 994	106 767	77 520	84 637	132 131
In wolfram concentrate	"	275 027	243 813	65 565	50 684	59 241	85 078
In wolfram concentrate	"	74 745	115 181	41 202	26 836	25 396	47 053

URANIUM

			1979*			1980*		
			1978	1979*	June	September	December	March
PRODUCTION								
Mine production								
Uranium oxide (U ₃ O ₈)	tonne		607	832	215	235	234	156
Uranium content	"		515	707	182	200	199	132

EXPORTS

Uranium oxide (U ₃ O ₈)	tonne	1 114	1 317	223	226	382	434
Value	\$'000	66 908	102 275	16 484	17 164	31 195	35 021

ZINC

	1978	1979*	1979*			1980*
			June	September	December	March

PRODUCTION

Mine production							
Minerals produced							
Zinc concentrate	tonne	841 869	943 187	239 374	260 648	246 698	193 764
Zinc content	"	433 578	482 886	123 264	132 487	127 342	100 131
Lead content	"	17 910	20 730	4 668	6 330	5 064	4 457
Silver content	kilogram	60 651	66 515	15 407	20 808	17 571	16 043
Gold content	"	261	272	60	66	76	52
Cadmium content	tonne	1 459	1 695	418	477	406	358
Cobalt content	"	93	97	29	25	21	18
Copper content	"	1 193	n.a.p.	n.a.p.	n.a.p.	n.a.p.	n.a.p.
Manganese content	"	5 385	6 432	1 811	1 748	1 461	1 035
Sulphur content	"	266 517	292 245	75 343	76 009	78 976	62 014
Zinc content of minerals produced							
Copper concentrate	"	1 217	3 291	986	1 207	757	995
Copper-lead-zinc ore	"	803	233	—	—	—	—
Lead concentrate	"	34 827	42 542	11 300	10 157	11 018	9 960
Lead-copper concentrate	"	2 834	2 817	618	624	828	700
Lead-zinc concentrate	"	—	—	—	—	—	761
Silver concentrate	"	34	—	—	—	—	—
Zinc concentrate	"	433 578	482 886	123 264	132 487	127 342	100 131
New South Wales							
Queensland	"	267 925	327 744	87 226	93 704	81 792	65 605
Tasmania	"	127 980	128 769	31 267	31 544	37 576	30 159
Total contained zinc	"	473 293	531 769	136 188	144 475	139 945	112 547
Smelter and refinery production							
Refined zinc	"	290 066	305 394	76 000	77 783	78 020	71 628

EXPORTS

Zinc concentrate	tonne	467 718	376 806	77 602	101 297	78 755	117 744
Belgium-Luxembourg		4 823	22 384	7 455	2 804	3 764	22 424
Bulgaria		21 906	—	—	—	—	—
India		30 942	19 013	—	130	8 293	9 982
Japan		200 069	220 852	46 495	83 992	35 329	36 925
Netherlands		87 952	13 185	—	—	—	20 906
U.K.		51 492	43 174	—	5 302	24 824	—
Other		70 534	80 516	53 950	9 070	6 545	27 507
Value	\$ '000	47 661	59 349	13 309	17 297	12 478	19 195

ZINC (continued)

		1978	1979*	1979*			1980*
				June	September	December	March
EXPORTS (continued)							
Refinery-type shapes	tonne	215 368	160 988	44 661	40 966	37 221	57 447
China (excl. Taiwan Province)	"	—	—	—	—	—	—
China (Taiwan Province only)	"	36 108	22 089	7 637	3 147	4 237	9 749
India	"	10 858	18 496	4 318	6 432	3 943	9 174
Indonesia	"	34 502	21 597	3 927	6 027	4 906	6 334
New Zealand	"	11 876	15 011	4 568	4 092	4 611	3 542
Thailand	"	21 585	19 706	4 277	3 226	6 045	5 133
U.K.	"	3 705	2 534	136	957	306	605
U.S.A.	"	38 068	27 014	10 253	9 611	3 668	8 200
Other	"	58 666	34 541	9 545	7 474	9 505	14 710
Value	\$ '000	107 237	105 571	31 089	26 532	24 541	38 785
Plates, circles and strips	tonne	49	38	5	15	17	10
Value	\$ '000	80	72	14	27	28	12
Slags and residues	tonne	5 454	3 523	1 075	988	947	3 006
Value	\$ '000	1 486	1 627	464	450	447	594
Zinc content of ores and concentrates, slags, residues, etc. exported	tonne	251 622	189 836	40 042	54 234	31 936	56 029

ZIRCONIUM

				1979*			1980*		
				1978	1979*	June	September	December	March
PRODUCTION									
Mine production									
Minerals produced									
Zircon concentrate	tonne			391 606	446 980	115 138	111 386	105 243	109 052
Zircon content	"			386 724	440 119	113 731	109 216	103 387	107 141
Production: States, zircon content									
New South Wales	"			108 823	95 921	31 642	22 221	14 504	22 336
Queensland	"			62 148	78 942	20 123	21 829	19 629	20 756
Western Australia	"			215 753	265 256	61 966	65 106	69 254	64 049
Total contained zircon	"			386 724	440 119	113 731	109 216	103 387	107 141

EXPORTS

		1978	1979*	1979*			1980*
				June	September	December	March
Zircon concentrate	tonne	391 276	479 115	137 385	124 206	103 368	133 455
Belgium-Luxembourg	"	13 915	8 122	—	8 104	18	2 000
Canada	"	16 520	16 719	16 066	36	415	593
France	"	24 501	21 793	2 274	4 916	10 098	7 056
Italy	"	40 348	64 774	16 522	13 566	14 814	23 254
Japan	"	100 364	188 080	48 689	47 039	44 215	40 896
Netherlands	"	39 185	35 237	6 847	7 877	4 650	13 872
U.K.	"	29 020	20 455	2 177	3 547	9 141	6 432
U.S.A.	"	56 614	49 117	20 218	19 455	4 164	28 442
Other	"	61 808	74 818	24 592	19 666	15 875	10 908
Value	\$ '000	29 365	33 115	9 282	8 396	7 288	8 954

MINOR MINERALS

		1978	1979*	1979*			1980*
				June	September	December	March
BARITE							
Mine production (a)	tonne	10 844	10 825	2 952	2 935	2 947	5 954
Imports (including witherite)		541	1 171	200	119	651	218
Value	\$'000	72	89	22	9	37	17
Exports	tonne	969	1 232	282	413	192	20 514
Value	\$'000	113	205	33	33	27	755

(a) Excludes Northern Territory.

MINOR MINERALS

					1979*	1980*
	1978	1979*	June	September	December	March
BISMUTH						
Mine production						
Bismuth concentrate		tonne	3 900	}	n.a.p.	n.a.p.
Bismuth content		"	1 054			
Gold content		kilogram	128			
Copper content		tonne	706			
Selenium content		unit	—			
Silver content		kilogram	120	n.a.p.	n.a.p.	n.a.p.
Bismuth content of minerals produced						
Bismuth concentrate		tonne	1 054	}	n.a.p.	n.a.p.
Copper concentrate		"	—			
Total contained bismuth		"	1 054			
Imports						
Bismuth metal		tonne	22	13	10	8
Value		\$'000	135	81	41	25
CLAYS						
Mine production						
Brick clay and shale		'000 tonnes	8 563	8 969	2 230	2 429
Imports						
Andalusite, mullite, Dinas earth, kyanite and sillimanite		tonne	385	3 033	213	361
Value		\$'000	39	236	21	43
Bentonite and bentonitic clay		tonne	30 355	57 241	3 050	11 773
Value		\$'000	1 375	2 028	552	243
Ball clay		tonne	1 571	560	208	74
Value		\$'000	153	57	26	11
Clays and earths, activated		tonne	3 786	4 863	958	1 415
Value		\$'000	649	1 144	239	397
China clay, Incl. kaolin		tonne	10 202	6 193	226	228
Value		\$'000	597	479	46	37
Fireclay		tonne	301	223	32	112
Value		\$'000	44	39	6	23
Clays, n.e.l.		tonne	27 217	45 636	11 667	9 836
Value		\$'000	2 457	3 842	1 174	667
Exports						
Clays (except activated)		tonne	13 408	6 092	1 672	786
Value		\$'000	1 054	525	176	54
COBALT						
Mine production						
Cobalt content of minerals produced						
Nickel ore		tonne	2 418	2 488	523	657
Nickel concentrate		"	882	762	181	212
Zinc concentrate		"	93	97	29	25
Total contained cobalt		"	3 393	3 357	733	894
Imports						
Cobalt oxide and hydroxide		tonne	13	16	3	5
Value		\$'000	186	627	97	219
Cobalt and cobalt-base metal alloys (excl. powder)		tonne	14	18	7	7
Value		\$'000	257	880	377	361
CRYOLITE, NATURAL						
Imports (including chiolite)						
Value		\$'000	175	112	44	31
			80	63	25	18
DIAMONDS, INDUSTRIAL						
Imports						
Value		metric carat	892 220	1 139 237	352 146	229 712
		\$'000	5 921	7 330	1 505	2 254
Exports (a)						
Value		metric carat	200 593	247 861	102 991	51 962
		\$'000	1 474	1 949	532	471

(a) Excludes powder and dust.

MINOR MINERALS

			1978	1979*	1979*			1980*
					June	September	December	March
DIATOMITE								
Mine production	tonne		2 621	588	143	83	260	90
Imports			13 707	7 532	2 080	880	1 862	3 251
Value	\$'000		1 740	1 759	352	283	691	557
DOLOMITE								
Mine production	tonne		638 422	726 004	197 141	177 172	187 044	221 931
FELSPAR								
Mine production	tonne		3 185	4 340	1 185	872	2 167	722
FLUORSPAR								
Imports	tonne		32 711	27 012	5 550	8 621	2 188	12 050
Value	\$'000		1 637	1 604	304	497	129	860
MERCURY								
Refinery production	kilogram		—	—	—	—	—	—
Imports			75 941	47 990	10 722	21 609	5 544	12 511
China (excl. Taiwan Province)	"		52 406	17 423	—	13 628	1 380	5 348
Japan	"		—	18 285	6 900	7 935	3 450	—
Spain	"		17 940	11 385	3 795	—	—	6 900
U.S.A.	"		321	174	15	36	13	248
Other	"		5 274	723	12	10	701	15
Value	\$'000		260	308	75	160	40	107
MICA								
Imports								
Ground or pulverised	tonne		277	335	67	77	171	179
Value	\$'000		54	67	19	14	26	25
Other	tonne		201	292	66	70	135	62
Value	\$'000		111	97	36	13	29	19
PEAT								
Mine production (b)	tonne		2 877	4 075	564	974	1 380	2 417
Imports			12 005	26 066	7 688	10 754	6 477	1 765
Value	\$'000		1 087	1 122	428	269	248	313
PLATINUM AND PLATINUM-GROUP METALS								
Imports								
Ingots, blocks, pigs, etc.	kilogram		4 542	1 333	156	213	631	57
Value	\$'000		2 196	3 060	810	683	691	771
Powder	kilogram		42	2 703	124	1 056	1 517	23 979
Value	\$'000		96	197	67	53	71	541
Wire	kilogram		86	120	26	37	51	11
Value	\$'000		284	569	222	156	128	164
POTASSIUM								
Imports								
Potassium chloride (fertiliser grade)	tonne		16 426	158 064	20 950	67 846	33 332	27 514
Value	\$'000		8 277	9 384	1 166	3 897	2 393	1 890
Potassium sulphate (fertiliser grade)	tonne		5 711	8 546	656	328	2 434	1 171
Value	\$'000		741	1 194	84	45	449	186
TANTALUM AND COLUMBIUM (NIOBIUM) (a)								
Exports								
Tantalite-columbite concentrate	tonne		125	312	49	167	57	48
Value	\$'000		2 243	5 950	1 598	1 051	2 402	3 268

(a) Details of mine production are not available for publication. (b) Excludes Western Australia.

Summary Tables

MINE PRODUCTION OF PRINCIPAL MINERALS: AUSTRALIA

Mineral	Unit of Quantity	1979*				1980*	
		1978	1979*	September	December	March	June
Bauxite	'000 tonnes	24 293	27 585	7 064	7 436	6 579	6 961
Black coal	"	79 827	83 142	20 750	22 116	18 703	19 701
Brown coal	"	32 860	32 597	9 465	7 692	7 134	8 607
Copper (a)	tonne	222 111	234 735	57 815	55 435	48 031	65 801
Gold (a)	kilogram	20 142	18 295	4 487	4 553	4 679	4 448
Iron ore and concentrate (b)	'000 tonnes	83 134	91 709	24 667	26 573	21 587	24 188
Lead (a)	tonne	400 291	417 485	107 486	101 250	93 600	108 252
Manganese ore, metallurgical	"	1 248 922	1 666 275	287 076	577 696	686 819	590 729
Nickel (a)	"	85 868	73 323	20 074	18 273	16 609	17 038
Petroleum—							
Crude oil	'000 m ³	25 187	25 368	6 525	6 485	5 593	5 063
Natural gas	'000 000 m ³	7 320	8 382	2 464	2 052	1 977	2 516
Silver (a)	kilogram	812 524	834 061	199 146	194 241	181 820	139 954
Tin (a)	tonne	11 864	11 503	2 875	3 059	2 573	2 894
Titanium—							
Ilmenite concentrate (c)	"	1 254 994	1 150 465	297 563	284 631	289 205	333 236
Rutile concentrate	"	257 075	278 901	74 512	65 174	69 358	77 909
Tungsten concentrate (d)	unit	341 400	399 441	104 051	104 553	85 107	126 405
Zinc (a)	tonne	473 293	531 769	144 475	139 945	112 547	124 080
Zircon concentrate	"	391 606	446 980	111 386	105 243	109 052	120 316

(a) Total metallic content of minerals produced. (b) Excludes iron oxide not intended for metal extraction. (c) Excludes leucocane. (d) Tungstic oxide content.

SMELTER AND REFINERY PRODUCTION OF PRINCIPAL METALS: AUSTRALIA

Mineral	Unit of Quantity	1979*				1980*	
		1978	1979*	September	December	March	June
Alumina	tonne	6 775 675	7 414 606	1 911 047	1 893 518	1 837 388	1 842 519
Aluminium (refined)	"	263 361	269 575	68 103	70 288	71 538	73 077
Cadmium (refined)	"	747	804	166	235	244	254
Copper (blister) (a)	"	164 395	166 260	41 651	37 128	39 198	44 931
Copper (refined)	"	152 621	137 689	38 071	32 868	32 684	33 427
Gold (refined) (b)—							
Australian origin	kilogram	16 645	14 987	3 978	3 770	3 779	3 563
Total	"	17 988	16 603	4 331	4 306	4 131	3 804
Lead—							
Refined (c)	tonne	204 022	215 734	51 820	53 816	49 019	49 632
Lead content of lead bullion for export	"	151 964	169 469	44 416	39 673	39 103	44 552
Pig iron	'000 tonnes	7 337	7 811	1 984	2 045	1 885	1 362
Raw steel (d)	"	7 589	8 125	2 097	2 157	2 049	1 592
Silver (refined)	kilogram	298 561	294 526	73 605	70 897	69 123	73 912
Tin (refined)	tonne	5 129	5 423	1 386	1 524	985	1 354
Zinc (refined)	"	290 056	305 394	77 783	78 020	71 628	72 175

(a) Total production for refining in Australia and overseas. (b) Newly-won gold. (c) Includes lead content of lead alloys from primary sources. (d) Includes recovery from scrap.

Note: Particulars of crude oil and natural gas were collected by Energy Economics Branch, Department of National Development & Energy; particulars of refined aluminium, cadmium, copper, gold, lead, silver, tin and zinc were collected by the Bureau of Mineral Resources.

books and maps, and information on prices, may be obtained from: Publications Sales, Bureau of Mineral Resources, Cnr of Constitution Avenue and Anzac Parade, Parkes, ACT (PO Box 378, Canberra City, ACT 2601) or phone (062) 49 9519. Back issues of the *AMI Annual Review* and *Quarterly* are available in limited numbers.

Coloured geological maps cost \$6.00 and \$12.00 per sheet, depending on scale, and geophysical and preliminary geological maps \$4.00/sheet. Other publications are priced individually; prices are given in the *Catalogue of Publications* and in the *Quarterly List of Publications*, but are subject to change.

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Other publications of the Australian Bureau of Statistics relating to the Australian mineral industry

Catalogue No.

- 8404.0 *Minerals and Mineral Products* (Monthly)
- 8407.0 *Mineral Exploration* (Annually)
- 5317.0 *Foreign Control in the Mining Industry, 1976-77*
- 8405.0 *Mineral Production* (Annually)
- 8402.0 *Mining Establishments (Details of Operations)* (Annually)
- 8401.0 *Mining Establishments (Summary of Operations, Australia)* (Preliminary) (Annually)
- 8408.0 *Mineral Exploration (other than for petroleum): Expenditure by Principal Enterprises* (Quarterly)
- 8409.0 *Petroleum Exploration* (Quarterly)

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Other BMR publications

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MINERAL RESOURCES REPORTS

Mineral Resources Reports are an occasional series; each summarises the geology and production statistics of deposits of a particular mineral commodity in Australia. *Australian Tin Deposits MRR 7*, 77 pp.) was issued in 1977, *Australian Antimony Deposits* (MRR 8, 15 pp.) in 1978, and *Australian Molybdenum Deposits* (MRR 9, 46 pp) in 1979.

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