

THE AUSTRALIAN MINERAL INDUSTRY

PART 1 – QUARTERLY REVIEW

Containing information to August, 1956. Issued by the Bureau of Mineral Resources under authority of the Hon. the Minister for National Development.

PART 2 – QUARTERLY STATISTICS

Quarter ended 31st March, 1956.
Prepared by S. R. Carver, Acting-Commonwealth Statistician, under instructions from the Rt. Hon. the Treasurer.

VOL. 9. No. 1.

AUGUST, 1956.

PRICE 3/-

Available from:—

THE BUREAU OF MINERAL RESOURCES
485 Bourke Street, Melbourne.

THE DEPARTMENT OF NATIONAL DEVELOPMENT
Melbourne and Sydney.

THE STATE CONTROLLER
DEPARTMENT OF SUPPLY
Brisbane, Adelaide and Perth.

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SECRETARY—H. G. RAGGATT

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THE
AUSTRALIAN MINERAL INDUSTRY

VOL. 9. No. 1

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AUGUST, 1956.

Prepared in the MINERAL ECONOMICS SECTION
CHIEF MINERAL ECONOMIST — J. A. DUNN.

Issued under the authority of
SENATOR the HON. W. H. SPOONER,
MINISTER FOR NATIONAL DEVELOPMENT.

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Information of interest to the mineral industry, corrections to published data, and suggestions will be welcomed.

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AUSTRALIAN MINERAL INDUSTRY

QUARTERLY REVIEW

AUGUST, 1956

THE SIGNIFICANCE OF NON-METALLIC MINERAL PRODUCTION

The total value of mine and quarry output in 1955, excluding both the added value attributable to smelting and refining operations and the value of building stone and road materials, was £149,709,543. Of this total 56.5% was attributable to metal mining, 38.5% to coal and 5.0% to other non-metallic (so-called) minerals. On the basis of these figures it may appear that the non-metallics section of the mining industry, other than coal, is of only minor importance to Australia. Such an opinion would also be supported when consideration is given to the value of exports of these products in relation to those of gold and the base metals, and also to the imbalance that exists between imports and exports of these commodities. However, when one surveys the needs of industry and of the community in general, one realises that our industries could get along nicely with a greatly reduced output of the more financially striking metals, but we would find our industrial development in a very poor position indeed if we lacked just those minerals which make such a poor statistical showing.

By and large we look upon our gold mines and our great base metal mines as direct money spinners, both to the country in the way of exports, and to the shareholders in the way of dividends. They are perhaps spectacular from this point of view. Of course they provide spring boards for development of the outback, and the base metals also provide raw materials to our industries. On the other hand, such minerals as building stones and the raw materials of clays, gypsum, limestone, the refractories, and sands are fundamental to industry and even to agriculture; without them it would be almost impossible to develop the country. They may not be spectacular money spinners, but they are the stuff on which civilisation is based, perhaps even more so than iron and steel. From the one group of minerals we look directly for wealth, from the other we look to provide a basis for wealth.

This is not a novel thought, but possibly some associated with the metal mining industry do not fully appreciate the significance of the so-called non-metallic minerals to the economy and development of the country. Of course the early development of Australia was intimately bound up with the discovery of the Victorian and Western Australian goldfields, and the discovery and opening up of such base metal mining fields as Wallaroo-Mounta (copper), Broken Hill (silver-lead-zinc), Mt. Morgan (gold-copper), Mt. Lyell (copper) and more recently Mt. Isa (silver-lead-zinc and copper) have been events of major national importance. Furthermore, investment and speculation in mining shares, which has been confined almost entirely to gold and base metal mines, has played no small part in bringing the importance of these industries to the attention of the public. Of course, the public is brought into more or less direct contact with the coal industry through its significance as a source of power, but by and large there is no great interest in its investment possibilities.

To list the wide variety of non-metallic minerals, or industrial minerals as they are now frequently called, and their diversity of uses in the industrial field

would not be practicable in an article of this nature. However, their importance may be appreciated if a few specific cases are mentioned in which these minerals are essential for the functioning of industry; for the iron and steel and other metallurgical industries — limestone, dolomite, magnesite, fireclay; for cement products — limestone, clay, gypsum; for glass and ceramics — silica, felspar, fluor spar for the chemical (including fertilizers) industry — sulphur, phosphate rock, limestone, salt.

A general picture of the present stage of the development of the non-metallics industry within Australia, its ability to meet local requirements and to sell on overseas markets is obtained from the following table:—

Production — Imports — Exports of Some Non-Metallic Minerals for 1955.

Mineral	Production	Imports	Exports
Asbestos—			
Chrysotile	865	27,681	65
Amosite	—	12,061	18
Crocidolite	4,487	104	6,476
Barite	6,254	281	940
Bentonite	647	5,274	—
Clays	4,233,163	9,161	1,779
Diamonds (industrial)	731	267,365	79,265
Dolomite	5,042	4,823	—
Felspar	20,833	—	220
Fluor spar	282	445	—
Graphite	22	950	22
Gypsum	470,014	—	38,743
Kyanite	—	244	—
Limestone	4,318,000	—	—
Magnesite	57,674	4,588	106
Mica (all types)	76,809	619,401	7,784
Mineral Pigments	408	3,150	218
Phosphate Rock	6,371	1,250,929	—
Salt	370,000	8,834	21,556
Sillimanite	2,679	45	—
Sulphur	—	195,482	—
Talc	12,567	—	2,234

An examination of the above data indicates that the non-metallics may be divided broadly into three groups:—

- those for which domestic consumers are virtually dependent on overseas supplies.
- those which are supplied wholly or almost wholly by domestic producers.
- those which are partly supplied by domestic producers and partly imported.

It is also obvious from the Table that except for salt, gypsum and crocidolite an export trade in these minerals is virtually non-existent — in the case of industrial diamonds it should be noted that exports are of scrap and re-exports of imported stones.

The above grouping on the basis of availability results from a combination of factors which in the first instance may not be obvious. Of course the primary consideration is the existence or otherwise of deposits of these minerals but the following factors have also to be borne in mind:—

- The situation of deposits with respect to markets; freight charges are of particular significance in the production of non-metallics as in most cases the products are of low value.

- The size of the domestic market and the existence of overseas markets.
- Consumers' specifications.
- Market price.

Of the minerals that fall into Category A above, phosphate rock, elemental sulphur, chrysotile asbestos, and graphite are the major examples. Except in the case of graphite the dependence on overseas supplies is dictated by the paucity or absence of domestic resources.

The importance of phosphate rock to the economy will be readily appreciated when it is realised that approximately 1,250,000 tons of this imported raw material were used in the production of over 2,000,000 tons of superphosphate in 1955. Although there is some local production (about 6,000 tons annually, used mainly for metallurgical purposes), the known domestic deposits are unsuitable in both size and general quality to base a superphosphate industry on them. Australian requirements are drawn from Nauru, Ocean Island in the Pacific Ocean, and from Christmas Island in the Indian Ocean.

The position regarding elemental sulphur is somewhat different. During 1955, Australian consumption of sulphur in all forms is estimated at 330,000 tons. Of this total 320,000 tons were used for the production of 895,000 tons of sulphuric acid; the breakdown of acid consumption by industries is approximately as follows:—

Superphosphate	82.0%
Ammonium sulphate	8.0%
Metallurgical	4.0%
Others	6.0%

That some 90% of the sulphuric acid production is used in the manufacture of fertilizers alone emphasises the great importance of sulphur supplies to the Australian economy, even without entering into discussion of its utter necessity in many manufacturing industries.

Although there are no known deposits of sulphur in Australia, acid producers have alternative sources of this commodity in pyrite, zinc concentrates, lead concentrates and to a lesser extent spent oxide from gas works. At the present time acid is being produced from the roasting of these materials, providing a link with the base metals industry. In the case of lead and zinc concentrates, acid production is merely a by-product of smelting operations. Pyrite for acid production is mined directly or produced as a by-product of other base metal mining operations. To lessen Australia's dependence on imported elemental sulphur the Commonwealth Government is paying a bounty on acid produced from pyrite. It was hoped that this bounty would result in at least 65% of local acid requirements being met from indigenous raw materials by 1956. In 1955 acid production was 895,000 tons, of which 63.5% was from elemental sulphur, 24.3% from pyrite, 10.4% from zinc concentrate and the balance from spent oxide. There will be some decrease in the proportion of acid derived from elemental sulphur in 1956 but the 65% objective will not have been reached. The failure to achieve this objective can be attributed to the ready availability from overseas of elemental sulphur at attractive prices, the relative ease of operating plants designed to use elemental sulphur, the lower capital cost of such plants and possibly to the profit limitation clause that operates in the assessment of any bounty to be paid to producers.

The basic fibre used in the production of asbestos cement products is chrysotile, of which known domestic deposits are small and consumers are virtually

dependent on overseas supplies. Imports in 1955 were 27,681 tons valued at about £2.75 million. Of this total 70% was from Canada and represents a not insignificant dollar expenditure. In addition to chrysotile, substantial tonnages of South African amosite are imported to mix with chrysotile in the production of asbestos cement sheeting. Although local supplies are readily available of blue asbestos which could be substituted for amosite, the principal consumers prefer to use the imported material because of cost considerations. However, for certain applications, blue asbestos is preferred and overseas markets for this product are now being successfully sought.

Current requirements of graphite, all types and grades, are about 1,000 tons annually. The reasons underlying the dependence of domestic consumers on imports of graphite are basically different from those related to chrysotile, elemental sulphur and phosphate rock, in that domestic deposits of graphite do exist and have in the past (particularly in the war years) supplied a proportion of the local market.

The lack of any large scale development of graphite has been due to a number of factors. The domestic market is relatively small and to supply effectively this market producers would have to cater for a wide range of specifications and at the same time keep prices at a competitive level with imported material which is readily available. The deposits at Munglinup, Western Australia, are believed to be extensive but, to be worked economically, production would greatly exceed local requirements and development of an export market would be essential. However, world demand for graphite is relatively static and is adequately provided by existing producers. Recent investigations by those concerned have shown that the large scale development of these deposits under the existing market conditions would not be justified.

From a quantitative point of view the greatest development in the non-metallics industry, excluding building stone and road materials, has been in the production of those minerals included in Category B, viz.: clays, limestone, gypsum, salt and felspar. This development has been concomitant with the establishment and development of the cement, metallurgical, chemical, building, glass and ceramics industries. Perhaps it would be more apposite to say that these domestic industries would not have developed to their present stage had the non-metallic minerals not been available locally. The upward trend in salt production has, of course, been directly related to the growth of population although the postwar expansion of the chemical industry has been a major contributing factor.

In the case of all these minerals, domestic production can generally cater adequately for requirements although some special clay types, small quantities of felspar, and some table salt in particular, are imported.

For Category C minerals, such as bentonite, diatomite, fluorspar, mica and mineral pigments, the local market is dependent largely on imports although not an insignificant proportion is supplied from local sources. The reason for this domestic under-supply is not so much the inadequacy of local resources but rather the difficult location of deposits with respect to markets, the relatively limited market and, to some extent, the consumers' preference for imported materials which in certain cases may not be justified. In the case of those minerals for which the market is not large and specifications are variable from consumer to consumer, the capital cost of plant necessary to produce to the varying specifications may be the dominant factor retarding the development of the industry.

Such problems confronting producers or potential producers are typified in the case of mica. Mica for industrial purposes may be broadly classified into 3 types—

- (i) Block mica — for the electrical trade.
- (ii) Mica splittings for production of micanite sheets and used extensively in the electrical trade.
- (iii) Scrap and ground mica used as filler in a wide range of products and for heat insulation.

The only significant domestic production of mica in Australia is from the Harts Range-Plenty River area of the Northern Territory; the production supplies approximately 50% of the local requirements of block mica, about 120,000 lbs. annually. Imports of sheet mica include condenser plates and qualities of block not available locally. All requirements of splittings, up to 240,000 pounds annually, are imported for the manufacture of micanite. As the splitting of block mica is a hand operation, domestic producers cannot compete with splittings from India where labour availability and costs for this operation are no great problem. All requirements of ground and scrap mica, up to half-a-million pounds annually, are imported. Large quantities of scrap are available from operations in the Harts Range-Plenty River area, but high freight costs to the principal markets in Adelaide, Melbourne and Sydney make the marketing of this material economically impossible.

As mentioned earlier, Australian export trade in non-metallic minerals is financially small. During 1955 the total export value of minerals and metals (excluding fabricated and semi-fabricated metals) was £71,490,037, of which the non-metallic minerals only contributed £1,182,593, or 1.5% of the total. Statistical data of the exports of these minerals is summarised in the following Table:

Item	Quantity	Value £
Asbestos, all types	tons	6,559
Barite — ground	tons	940
Clays, all types	tons	1,779
Diamonds, industrial (a)	carats	79,265
Felspar	tons	220
Gypsum	tons	38,743
Mica — all types	lbs.	7,784
Opal	tons	n.a.
Salt	tons	21,556
		122,967
		172,238

(a) Re-exports of imported stones and scrap material.

Bearing in mind the general low market value of the non-metallic minerals, Australia's geographical position with respect to the major world markets, the ready availability of a large proportion of these minerals in most consuming countries, and the insignificance of Australian deposits in important cases, the reason for this lack of development in export trade is understandable.

To date, except for blue asbestos, the only market that has been developed to any extent for any of these commodities has been in New Zealand. However, the lack of any large scale industrial development in that country has, of course, been a limiting factor to this trade.

Exports of blue asbestos, produced at Wittenoom, Western Australia, were valued at £637,570 in 1955 and should exceed £1 million annually in the near future. The Wittenoom deposits were initially opened up to supply the local market but, on economic grounds, asbestos cement manufacturers

were unwilling to incorporate this material in their product and the operating company was forced to develop overseas markets. Recent marketing developments, and the payment of a subsidy by the Commonwealth and State Governments, should place operations on a profitable basis for the first time.

At present it would appear that the future development of the so-called non-metallic minerals will follow the pattern of the past in that the primary consideration will be the scope of the domestic market. Although considerable expansion has occurred, particularly in the postwar years, domestic markets by world standards are relatively small, and except in a few isolated cases the incentive to find and develop non-metallic mineral deposits is not great. A further deterrent is, of course, the difficulty in selling on overseas markets. Under such circumstances the scope of any large-scale investment in the industry in the short run is particularly restricted. Undoubtedly the largest market for the indigenous non-metallic minerals is the building industry, and with the continued growth of population the demands of that industry for clay, limestone and gypsum in particular must continue to grow although the rate of growth will fluctuate according to general economic conditions. However, the present activity in the exploration for metals could result in a wider appreciation of the non-metallic resources of the country, and possibly lead to investment in industries that would decrease local consumers' dependence on overseas supplies, and make a worthwhile contribution to the Australian export trade in mineral products.

31/7/1956.

J. W. MORGAN

ALUMINIUM.

Recent finds of very large deposits of bauxite around the Gulf of Carpentaria are of great significance. The likely development of considerable trade in alumina could well lead to the opening up of the Gulf region.

Because of an improvement in the availability of power in Tasmania, some increase in the production of aluminium ingot at Bell Bay may be possible in the near future. In mid-1956 production was at the rate of 10,000 tons annually. Imports of ingot in the first quarter were 2,958 tons.

Requirements of aluminium ingot in 1956 are estimated at 20,000 tons, of which approximately 50% will be supplied by the Bell Bay plant. Because of the shortage of metal overseas, allocations of Canadian metal to Australia for 1956 were severely cut but consumers generally have been able to meet requirements from other sources although in some cases substantial premiums have been paid for this metal. Consumption of primary and fabricated metal in 1956 is estimated at 25,000 tons.

The rapid expansion in aluminium production capacity, particularly in the United States and Canada, continued in the first half of 1956. Installed capacity in the United States has been increased to 1.55 million tons and completion of facilities now under construction plus those planned for the immediate future will result in an additional 0.5 million tons of capacity being available. Actual production of metal in the United States in 1956 is likely to reach 1.50 million tons, a 6% increase on production in 1955. Construction work now under way will increase Canadian aluminium production capacity from 0.65 million tons to 1 million tons.

The price of domestically produced aluminium, 1-20K ingots, 99.5% Al was increased from £259/10/- to £267/10/- per ton, c.i.f. capital city ports on 1st June, 1956. This increase followed increases in freight charges on both bauxite and metal. There has been no recent price change in aluminium ingot overseas. Prices operating in July were: Canada, 23.50 cents per pound; United States, 25.9 cents per pound; United Kingdom, £stg 189 per ton.

ANTIMONY.

The mill of the principal domestic producer of antimony concentrates, New England Antimony Mines N.L., was closed during January on account of a shortage of water; after milling was resumed 1,301 tons of ore were treated for 220 tons of concentrate to 23rd May. It would appear that grade of ore is improving but is still considerably below the prospectus estimate; so far for 1956, the rate of output is about one-half that estimated. In July it was announced that operations had ceased due to a shortage of working capital.

There has been no alteration of the domestic price of either ore (30/- a unit) or metal (£325 a ton). The overseas price of metal was unchanged over the last quarter although there has been a tendency for ore prices to weaken.

ASBESTOS.

Asbestos production in the first quarter of 1956 was 1,344 tons, comprising 1,227 tons of crocidolite from Wittenoom, Western Australia, and 117 tons of chrysotile from Baryulgil, New South Wales. Exports of blue asbestos were 514 tons; imports of chrysotile and amosite were 4,554 tons and 3,406 tons respectively.

To meet the increased overseas demand for blue asbestos, production at Wittenoom has been steadily increased and in June an annual rate of approximately 7,000 tons had been achieved. Overseas sales in 1956 are expected to be about 6,000 tons.

Some decrease in activity of the building industry late in 1955 and in the early months of 1956 was reflected in a cut back in production of asbestos

cement sheeting. Production of this commodity during the first quarter of this year was approximately 10% below that of the corresponding quarter of 1955. This reduction, together with the fact that imports in 1955 were somewhat above actual requirements and allowed accumulation of stocks, was an underlying factor in the sharp decline in imports of chrysotile in the first quarter of 1956.

BERYLLIUM.

The Western Australian Mines Department advises that sales of 3.62 tons of beryl (45.25 units of BeO) were finalised during the first quarter — actual production statistics are not available. There was no production recorded in other States. Exports of beryl in the first quarter were 44 tons.

The whole of the Australian beryl production is purchased by O. T. Lempriere & Co. Ltd. as agent for the U.K. Ministry of Supply. The buying price was increased from £15 per unit BeO (minimum 9.5% BeO), i.e., to £16/8/9 per unit BeO (minimum 10.0% BeO) late in June, 1956.

COAL (BLACK).

There was a substantial fall in the production of black coal during the first quarter of 1956, output totalling only 3,770,622 tons, the lowest quarterly production since March, 1951. Factors contributing to the decline were the annual holiday period from Christmas to mid-January, the closure of some collieries, the strikes by power electricians in Queensland and by some miners in Western Australia, and the large amount of coal held in stocks. Underlying these is the increased preference for oil as a fuel in many industrial applications.

COAL (BROWN).

Brown coal production in the period January-May, 1956, was 4,205,102 tons compared with 3,981,167 tons for the corresponding period of 1955.

Whilst undergoing trials the new bucket wheel dredger at Yallourn, capacity of 2,340 cubic yards per hour, was damaged by fire. Damage to this machine necessitated some readjustment of the State Electricity Commission's programme for overburden removal and coal production. However, adequate plant is available to meet the present requirements of the Yallourn power station and briquette factory. New dredgers now in course of erection (in addition to the dredger under repair) are adequate to meet future needs.

Commercial production of town gas from the Lurgi plant at Morwell is scheduled to commence in October. Initially, production will be at the rate of 4,380 million cubic feet annually. Plant capacity will be quadrupled by 1964.

COPPER.

For the first five months of 1956 the output of domestic primary blister copper is estimated to have been at the rate of 44,000-46,000 tons per year, and the rate of production of refined copper was 33,000 tons per year. The rates of the outputs of blister and refined for the same period in 1955 were 37,000 and 25,000 tons respectively.

Mt. Isa is considering increasing its output of lead and copper ores but before these plans can be put into effect, the carrying capacity of the Mt. Isa-Townsville railway must be greatly increased. These improvements have been estimated to cost £10m. and the Queensland Government has approached the Commonwealth Government for financial assistance. The matter is now being considered.

Western Uranium Mines, N.L. has been diamond drilling copper deposits at Ravensthorpe, Western Australia, which were worked in the early part of this century. Drilling has indicated 1½ million tons assaying 4% copper. A plant is being installed and is expected to be in operation in early 1957. The initial throughput will be of the order of 5,000 tons per four-weekly period.

World copper supplies should be easier in 1956 than they were in 1955. To date there have been no strikes of consequence in any of the leading producer countries. Production in Chile is increasing, San Manuel (U.S.A.) will reach its estimated output (70,000 s. tons p.a.) by mid-1956, and Chibuluma in Northern Rhodesia (16,000 tons p.a.) commenced production in April.

Prices on the copper market in the U.K. fell heavily during the second quarter 1956, dropping from £stg. 436½ in March to £stg. 274 at the end of June. The Rhodesian Selection Trust price was also reduced by stages from £stg. 385 in April to £stg. 275 in July.

In the United States the producers' price of 46 cents per lb. was held from February to July, when it was reduced to 40 cents; the customs smelter price has been reduced as the L.M.E. price fell and by mid-July stood at 37½ cents per lb. The pricing system for Chilean copper in the U.S., mentioned in the previous Quarterly Review, was short-lived and ceased to operate as soon as the L.M.E. quotation fell below 46 cents; since then it has been at the same rate as that of producers in the U.S.

The Australian price of copper, which is based on the L.M.E. quotations for the previous month, was £438/15/- for the month of June and £391 for July.

GOLD.

The Mint issues for the first six months of 1956 were 470,840 f. oz., approximately 5,000 oz. less than for the same period of 1955; in addition there is the refined gold output of the Broken Hill Associated Smelters, Electrolytic Smelting and Refining Co. and Garrett, Davidson and Matthey, but the data on production of these refiners is not yet available.

The Act providing assistance to marginal gold mines has been in force for two years to 30th June, 1956, and the value of this assistance to the industry is apparent; the Act has been renewed for another three years, and some amendments were made to the original Act permitting more favourable interpretations for the industry.

IRON AND STEEL.

Domestic production of pig iron and ingot steel was 852,440 tons and 998,289 tons respectively in the period January-May. Steel production in May was 218,242 tons the highest yet recorded in Australia in any one month. A fourth blast furnace, capacity 600,000 tons annually, is to be erected at Port Kembla.

Following the break-down in wage negotiations between unions and the major steel producers in the United States, a nation-wide steel strike commenced in the U.S.A. on the 1st July and continued into the last week of that month; approximately 90% of the country's steel making capacity was idle with loss of production of about 2 million tons weekly. Directly effected by the strike were 650,000 steel workers, but considerable lay-offs in the transportation, coal mining and construction industries occurred. In anticipation of the strike, consumers had, where possible, built up substantial stocks but by mid-July it was reported that a serious shortage of plate and structural

steel had developed and with continuation of the strike a similar situation would have arisen with respect to bars and rods.

In the United Kingdom the ban on overtime and week-end work by maintenance men had not been settled at the end of July. This ban which commenced early in May had resulted in a loss of about 350,000 tons of ingot production.

LEAD.

The output of lead concentrate in the Broken Hill district for the March quarter, 1956, was about 4,000 tons less than for that quarter in 1955; however, this deficiency was made good during the following quarter and the output for the half year was equal to that for the same period in 1955.

The refined lead output for the first 5 months of 1956 was 74,770 tons, about 3,000 tons less than for the same period in 1955. Production for the remaining seven months of the year will have to average 18,000 tons per month if the high output achieved in 1954 is to be approached.

Production of bullion by Mt. Isa was 16,180 tons for the first 5 months of 1956; a part of this presumably came from concentrate produced during November-December, 1955, when the smelter was closed through shortage of fuel and 3,000-3,500 tons of smelter output temporarily lost. Assuming that all the stacked concentrate has been smelted, bullion production from current output would be at the rate of 30,000-32,000 tons per year.

The L.M.E. price has been relatively stable for some months, within the range £110-£114. There has been no change in the U.S. price of lead, 16 cents per lb.

MINERAL OILS.

Drilling for mineral oils in Victoria, South Australia, Western Australia and Papua totalled about 22,000 feet during the second quarter of 1956, about the same footage as in the first quarter. Early in July there were a number of applications for oil prospecting permits in the heart of the Northern Territory, following the report of a gas explosion in a hole being drilled for water.

New South Wales. Australian Oil and Gas Corp. set up a new rig at Dural early in July and began drilling.

Victoria. The No. 3 hole of Woodside (Lakes Entrance) Oil Co. N.L. was at 5,700 feet in hard rock towards the end of July. Several additional petroleum exploration licences were issued covering large areas in northern and south-western Victoria.

South Australia. Santos Ltd. increased the number of rigs operating to six, and is continuing its programme of shallow drilling. The company has reported the recovery of some medium heavy crude oil from the No. 3 bore.

Western Australia. West Australian Petroleum Pty. Ltd. met drilling troubles in several of their holes during the quarter. The side-tracked hole at Fraser River No. 1 was at 9,851 feet by 24th July; at this date Rough Range South No. 3 was at 1,237 feet and Cape Range No. 3A at 969 feet. Structure holes numbers 7, 7A, 8 and 8A were drilled in the Dirk Hartog programme.

Papua. The relief hole drilled at Kuru to control the gas flow was completed successfully and the No. 2 hole was at 566 feet early in July. The Barikewa hole was expected to be spudded in about mid-August.

SULPHUR.

Sulphuric acid production in the first quarter of 1956 was 236,700 tons, only slightly below the record of 238,603 tons established in the December quarter of 1955. Although acid production in 1956 is likely to exceed that of 1955, 895,765 tons, the rate of increase would seem to be considerably below that achieved in 1954 and 1955 when a 15% increase was recorded in both years. A slackening in the rate of increase of acid production is primarily due to a tapering off in the demand for superphosphate after excessive rainfall, particularly in New South Wales; tightening of credit has also affected sales of superphosphate.

At Port Pirie, South Australia, production of acid from lead sinter gas commenced late in January, 1956 — production is at the rate of approximately 1,000 tons weekly. This plant was formerly operating on imported elemental sulphur. The company, Broken Hill Associated Smelters Pty. Ltd., has been granted a hearing by the Tariff Board with respect to its application for bounty payments, now made to acid producers operating on pyrite, to be extended to cover acid production from lead concentrates.

Imports of elemental sulphur in the first quarter were 59,181 tons. As from the 1st July, 1956, the pool price of sulphur was increased from £20/10/- per ton to £21/10/- per ton.

TIN.

The price of tin on the L.M.E. has gradually weakened since the beginning of 1956, though this may be partly in sympathy with the decline in other metal prices. The average monthly price during 1956 has been: January, £184 4/-; February, £185 10/-; March, £185 10/-; April, £176 5/-; May, £174 8 10/-; June, £174 2 2/-; the average during July increased to £174 18/-.

Following Indonesia's ratification of the International Tin Agreement in May, 1956, representatives of the fifteen Governments who have ratified the Agreement met in London on the 29th June, 1956, and decided that the Agreement should come into force on 1st July, 1956. Members comprise both producer countries and consumer countries. Producing members: Belgian Congo and Ruanda Urundi, Bolivia, Indonesia, Malaya, Nigeria. Consuming members: Australia, Belgium, Canada, Denmark, France, India, Netherlands, Spain, the United Kingdom and Ecuador. In addition, Turkey has indicated her intention to ratify, and Korea and Israel have applied for accession. During July, Thailand indicated that she would shortly accede as a producer.

The first meeting of the International Tin Council, an organisation created to administer the Agreement, was held in London from the 2nd to 6th July, all member countries being present. The distribution of votes according to present membership was decided as follows, based on the statistical position of each country:

Producer countries—

Belgian Congo & Ruandi Urundi ...	96	votes
Bolivia ...	229	"
Indonesia ...	229	"
Malaya ...	385	"
Nigeria ...	61	"

1,000 votes

Consumer countries—

Australia ...	35	votes
Belgium ...	41	"
Canada ...	83	"
Denmark ...	86	"
Ecuador ...	5	"
France ...	180	"
India ...	82	"
Netherlands ...	57	"
Spain ...	15	"
United Kingdom ...	416	"

1,000 votes

On accession of Thailand, Turkey, Korea and Israel, the votes will be re-cast.

At the meeting France withdrew her earlier proposal, made in 1954, for a reduction in the ceiling price at which the Buffer Stock manager would be obliged to sell tin. Thus the prices written into the Agreement remain undisturbed: the Buffer Stock manager must use up all his remaining cash in buying tin in an effort to prevent the price from falling below £640, he may buy tin when the L.M.E. price is between £640 and £720, he will remain inactive when the price is between £720 and £800, he may sell tin when the L.M.E. price is above £800, and he must sell his remaining stock of tin at £880 in an effort to prevent it going above that figure.

The Council notified that the date on which initial contributions were due from producing countries to the Buffer Stock under Article VIII(2) of the Agreement was the 15th September, 1956. A very important notification was also made by the Council that producing countries have indicated their intention of making their contributions mainly in cash. It may be of interest to examine the implications of these decisions. Prices mentioned are sterling.

The initial contributions to the Buffer Stock represent a total instalment equivalent to 15,000 tons of tin at the floor price £54.640, i.e., £9,600,000 if all contributions are in cash. Under Article VIII(6), these initial contributions are to be at the disposal of the Buffer Stock manager not later than three months after the due date, that is by 15th December, 1956.

The second and third contributions, of the equivalent of 5,000 tons tin each, will become due when the Buffer Stock holds respectively 10,000 tons and 15,000 tons of tin metal, unless the Council decides otherwise. As the producing countries have decided to contribute mainly in cash, little or no tin metal is likely to be contributed in the first instalment. Thus, until a surplus of tin arises and the Buffer Stock manager is able to purchase tin on the market at below £720, further contributions will not become due, probably until well into 1957.

It is difficult to judge at the moment the precise consumption-production position of tin over the next 6 months. According to 1955 figures of the International Tin Study Group, world smelter production was 179,000 tons and consumption was 152,000 tons. Production from the Texas smelter, 22,300 tons, was diverted to the U.S. stockpile. The excess, on these figures, of nearly

5,000 tons does not tie up with recorded reduction in stocks. On these figures the true surplus (including tin entering the U.S. stockpiles) would be of the order of 27,000 tons; recent estimates during the current year have variously given the surplus as between 12,000 and 20,000 tons. At any rate it would seem that, over the remainder of this year, whilst the Texas smelter continues to divert tin to the stockpile (apparently some 8,000-9,000 tons) there will be little if any surplus tin for the Buffer Stock to absorb. It is at the point when a surplus is available that the purpose of the Agreement becomes effective.

The early commencement of the Buffer Stock was made possible because of the understanding that the bulk of the contributions will be in cash. Had it been intended to make considerable contributions in metal the market would have been seriously disturbed under the present closely balanced position of available metal and consumption. The fact that the bulk of the contributions is to be in cash should greatly simplify Buffer Stock operations, and enable the manager to take surplus tin off the market smoothly and effectively as it arises, and as the market position warrants.

World-wide credit restrictions have caused some reduction in manufacturing activity in most countries during recent months, and it is likely that tin consumption over the remainder of the year may be rather below estimates made by some authorities earlier this year. If this is so, the date of availability of some surplus metal will be advanced a little. However, it would seem that the second contribution to the Buffer Stock will not become due until well into 1957, and the third contribution possibly not until the latter part of 1957. If all contributions are in cash, equivalent to 25,000 tons of tin at £640, the purchases of surplus tin from the market by the Buffer Stock (totaling about 22,000 tons with the money available, depending on the price at which purchased) would not be completed by the end of 1957 on present surplus prospects. The determination of export quotas, which may first be made when the Buffer Stock holds 10,000 tons of metal, thus does not require consideration for the present, and is unlikely to become effective during the next 12 months.

These considerations lead to certain prognostications on price. Assuming no abnormal happening during the remaining months of this year whilst surplus tin is removed from the market through the Texas smelter to the U.S. stockpile, the price of tin on the London Metal Exchange may be expected to range between £54.720 and £800.

Once a surplus appears, necessitating purchases by the Buffer Stock manager, the price of tin must frequently fall below £720 whilst the Buffer Stock is being built up by cash purchases. The manager may buy tin immediately the price falls below £720, but how far below he will permit it to fall before buying will be his decision. He has before him the alternatives either keeping the price as steady as possible, or of buying the maximum amount of tin (therefore at a much lower price down to £640) as is possible with the money available. Having in mind the purpose of the Agreement, to restrain price fluctuations, it would seem reasonable to suppose that the manager will allow prices to fall unduly before buying.

Thus, by and large, for the remainder of this year, one may expect the price to maintain its recent general range £720-£800. Over 1957, whilst the Buffer Stock is being built up, the average price may be expected to be at a rather lower level, averaging perhaps slightly below £720, and ranging generally, say, between £700 and rather over £720; the price would be decidedly

higher if later contributions are made in metal. Thereafter it should normally range in the £720-£800 zone.

The action of France in not disturbing the ceiling price written into the Agreement, and of the producer countries in deciding to contribute to the Buffer Stock mainly in cash, augurs well for the success of the Agreement. The present writer had not accepted the contention, widely held in recent months, that as producers, instead of contributing metal, were permitted to contribute equivalent cash at £640 a ton, it would be in their financial interests to contribute only cash. Because of the higher level at which prices would have been maintained whilst the Buffer Stock is built up if metal were contributed, the producers' normal sales would have brought in far more profit than the amount supposed to be saved by contributing cash at the lower price of £640 a ton, particularly when it is also appreciated that the profits of the Buffer Stock will be distributed amongst the producing countries eventually. The producers' decision to contribute cash, far from being a matter of self interest, was a gesture in the real interests of the smooth working of the Agreement.

TITANIUM.

Production of rutile concentrate in the first quarter of 1956 was 17,782 tons, a 55% increase on that for the corresponding quarter for 1955. The Australia-wide strike of dockworkers seriously affected shipping in the first quarter and exports of concentrate were only 12,328 tons. However, the large build-up of stocks of concentrate was effectively disposed of during April and May — shipments to the end of May were 28,447 tons.

Although production of rutile was at a record rate in the first quarter, further increases are expected in subsequent quarters as new plants come into operation. It appears likely that production for 1956 will be at least 80,000 tons compared with 59,612 tons in 1955.

World demand for rutile in the first half of 1956 continued to be particularly firm, and notwithstanding the significant increase in production very little concentrate has been available to buyers not covered by contract. Prices paid for such concentrate have ranged between £120-£140 per ton. The future market outlook for rutile is governed primarily by the titanium metal production programme in overseas countries, particularly in the United States. World metal production, in 1955 was 10,000 tons and a substantial increase is likely in 1956. Whilst rutile continues as the preferred raw material for metal production the outlook for the Australian beach sands industry will be very favourable. The price of titanium sponge in the United States was reduced from \$3.50 to \$3.25 per pound in May, 1956, and subsequently to \$3.00 per pound in July.

TUNGSTEN.

Although it is yet early to prognosticate domestic production of tungsten concentrates for the full year, indications are that it will be approximately the same as in 1955, i.e., 800 tons of wolfram and 1,450 tons of scheelite concentrates. For 1956 to June the London price has been remarkably steady with little variation above or below stg.268/- per unit. In July there was a tendency for the price to weaken and stg.261/- was quoted; this may be a reflex in the general slackening of industrial activity in the United Kingdom and the European continent, especially the former.

URANIUM.

Some extremely rich patches of ore were reported from the South Alligator field in the Northern Territory, where most of the exploration for uranium during the second quarter of this year was concentrated. The Bureau of Mineral Resources relinquished the reserve at Coober Pedy and the Northern Territory Administration will allot the area among applicant companies. The Bureau has continued its programme of airborne surveys, maintaining two Cessna and one Auster aircraft in operation and may use a second Auster in desert areas throughout the continent. Calstar Mining Corporation, an American company, is reported to have gained a uranium concession near the jungle from which it hopes to produce ore for treatment at Rum Jungle in March, 1957.

ZINC.

For its financial year ended 30th June, 1956, the Electrolytic Zinc Co. produced 104,000 tons of refined zinc, some 1,500 tons of this was used in the plant in the form of zinc dust. The manufacture of ammonia sulphate has been started as power has now become available from the Hydro-electricity Commission of Tasmania.

The average L.M.E. quotation for g.o.b. zinc for the three months May-July has been of the order of stg.94 with the premium for higher grades of metal variable. The United States quotations, 13½ cents, has been unchanged since early January, 1956.

Although the market for zinc in Europe does not appear to be very bright, better deals by the U.S. of agricultural produce for lead and zinc in addition to other strategic metals and minerals will tend to remove any pressure of excessive supplies from the market.

ZIRCONIUM.

The rapid expansion of the east coast beach sands industry to meet the strong demand for rutile has greatly increased the potential production of by-product zircon concentrates. During the first quarter of 1956, production of zircon concentrate was 16,008 tons, the highest ever recorded in any one quarter. However there is considerable scope for a further increase as some producers, because of price considerations, are not cleaning their zircon by-product to a saleable grade of concentrate.

There was some improvement in the market for zircon during the first half of 1956 and producers have had no difficulty in disposing of current production. Sales in June were reported at £15 per ton.

In May, 1956, the United States Atomic Energy Commission announced an expanded programme for the procurement of high purity zirconium metal for nuclear reactor developments. Contracts for the delivery of approximately 1,000 tons of metal annually over a five year period have been let. Production of metal under these contracts is expected to begin late in 1957.

METAL AND MINERAL PRICES

MONTHLY AVERAGE BASE METALS PRICES.

	Aust.	U.K. Stg.	U.S.A. (a)	Aust.	U.K. Stg.	U.S.A. (a)
COPPER						
May	\$489/15/-	\$332/15/6	46.0	\$133/19/5	\$111/10/11	16.0
June	\$438/15/-	\$295/17/-	46.0	\$135/10/11	\$113/2/11	16.0
July	\$391/5/-	\$284/15/3	41.4	\$136/1/7	\$113/13/2	16.0
LEAD						
May	\$120/-/-	\$94/16/4	13.5	\$984/19/2	\$748/10/3	97.2
June	\$118/3/11	\$94/-/1	13.5	\$969/14/-	\$742/1/11	94.7
July	\$118/-/-	\$93/9/8	13.5	\$978/15/5	\$748/18/2	96.1

MAXIMUM AND MINIMUM SPOT METAL PRICES, 1st MAY - 31st JULY, 1956.

	Max. Australia	Min. Australia	Max. U.K. Stg.	Min. U.K. Stg.	Max. U.S.A. (a)	Min. U.S.A. (a)
Copper	\$489/15/-	\$391/5/-	\$355/-/-	\$263/-/-	46.0	40.0
Lead	\$140/5/-	\$130/7/6	\$117/5/-	\$109/12/6	16.0	16.0
Zinc	\$121/2/6	\$115/12/6	\$98/15/-	\$91/10/-	13.5	13.5
Tin	\$996/-/-	\$950/-/-	\$784/10/-	\$723/10/-	99.6	93.8

METAL PRICES AS AT 1st AUGUST, 1956.

	Australia	U.K., Stg.	U.S.A. (a)
Aluminium	(e) \$257/10/- per ton (d) \$250 per ton nom.	\$189 per ton	(f) \$23.50
Antimony	(i) \$325 per ton	(i) \$222½ per ton	(j) \$33.00
Bismuth	\$1/10/3 per lb.	16/- per lb.	\$2.25
Cadmium	14/3 per lb.	12/- per lb.	\$1.70
Cobalt	—	21/- per lb.	\$2.52
Copper	(b) \$369 per ton	\$300 per ton R.S.T. \$300 per ton (d)	(c) \$39.40
Gold, per fine oz.	\$15/12/6	\$12/8/-	\$35
Lead	\$139/10/-	\$115/17/6 per ton	16
Mercury	—	\$84½-85 per flask	\$258-260 per flask
Nickel	6/3½ per lb.	\$519 per ton	(g) \$63.00
Pig Iron	\$21/2/6 per ton	\$17/3/3 per ton	\$60½-63 per ton
Silver, per fine oz.	8/2½	6/6½	90.125 cents
Tin	(h) \$1,000/15/- per ton	\$778/10/- per ton	99.6
Zinc	\$119/5/- per ton (electro)	\$96/10/- per ton (a.o.b.)	13½ (Prime Western)

(a) Cents per lb. unless otherwise stated. (b) Price ex smelters, Port Kembla. (c) Domestic. (d) Foreign. (e) Domestic 1-20K ingots, c.i.f. & e. 99.5% c.i.f. capital cities. (f) Canadian price f.o.b. Toronto. (g) Canadian price f.o.b. Port Colborne. (h) 5 ton lots, f.o.b. Sydney. (i) 99.6% Sb. (j) 99.5% Sb.

ORE AND CONCENTRATE PRICES AS AT 1st AUGUST, 1956.

	Australia	U.K. Stg.	U.S.A.
Antimony	30/- per unit 60% Sb.	23/6-24/6 per unit 60% Sb.	\$3.85-4.15 per s. ton unit 60-65% Sb. Nom.
Beryl	(a) \$16/8/9 per unit min. 10% BeO, f.o.b.	255/- - 275/- per unit f.o.b. point of origin min. 10% BeO.	\$46-48 (Nom.) f.o.b., mine, domestic, c.i.f. Atlantic ports, foreign per s. ton unit 10-12% BeO \$40 (Nom.).
Bismuth	7/- per lb. metal content 65% concentrate	8/6 per lb. metal content 65% concentrate.	—
Chromium Ore	Nom.	\$16/15/- per ton, 48% metallurgical ore c.i.f.	Rhodesian ore long ton, f.o.b. cars New York, 48% Cr ₂ O ₃ , 3:1 ratio, \$45-46, 48% Cr ₂ O ₃ , no ratio \$33.35
Columbite-Tantalite	—	65% combined oxides c.i.f. 9/12½ ratio, 190/- - 205/- per unit. 4/1 ratio 160/- - 170/-	\$115-130 per lb. pentoxide.
Manganese Ore	Metallurgical Ore \$10 f.o.b. Geraldton. Battery Grade \$14/10/- per ton at rail, N.S.W. railway siding, for 75% MnO ₂ .	8/4 - 8/9 per unit 48-48% ore, c.i.f. European ports.	\$1.30 (nom.) per long ton unit 48-50% ore, c.i.f. U.S. ports.
Molybdenum Ore	Nom.	8/2½ per lb. metal c.i.f. 85% MoS ₂ cons.	\$1.10-1.15 per lb. contained Mo. f.o.b. mines.
Monazite cons.	Nom. About \$150 per ton f.o.b. 90-95% monazite cons.	—	Per lb. c.i.f. U.S. ports, total rare earths and ThO ₂ 55% 18 cents 66%, 20 cents.
Rutile	\$115-120 per ton, nom.	\$100-110 per ton 95-97% TiO ₂ cons. c.i.f. Nom.	10-15 cents per lb. of 94% TiO ₂ cons. f.o.b.
Ilmenite	—	\$84-91 per ton 52-54% TiO ₂ c.i.f.	\$25-28 per ton 59.5% TiO ₂ , f.o.b. Atlantic ports. Nom.
Tantalite	—	Nominal	Nominal
Tin	\$8½-9 per unit of contained metal delivered Sydney.	—	—
Tungsten	315/- - 320/- per unit f.o.b.	247/6 - 252/6 per unit, c.i.f.	(b) \$63 per s. ton unit. (c) \$34 (nom.) per s. ton unit.
Zircon	\$13-15 per ton 66-67% ZrO ₂ cons. f.o.b.	\$19-21 per ton c.i.f. 66-67% ZrO ₂ cons. c.i.f.	\$48-49 per long ton c.i.f. 65% ZrO ₂ cons.

(a) U.K. Ministry of Supply buying price.

(b) Domestic tungsten concentrates.

(c) Foreign tungsten concentrates.

Note: Some Australian ore prices are nominal and are subject to negotiation between the producer and purchaser.

The ore and concentrate prices quoted above will vary according to grade and, in many cases, to the size of the ore parcel.

Copper Ore.

Australia: Copper content of the ores is paid for at the prevailing price of refined copper less charges listed below.

Company	Draughtage Deduction or Copper Content Deduction.	Receiving, Sampling, Assaying & Smelting Charge per ton of ore	Converting, Refining, Realising Charge per unit of copper paid for.	Gold Refining Charge per oz. of gold paid for.	Silver Refining Charge per oz. of silver paid for.
E.R.S. (1)	1.3 unit of copper per ton of ore	£6/9/3	11/3½	14/10½	4/4½
Mt. Isa (2)	1.3 unit of copper per ton of ore	£4	14/-	No payment for gold and silver.	
Mt. Morgan . . . (3)	1% of weight of ore plus 1.3 units of copper per ton of ore	£5/5/-	16/-	17/-	5/-
(4)					

- (1) The Electrolytic Refining and Smelting Company of Australia Pty. Ltd., Port Kembla, N.S.W.
 (2) Mt. Isa Mines Ltd., Mt. Isa, Queensland.
 (3) Mt. Morgan Ltd., Mt. Morgan, Queensland.
 (4) Mt. Morgan gold and silver deductions:—Gold, deductions range from 1 dwt/ton for 10 dwt/ton and lower grade ore to 1 dwt/ton plus 5% of the balance for 120 dwt/ton and over ore; silver, 1 oz/ton plus 10% of the balance.

INDUSTRIAL MINERAL PRICES AS AT 1st AUGUST, 1956.**Asbestos.**

W.A. Crocidolite, export price, f.o.b. Fremantle.
 £98-110 according to quantity.

Barite (Ground).

£15-£42 per ton according to grade, f.o.b. Sydney.

Fluorspar.**Buying.**

90% CaF₂ f.o.b. Mungana, Queensland—£11/2/6 per ton.
 85% CaF₂ f.o.b. Mungana, Queensland—£9/17/6 per ton.

Selling.

90% CaF₂ delivered Sydney—26/15/- per ton.
 85% CaF₂ delivered Sydney—£25/10/- per ton.

Gypsum.**Selling.**

In bulk f.o.r. Conoble, N.S.W.—38/- per ton.

Mica.—Current price schedule obtainable on application to the Commonwealth Mica Pool, 339 Swanston Street, Melbourne.

Sillimanite.**Selling.**

£6/5/- f.o.r. Broken Hill.
 £11/4/6 f.o.r. Port Adelaide.

**Commonwealth Bureau of Census and Statistics,
 Canberra, Australia.**

**THE
 AUSTRALIAN MINERAL INDUSTRY**

VOL. 9 No. 1

PART 2 — QUARTERLY STATISTICS

QUARTER ENDED 31st MARCH, 1956

Prepared under instructions from the Right Honorable the Treasurer

by

S. R. CARVER

Acting Commonwealth Statistician.

PREFACE

Statistics included in this Part relate to Australian production and overseas trade of minerals and metals. In the main, the data relating to mineral production consist of official statistics of Mines Departments of the several States and of the Northern Territory Mines Branch. These statistics have been supplemented as necessary by data obtained from the Australian Mines and Metals Association (Inc.), and the Bureau of Mineral Resources, including information collected by that Bureau from mines and treatment plants.

The fundamental provision of the uniform plan evolved in 1950 for standardization of Australian mineral production statistics is that quantities and values of individual minerals produced should be reported in terms of the products in the form in which they are dispatched from the locality of each mine. This involves the inclusion in the mining industry of ore-dressing and 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 associated works in the locality of the mine.

The particulars of quantities of minerals produced shown in Table 5 have been compiled on this basis as far as practicable. This has involved some rearrangement of official statistics published by Mines Departments 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 dispatches from the mine (or sales) as distinct from production in deriving the total for Australia. In addition to the basic quantity data, particulars of contents of metallic minerals (and of contents or average grade of selected non-metallic minerals) have been shown in detail in Table 5 and in summary form in the case of metallic minerals in Table 6. In general, the particulars of content of metallic minerals 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 in Table 5 exclude construction materials (sand, gravel, building stone, etc.), and some non-metallic minerals for which relevant particulars are not at present available. In Table 6 particulars of producing States as well as totals for Australia are shown.

Principally because of time lags in treatment of a number of important metallic minerals, it has been found impracticable, under Australian conditions, to obtain satisfactory information as to the value of minerals produced, on a quarterly basis. Statistics of (i) value of individual minerals produced and (ii) value of output of the mining and quarrying industry are shown on an annual basis in other publications of this Bureau.

Where the unit "ton" is used in this Bulletin, it refers to the long ton of 2,240 lb.

All tables in this publication omit particulars relating to uranium bearing minerals.

I extend my thanks to State Departments of Mines, State Statisticians, the Bureau of Mineral Resources and others who have supplied information used for the preparation of this Bulletin.

S. R. CARVER,
Acting Commonwealth Statistician.

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SUMMARY

The following provides a summary of trends in the production and overseas trade of principal minerals and metals for Australia during the quarter ended 31st March, 1956, in comparison with earlier periods:—

(i) **Production of Minerals (Table 1):** The production of metals (i.e., metal contents of ores, concentrates and other minerals produced) during the quarter ended 31st March, 1956, was greater than the quarterly average of 1955 for rutile (TiO_2 content), copper, iron and tungstic oxide (WO_3), tin. Main increases were rutile (TiO_2 content) 19.6%, and copper 12.5%. Principal decreases were tin (21.6%), silver (16.8%), lead (15.1%).

Black coal recorded a decrease of 21.8% and brown coal 3.5% compared with the quarterly average of 1955.

Production of sulphur (i.e., sulphur content of zinc concentrate, lead concentrate and pyrite produced and of spent oxide roasted) was 5.0% greater than 1955 quarterly average. Prior to 1956 sulphur content of lead concentrate was not included.

(ii) **Smelter and Refinery Production of Metals (Table 2):** Production for the quarter ended 31st March, 1956, compared with the average quarterly production for 1955, showed increases for blister copper (39.8%), refined copper (7.3%), pig iron (12.3%), steel ingots (7.7%), and lead content of lead bullion (0.5%). Refined tin (25.3%) and refined silver (8.6%) showed the main decreases.

Compared with the quarterly average for 1939, production for the quarter ended 31st March, 1956, recorded increases in the case of blister copper (184.9%), steel ingots (102.5%), pig iron (82.8%), refined copper (69.0%), and refined zinc (41.7%). Principal decreases were refined gold (41.6%), refined tin (54.6%), and refined silver (25.3%).

(iii) **Overseas Trade in Principal Minerals and Metals (Table 3):** This table gives a brief summary of the overseas trade in principal minerals and metals for the year 1938-39, 1953, 1954, 1955, and the quarter ended 31st March, 1956. The particulars shown for metals represent total quantities of metal (in refined and unrefined form) entering into overseas trade. Detailed particulars for unrefined metallic minerals (ores, concentrates, etc.) and for refined metals in various forms are shown in tables 8 and 9.

(iv) **Summary of Production, Imports and Export of Principal Metals, Coal and Sulphur (Table 4):** This summary table presents data obtained from the detailed tables, in the form considered most suitable for covering all phases of statistics for the principal metals, coal and sulphur.

I. SUMMARY TABLES

TABLE 1: PRODUCTION OF PRINCIPAL MINERALS: AUSTRALIA.

Period	Contents of Metallic Minerals Produced.					
	Copper	Gold	Iron (a)	Lead	Rutile (TiO_2 Cont.)	Silver
Annual Totals	Tons	'000 fine oz.	'000 tons	Tons	Tons	'000 fine oz.
1939	20,560	1,845.7	1,543.0	280,003	707	15,320.1
1951	17,926	895.6	1,605.4	212,013	33,432	10,243.7
1952	18,578	980.4	1,883.1	228,196	36,861	11,278.4
1953	36,585	1,075.2	2,131.9	269,344	37,067	12,539.2
1954	40,857	1,117.7	2,274.3	284,862	43,011	13,827.0
1955	45,496	1,049.0	2,304.2	295,944	57,232	14,555.4
Quarterly Averages—						
1939	5,140	411.4	387.0	70,001	177	3,830.0
1951	4,481	223.9	401.4	53,003	8,358	2,560.9
1952	4,645	245.1	470.8	57,049	9,216	2,819.6
1953	9,146	268.8	533.0	67,336	9,275	3,134.8
1954	10,214	279.4	588.6	71,216	10,753	3,456.8
1955	11,063	262.2	576.1	73,263	14,308	3,522.0
Jan-Mar. '56	12,448	237.1	622.0	62,203	17,115	2,930.0
% Change	%	%	%	%	%	%
Jan-Mar. '56 on Quarterly Average						
1939	+142.2	-42.4	+60.7	-11.1	+9,569.5	-23.5
1955	+12.5	-9.6	+7.9	-15.1	+19.6	-16.8

Period	Contents of Metallic Minerals Produced				Quantity Produced	
	Sulphur (b)	Tin	Tungsten (WO_3 Content)	Zinc	Black Coal	Brown Coal
Annual Totals	Tons	Tons	Tons	Tons	'000 tons	'000 tons
1939	151,008	3,067	612	214,823	13,535.1	3,651.0
1951	183,126	1,359	1,112	189,227	17,608.4	7,836.1
1952	217,242	1,611	1,282	196,450	19,404.0	8,103.8
1953	225,197	1,553	1,406	239,324	18,410.8	8,257.3
1954	254,403	2,075	1,372	252,659	19,763.0	9,331.3
1955	267,183	2,017	1,482	256,564	19,274.8	10,112.2
Quarterly Averages—						
1939	37,752	767	153	53,706	3,383.8	912.8
1951	45,781	390	277	47,307	4,402.1	1,959.0
1952	54,311	403	321	49,113	4,851.0	2,026.0
1953	56,303	388	352	59,831	4,602.7	2,064.3
1954	63,601	519	349	63,165	4,940.4	2,332.8
1955	70,548	519	366	64,105	4,820.8	2,528.1
Jan-Mar. '56	74,060	407	377	60,973	3,770.6	2,438.7
% Change	%	%	%	%	%	%
Jan-Mar. '56 on Quarterly Average						
1939	+96.2	-46.9	+146.4	+13.5	+11.4	+167.2
1955	+5.0	-21.6	+3.0	-4.1	-21.8	-3.5

(a) Estimated. (b) Total sulphur content of zinc concentrates, lead concentrates, and pyrite and of spent oxide roasted.

TABLE 2: SMELTER AND REFINERY PRODUCTION OF PRINCIPAL METALS, AUSTRALIA.

(Excludes secondary recovery of metal (i.e. from scrap) unless otherwise stated).

Particulars	Copper (Bilister)	Copper (Refined)	Gold (Refined)	Lead (Refined)	Lead, Con- tent of Lead Bullion
	(a)	(b)	(c)	(d)	(e)
Annual Totals—	Tons	Tons	000 f. oz.	Tons	Tons
1939	18,375	17,827	(d)19,437	43,600	43,600
1951	15,241	15,543	1,029.6	31,800	31,800
1952	20,008	(e)18,603	1,247.8	156,639	37,700
1953	34,159	16,882	1,255.2	172,468	34,000
1954	38,047	29,287	1,253.4	200,409	38,146
1955	37,439	38,148	1,222.3	187,134	37,380
Quarterly Averages—					
1939	4,594	4,467	(d)505.3	(e)49,859	10,900
1951	3,810	3,386	257.4	41,440	7,980
1952	5,002	16,906	310.2	39,160	9,420
1953	8,540	4,171	313.8	43,117	8,510
1954	9,512	7,352	313.4	50,102	9,530
1955	9,360	7,037	305.6	46,784	9,346
Jan.-March, 1956 (f)	13,087	7,549	295.0	46,545	9,404
Percentage Change	%	%	%	%	%
Jan.-March, 1956 on Quar- terly Average—					
1939	+18.9	+69.0	-4.6	-6.6	-14.4
1955	+39.8	+7.3	-3.5	-0.5	+0.6

Particulars	Pig Iron	Steel Ingots	Silver (Refined)	Tin (Refined)	Zinc (Refined)
	(a)	(b)	(c)	(d)	(e)
Annual Totals—	000 tons	000 tons	000 f. oz.	Tons	Tons
1939	(f)1,104.6	(f)1,170.1	5,552.4	3,294	71,220
1951	1,325.1	1,462.8	8,872.8	1,459	77,010
1952	1,549.2	1,655.9	6,772.6	1,700	87,436
1953	1,842.4	2,043.1	5,595.4	1,443	90,178
1954	1,856.0	2,210.6	8,474.1	2,063	104,523
1955	1,797.5	2,209.6	17,817.6	2,004	101,090
Quarterly Averages—					
1939	(f)276.2	(f)292.5	2,388.1	824	17,800
1951	331.3	383.7	1,719.7	365	19,253
1952	387.3	405.5	1,693.2	475	21,860
1953	460.6	510.8	1,648.9	361	22,545
1954	464.0	552.7	2,118.3	516	26,131
1955	449.4	550.2	1,944.4	501	25,273
Jan.-March, 1956 (f)	504.8	592.4	1,944.4	374	25,237
Percentage Change	%	%	%	%	%
Jan.-March, 1956 on Quar- terly Average—					
1939	+82.8	+102.5	-2.3	-54.6	+4.7
1955	+12.3	+4.7	-8.6	-25.3	-0.1

(a) Excludes quantities refined from imported blister copper. (b) Includes quantities from gold-bearing minerals of overseas origin, see Table 17. (c) Lead content of lead bullion produced for export. (d) Year ended 31st December 1940. (e) Includes small quantities recovered from scrap. (f) Subject to revision. (g) Includes small quantities recovered from silver-bearing minerals of overseas origin. (h) Includes zinc dust produced for sale and for use in the zinc refining plant. (i) Includes zinc dust (i) Revised.

Note: Particulars of refined copper, lead, silver, tin and zinc in the above table were collected by the Bureau of Mineral Resources.

TABLE 3: IMPORTS AND EXPORTS OF PRINCIPAL MINERALS AND METALS, AUSTRALIA.

Particulars	Unit of Quantity	1938-39	1953	1954	1955	Jan.-Mar. 1956
IMPORTS.						
Metals (b)—			(a)	(a)		
Copper . .	ton	878	3,428	17,975	25,518	505
Gold . .	fine oz.	376,417	158,366	211,018	150,606	87,246
Iron & Steel						
(c) . .	ton	137,041	135,534	271,050	423,206	74,618
Lead . .	ton	110	—	—	76	—
Silver . .	'000 f. oz.	201	63	104	506	44
Tin . .	ton	39	623	—	—	97
Zinc (d) . .	ton	180	—	—	—	—
Coal (Black)	ton	86,970	22,200	3,040	4,026	—
Petroleum &						
Shale Oils	'000 gal.	602,761	1,491,846	1,781,308	2,285,834	681,476
Sulphur (e) .	ton	115,101	146,281	187,916	195,482	59,181
EXPORTS.						
Metals (b)—						
Copper . .	ton	3,057	12,334	12,586	12,510	413
Gold . .	fine oz.	2,012,972	1,224,659	578,963	1,151,819	1,293
Iron & Steel						
(c) . .	ton	187,767	425,589	107,794	74,010	7,630
Lead . .	ton	232,029	230,603	241,706	228,021	30,163
Silver . .	'000 f. oz.	14,266	10,750	12,283	11,240	1,475
Tin . .	ton	1,785	93	111	230	5
Zinc . .	ton	178,654	161,966	193,319	164,362	23,843
Coal (Black)	ton	382,085	376,779	376,774	202,062	44,150
Petroleum &						
Shale Oils	'000 gal.	1,313	4,617	18,525	84,517	46,371
Sulphur (g) .	ton	78,373	74,659	84,564	73,472	11,178

(a) Cleared for home consumption. (b) Ingots, rods, sheet, etc., plus content of ores, concentrates, etc.; excludes scrap. (c) Excludes iron ore; includes turnplates, tinplate and galvanized sheet. (d) Blocks, ingots. (e) Elemental sulphur. (f) Sulphur content of zinc concentrate and lead concentrate exported as from 1st January, 1956. Earlier figures exclude content of lead concentrate.

TABLE 4: SUMMARY OF PRODUCTION, IMPORTS AND EXPORTS OF PRINCIPAL METALS, COAL AND SULPHUR: AUSTRALIA.

(Note: Particulars of production of refined metals exclude secondary recovery of metal (i.e. from scrap) unless otherwise stated).

Item	1939	1953	1954	1955	Jan.-Mar. 1956(a)
COPPER (Tons)					
Copper Content of Minerals Produced	20,560	36,585	40,857	45,496	12,448
Production of Blister Copper	18,375	34,159	38,047	37,439	13,087
Production of Refined Copper (b)	17,867	16,682	29,287	28,148	7,545
Imports (c)—					
Blister (copper content)	(d)	(d)	496	—	—
Ingot, etc. (refined)	(e)72	1,666	14,409	21,303	—
Rods, Bars, Sheets, Tubes etc.	(e)806	1,762	3,070	4,215	505
Exports—					
Blister (copper content)	(d)	(d)	9,711	8,077	—
Ingot, etc. (refined)	(e)16	9,906	14	2	—
Rolled, Drawn and Extruded Shapes (excluding wire)	(e)150	1,330	392	468	37
Copper in all concentrates, etc.	(e)2,891	1,098	2,469	3,963	376
GOLD (Fine oz.)					
Gold Content of Minerals Produced	1,645,697	1,075,181	1,117,742	1,049,011	237,145
Production of Refined Gold					
Australian Origin	(f)1,637,031	1,052,779	1,063,457	1,054,714	253,605
Overseas Origin	(f)384,223	202,405	189,913	167,547	41,357
Total Refined Gold	2,021,254	1,255,184	1,253,370	1,222,261	294,962
Imports (e)—					
Bar, Dust, Ingot, Sheet in matte (gold content)	(e)376,417	158,366	211,018	150,606	87,246
Exports—					
Ores, Concentrates (gold content)	(e)42,732	20,141	10,281	(i)15,244	616
Bar, Dust, Ingot, in matte, etc. (gold content)	(e)1,970,240	1,204,518	568,732	1,136,875	477
Change in Stock of Gold in Australia (g)	(e)+15,840	+8,888	+749,797	+47,798	+323,098
IRON AND STEEL (Tons)					
Iron Content of Ore Produced (h)	1,548,031	2,131,865	2,274,330	2,304,165	622,032
Production of Pig Iron	(i)1,104,605	1,842,408	1,856,013	(i)1,797,593	504,757
Production of Ingot Steel	(i)1,170,103	2,043,123	2,210,611	(i)2,200,555	592,448
Imports (c)—					
Iron Ore	(e)51	1	17	32	—
Pig Iron	(e)51	—	—	—	—
Iron and Steel—					
Ingot, Blooms, Billets	(e)4,390	227	424	728	345
Bars, Rods, Plates, Sheets, etc. (k)	(e)132,600	135,307	270,626	422,478	74,265
Exports—					
Iron Ore	(e)132,163	—	—	—	—
Pig Iron	(e)52,321	211,216	33,798	44,892	1,842
Iron and Steel—					
Ingot, Blooms, Billets	(e)17,656	161,678	26,561	211	13
Bar, Rod	(e)104,714	25,077	20,541	9,729	1,188
Plate, Sheet (excl. galvanized)	(e)11,471	14,397	14,957	11,936	3,016
Plate, Sheet (galvanized)	(e)1,605	13,221	11,997	242	1,571

(a) Subject to revision. (b) Excludes quantities refined from imported blister. (c) Cleared for home consumption; total imports as from 1st January, 1955. (d) Included with roughs, etc. (refined) prior to 1st July, 1953. (e) Year ended 30th June. (f) Year ended 31st December, 1940. (g) Excludes gold specie; includes gold content of minerals awaiting refining. (h) Estimated. (i) Year ended 31st May, 1939. (j) Not available. (k) Includes terneplate, tinplate, galvanized sheet. (l) Revised.

TABLE 4: SUMMARY OF PRODUCTION, IMPORTS AND EXPORTS, ETC.—(Continued).

Item	1939	1953	1954	1955	Jan.-Mar. 1956(a)
LEAD (Tons)					
Lead content of Minerals Produced	280,003	269,344	284,862	295,944	62,203
Production of Refined Lead	(b)199,437	172,468	200,409	(c)187,134	46,545
Production of Lead Bullion (d) (lead content)	43,955	34,050	38,146	37,392	9,404
Imports (e)—					
Pig, other unwrought shapes, Sheet, Pipe	(f)110	—	—	—	—
Exports—					
Ores, Concentrates (lead content)	(f)26,410	39,864	45,261	43,830	3,814
Lead Bullion (lead content)	(f)204,999	42,043	35,894	38,231	1,756
Refined Lead	(g)	148,433	159,328	145,674	24,584
Pigs, etc.	(f)620	263	1,224	86	9
Sheet, Pipe, etc.					
RUTILE (TiO₂ Content) (Tons)					
Concentrates Produced (TiO ₂ content)	707	37,067	43,011	57,232	11,241
Imports (e)—					
Concentrates (TiO ₂ content)	—	—	—	—	—
Exports—					
Concentrates (TiO ₂ content)	(h)	(i)35,174	(i)42,267	(i)57,208	(i)1,670
SILVER (Fine oz.)					
Silver content of Minerals Produced	15,320,116	12,539,152	13,827,038	14,555,412	2,929,956
Production of Refined Silver (j)	9,552,411	6,595,440	8,474,087	(c)7,817,587	1,785,088
Imports (e)—					
Bar, Ingots, etc.	(f)200,568	63,224	103,818	75,871	43,993
Exports—					
Ores and Concentrates (silver content)	(f)1,840,159	2,204,790	1,943,150	1,907,303	160,790
Silver-Lead Bullion	(f)3,000,000	3,382,302	2,908,845	3,318,541	159,120
Bar, Ingots, Sheets, etc.	(f)9,426,059	5,162,656	7,431,170	6,014,099	1,155,407
TIN (Tons)					
Tin content of Minerals Produced	3,067	1,553	2,075	2,017	407
Production of Refined Tin	3,294	1,443	2,063	2,004	374
Imports (e)	(f)39	623	571	506	97
Exports—					
Ores, Concentrates (tin content)	(f)309	12	19	132	1
Ingots	(f)1,476	81	94	98	4

(a) Subject to revision. (b) Includes small quantities recovered from scrap. (c) Revised. (d) Exported as lead bullion. (e) Cleared for home consumption; total imports as from 1st January, 1955. (f) Year ended 30th June. (g) Included with lead bullion. (h) Not available. (i) Estimated. (j) Includes small quantities recovered from imported materials.

TABLE 4: SUMMARY OF PRODUCTION, IMPORTS AND EXPORTS, ETC.—
(Continued).

Item	1939	1953	1954	1955	Jan.-Mar. 1956(a)
TUNGSTEN (WO₃ Content) (Tons)					
WO ₃ Content of Minerals Produced					
In Wolfram cons. (b)	452	678	511	522	146
In Scheelite cons. . .	160	728	861	960	231
Total WO ₃ content . .	612	1,406	1,372	1,482	377
Imports (c)—					
Cons (WO ₃ content) . .	—	—	—	—	—
Exports—					
Wolfram concentrates (WO ₃ content)	(d)(e)610	(e)834	537	605	137
Scheelite concentrates (WO ₃ content)	(d)(e)75	(e)689	755	886	208
ZINC (Tons).					
Zinc Content of Minerals Produced	214,823	239,324	252,659	256,564	60,973
Production of Refined Zinc (f)	71,220	90,178	104,523	101,090	25,237
Imports (c)—					
Blocks, Ingots	(d)160	—	—	—	—
Exports—					
All Concentrates (zinc content)	(d)134,017	122,272	151,313	128,256	17,863
Ingots, Blocks	(d)44,617	36,938	38,262	33,902	5,425
Plates, Sheets, etc.	20	2,757	3,744	2,204	555
COAL (Tons).					
Production—					
Black Coal					
Semi-anthracite	72,227	81,909	73,621	83,864	18,721
Bituminous	12,809,284	16,764,287	17,848,220	17,608,498	3,427,348
Sub-bituminous	653,631	1,564,649	(g)1,841,198	1,582,388	324,553
Total, Black	13,535,142	18,410,845	(g)19,763,039	19,274,750	3,770,622
Underground	13,492,057	15,271,869	16,773,244	16,959,182	3,353,726
Open-cut	43,085	3,138,976	(g)2,989,795	2,315,568	416,896
Brown Coal (incl. lignite (h))	3,651,014	8,257,299	9,331,255	10,112,206	2,438,738
Imports (c)—					
Black Coal	(d)86,970	22,200	3,040	4,026	—
Exports—					
Black Coal	(d)382,085	376,779	376,774	202,062	44,150
SULPHUR (Tons).					
Sulphur content of Materials produced—					
Zinc concentrates	123,968	141,954	152,074	155,836	36,664
Lead concentrate (e)	(i) 27,040	(i) 77,811	(i) 97,649	105,836	18,253
Pyrites	(i) 27,040	(e)15,432	(e)14,680	5,511	1,781
Spent Oxide Roasted	151,008	225,197	254,403	267,183	74,600
Total, Sulphur content	129,709	195,471	221,265	232,552	57,940
Recoverable Sulphur	(d)484,493	671,471	778,008	895,765	236,700
Production of Mono Acid Sulphur in Mono Acid produced from—					
Sulphur (elemental) (k)	(e)114,500	123,469	154,337	187,015	45,127
Zinc concentrate	25,300	31,270	33,564	30,412	7,004
Lead concentrate (e)	—	—	—	—	3,217
Pyrite (e)	27,040	60,811	62,533	71,179	20,609
Spent Oxide (e)	(h) —	3,973	3,973	4,295	1,448
Total	166,840	219,523	254,407	292,901	77,405
Imports (c)—					
Sulphur (elemental)	(d)115,101	146,281	187,916	195,482	59,181
Exports—					
Sulphur content of—					
Zinc concentrate (e)	(d)78,373	74,659	84,564	73,472	10,078
Lead concentrate (e)	(i) —	(i) —	(i) —	(i) —	1,100

(a) Subject to revision. (b) Includes bismuth-wolfram and tin-wolfram concentrates. (c) Cleared for home consumption; total imports as from 1st January, 1955. (d) Year ended 30th June. (e) Estimated. (f) Includes zinc dust produced for sale and for use in zinc refining plant. (g) Revised (h) All open cut. (i) Not recorded; sulphuric acid not produced from lead concentrate in Australia prior to 1956. (j) Not available. (k) All imported.

II. DETAILED TABLES

TABLE 5: QUANTITIES AND CONTENTS (OR GRADE) OF MINERALS
PRODUCED: AUSTRALIA.

Mineral	Unit of Quantity	1953	1954	1955(a)	Jan.-Mar. 1956(b)
METALLIC MINERALS					
Antimony Ore & Concentrate	ton	450	222	650	109
Antimony content	ton	213	117	307	61
Gold content	fine oz.	—	2	—	—
Bauxite	ton	4,052	5,487	7,563	1,368
Al ₂ O ₃ content	ton	1,628	2,440	3,396	589
Beryllium Ore	ton	125	149	206	4
BeO content	unit	1,507	1,723	2,428	45
Bismuth Concentrate	lb.	5,173	3,926	—	—
Bismuth content	lb.	883	1,393	—	—
WO ₃ content	ton	1	—	—	—
Silver content	f. oz.	—	—	—	—
Gold content	f. oz.	—	—	—	—
Chromite	ton	2,741	4,943	—	—
Cr ₂ O ₃ content	ton	1,131	2,094	—	—
Copper Ore, Concentrate, etc.	ton	170,076	194,269	211,651	57,764
Copper content	ton	33,007	37,041	41,674	11,518
Gold content	f. oz.	87,739	97,202	68,980	15,597
Silver content	f. oz.	853,126	1,069,600	854,722	224,459
Cadmium content	ton	1	—	—	—
Lead content	ton	1,744	2,845	2,171	561
Zinc content	ton	869	—	—	—
Gold Ore & Concentrate	ton	518	102	171	5
Gold content	f. oz.	1,337	324	543	24
Silver content	f. oz.	1,010	357	433	12
Copper content	ton	1	(c)	(c)	(c)
Gold Matte, Slag, etc.	ton	—	—	—	—
Gold content	f. oz.	—	—	—	—
Silver content	f. oz.	—	—	—	—
Copper content	ton	—	—	—	—
Gold — other forms	oz.	(d)	(d)	(d)	(d)
Gold content	f. oz.	972,466	1,006,842	966,081	218,403
Silver content	f. oz.	240,880	245,334	210,899	53,007
Ilmenite Concentrate	ton	—	469	535	—
Ilmenite content	ton	—	446	509	—
Iron Ore	ton	3,298,718	3,518,804	3,572,609	961,339
Iron content	ton	(e)2,131,865	(e)2,274,330	(e)2,304,165	(e)622,032
Iron Oxide—					
For Gas purification	ton	5,267	3,512	5,328	510
For Fluxing and other purposes	ton	6,182	8,251	7,583	1,525
Lead Ore, Concentrate, etc.	ton	428,310	454,631	508,424	104,539
Lead content	ton	262,623	276,675	287,058	59,983
Silver content	f. oz.	10,836,463	11,868,083	12,878,341	2,505,250
Gold content	f. oz.	9,608	9,307	9,556	2,226
Antimony content	ton	578	614	615	125
Copper content	ton	3,037	3,241	3,224	799
Cadmium content	ton	71	67	69	15
Sulphur content	ton	(f)	(f)	(f)	(e)17,362
Zinc content	ton	1,435	74	—	—
Manganese Ore—					
Metallurgical Grade	ton	31,515	27,335	45,344	4,328
Manganese content	ton	14,634	12,718	20,462	1,865
Battery Grade	ton	1,205	867	550	59
MnO ₂ content	ton	937	644	403	42
Other Grades	ton	223	—	1,462	186
MnO ₂ content	ton	157	—	975	124
Molybdenite Concentrate	lb.	4,816	1,904	6,328	—
MoS ₂ content	lb.	4,094	1,620	(e)5,378	—

Footnotes: See end of Table.

TABLE 5: QUANTITIES AND CONTENTS (OR GRADE) OF MINERALS
PRODUCED: AUSTRALIA (continued).

Mineral	Unit of Quantity	1953	1954	1955(a)	Jan. Mar. 1956(b)
METALLIC MINERALS (continued).					
Monazite Concentrate	ton	197	79	164	25
Monazite content	ton	182	71	149	22
Osmiridium—Native	oz.	59	16	21	10
Platinum Concentrate	oz.	—	32	8	—
Platinum content	oz.	—	23	7	—
Palladium content	oz.	—	—	—	—
Osmiridium content	oz.	—	2	—	—
Gold content	oz.	—	—	(c)	—
Pyritic Ore & Concentrate	ton	167,007	206,778	223,945	54,804
Sulphur content	ton	77,811	97,649	105,836	26,103
Rutile Concentrate	ton	38,039	44,659	59,613	17,782
TiO ₂ content	ton	37,067	43,011	57,232	17,115
Silver Ore	ton	(a)1	—	—	—
Silver content	f. oz.	8,160	—	—	—
Gold content	f. oz.	1	—	—	—
Tantalite-Columbite Concentrate	lb.	18,124	117,767	27,139	15,718
Ta ₂ O ₅ & Nb ₂ O ₅ content	lb.	13,304	60,348	15,454	9,999
Tin Concentrate (h)	ton	2,223	2,975	2,890	585
Tin content	ton	1,553	2,075	2,017	407
Gold content	f. oz.	416	481	404	53
WO ₃ content	ton	—	(c)	(c)	—
Tungsten Concentrates—					
Scheelite Concentrate (i)	ton	1,185	1,331	1,449	348
WO ₃ content	ton	729	861	960	231
Wolfram Concentrate	ton	1,008	722	788	238
WO ₃ content	ton	672	511	522	146
Zinc Ore & Concentrate	ton	452,988	483,744	492,549	115,506
Zinc content	ton	237,020	252,585	256,564	60,973
Lead content	ton	4,977	5,342	6,715	1,659
Silver content	f. oz.	599,513	643,664	610,117	147,228
Gold content	f. oz.	3,614	3,582	3,447	842
Copper content	ton	540	575	598	131
Sulphur content	ton	141,954	152,074	155,836	36,664
Cadmium content	ton	734	836	775	182
Cobalt content	ton	53	69	61	16
Manganese content	ton	4,135	4,586	4,643	1,052
Zircon Concentrate	ton	27,207	41,453	48,683	16,008
Zircon content	ton	26,858	40,920	48,219	15,805

FUEL MINERALS.

Coal, Black—					
Semi-anthracite	ton	81,909	73,621	83,864	18,721
Bituminous	ton	16,764,287	17,848,220	17,608,498	3,427,348
Sub-bituminous	ton	1,564,649	1,841,198	1,582,388	324,553
Total, Black Coal	ton	18,410,845	19,763,039	19,274,750	3,770,622
Coal, Brown (incl. Lignite)	ton	8,257,299	9,331,255	10,112,206	2,438,738
Oil (Petroleum)—Crude	gal.	—	—	—	—
Shale—Oil-bearing	ton	—	—	—	—
Crude Oil content	gal.	—	—	—	—

NON-METALLIC (excl. Fuel) MINERALS.

Alunite	ton	—	—	—	—
Potash content	ton	—	—	—	—
Asbestos—					
Chrysotile—Fibre	ton	1,175	919	865	117
Fines	ton	—	—	—	—
Crocidolite—Fibre	ton	3,795	3,794	4,487	1,227
Barite	ton	5,677	6,872	6,264	1,358
Clays—					
Bentonite	ton	219	1,122	647	483
Bentonitic Clay	ton	282	189	138	41
Brick Clay & Shale	ton	(a)3,054,010	3,518,819	3,556,118	775,923

Footnotes: See end of Table.

TABLE 5: QUANTITIES AND CONTENTS (OR GRADE) OF MINERALS
PRODUCED: AUSTRALIA (continued).

Mineral	Unit of Quantity	1953	1954	1955(a)	Jan. Mar. 1956(b)
NON-METALLIC (excl. Fuel) MINERALS (continued).					
Cement Clay & Shale	ton	135,286	146,703	156,871	(i)6,767
Demouritic Clay	ton	445	514	436	(d)
Fireclay n.e.l.	ton	142,796	127,131	119,846	(i)15,622
Fuller's Earth	ton	106	73	71	14
Kaolin (incl. Ball Clay)	ton	39,722	41,253	45,054	(i)4,326
Stoneware Clay	ton	71,912	110,852	183,809	(d)
Tile Clay	ton	150,537	150,184	142,945	(d)
Other Clays	ton	312,895	138,091	117,804	(i)33,268
Corundum	ton	—	—	—	9
Cupreous Ore & Concentrate					
For Fertilizer	ton	1,958	4,766	7,731	907
Average grade	% Cu.	9	8	9	9
Diamonds, Industrial	carat	736	1,564	731	270
Diatomite	ton	4,440	5,439	5,042	1,173
Emerald	ton	99,642	127,994	111,417	31,932
Felspar (inc. Cornish Stone)	ton	6,883	16,384	20,833	4,134
Fluorite	ton	333	19	282	23
Average grade	% CaF ₂	74	(b)70	72	85
Garnet Concentrate	ton	35	—	—	—
Gems—					
Opal	Value only	84,739	46,426	46,875	(d)
Sapphire	(£A)	—	636	3,412	(d)
Other	(£A)	—	313	—	—
Glaucanite	ton	320	258	197	24
Graphite—					
Flake	ton	2	—	(e)22	(d)
Average grade	% Carb.	(d)	—	(e)85	(d)
Amorphous	ton	13	70	—	(d)
Average grade	% Carb.	40	(b)40	—	(d)
Gypsum	ton	329,992	439,716	470,014	110,500
Limestone (inc. Shell and Coral)	ton	(i)3,077,560	(i)3,459,354	(i)3,997,696	(i)940,286
Magnesite					
Crude	ton	46,397	43,152	57,674	11,577
Mica—					
Muscovite—Trimmed	lb.	70,684	84,619	56,649	513
Crude & Film	lb.	1,542	—	—	—
Scrap	lb.	—	80,864	20,160	—
Mineral Pigments—					
Red Ochre	ton	433	435	351	—
Yellow Ochre	ton	147	161	57	48
Other	ton	16	16	—	—
Pebbles for grinding	ton	607	624	791	103
Petalite	ton	—	15	—	—
Li ₂ O Content	unit	—	62	—	—
Phosphate Rock	ton	3,368	6,120	6,371	—
Pyrophyllite	ton	129	184	266	48
Quartz Crystals	lb.	—	—	—	—
Salt	ton	(e)310,000	(e)380,000	(e)370,000	(d)
Serpentine	ton	395	758	927	146
For Refractories					
Silica (Glass, Chemical, etc.)	ton	142,446	133,958	139,551	(i)3,905
Sillimanite	ton	3,557	2,337	2,679	357
Slate	ton	300	204	369	30
Spodumene	ton	—	—	—	—
Li ₂ O Content	unit	—	—	4	—
Talc (inc. Steatite)	ton	9,806	12,940	12,567	3,143
Vermiculite	ton	29	—	—	—
Zinciferous Ore—for Fertilizer	ton	10	—	—	—
Average grade	% Zn.	10	—	—	—

(a) Revised. (b) Subject to revision. (c) Less than half. (d) Not available. (e) Estimated. (f) Not recorded prior to 1956. (g) Includes silver sludge. (h) Includes tin-wolfram concentrates. (i) Includes scheelite-wolfram concentrate. (j) Incomplete.

TABLE 6: PRINCIPAL CONTENTS OF METALLIC MINERALS, AND QUANTITY OF COAL PRODUCED: STATES AND AUSTRALIA.

Content and States	Unit of Quantity	1953	1954	1955(a)	Jan-Mar 1956(b)
CONTENTS OF METALLIC MINERALS PRODUCED.					
Antimony	ton	791	731	922	186
New South Wales		617	697	850	185
Victoria		2	3	3	1
Queensland		8	8	10	—
Western Australia		164	23	59	—
Tasmania		—	—	—	—
Copper	ton	36,585	40,857	45,496	12,448
New South Wales		3,626	3,182	3,492	877
Queensland		23,955	27,207	30,738	8,826
South Australia		—	(c)	—	—
Western Australia		15	—	3	10
Tasmania		8,902	9,880	8,394	1,705
Northern Territory		86	588	2,869	1,030
Gold	'000 f. oz	1,075.2	1,117.7	1,049.0	237.1
New South Wales		26.5	31.4	38.0	7.2
Victoria		63.9	52.7	38.0	7.2
Queensland		91.9	97.9	64.3	15.4
South Australia		0.4	0.0	0.0	—
Western Australia		923.1	862.0	834.3	188.1
Tasmania		17.0	19.4	16.9	3.4
Northern Territory		52.4	54.3	65.4	15.8
Iron (d)	'000 tons	2,131.9	2,274.3	2,304.2	622.0
New South Wales		1,684.4	1,863.6	1,978.6	550.6
Western Australia		447.5	410.7	325.6	71.4
Lead	ton	269,344	284,852	295,944	62,203
New South Wales		217,574	230,392	234,854	49,901
Queensland		37,012	41,424	48,814	8,452
South Australia		20	14	2	3
Western Australia		4,700	1,497	1,007	978
Tasmania		10,038	11,533	11,267	2,869
Northern Territory		—	2	—	—
Rutile	tons TiO ₂	37,067	43,011	57,232	17,115
New South Wales		21,223	21,872	33,034	11,241
Queensland		15,844	21,139	24,198	5,874
Silver	'000 f. oz	12,539.2	13,827.0	14,555.4	2,930.0
New South Wales		8,069.0	8,680.1	8,823.2	1,856.4
Victoria		6.3	3.4	1.6	0.5
Queensland		2,980.7	3,583.8	4,363.4	726.6
South Australia		0.7	0.6	0.1	0.1
Western Australia		241.6	237.6	200.8	49.8
Tasmania		1,240.6	1,321.4	1,166.3	296.6
Northern Territory		0.3	0.1	—	—
Sulphur (e)	ton	219,765	249,723	261,672	80,129
New South Wales		124,794	127,648	140,120	42,073
Queensland		27,555	53,368	47,515	14,050
South Australia		—	—	13,790	7,850
Western Australia		25,571	24,458	22,004	5,166
Tasmania		41,845	44,249	38,243	10,990
Northern Territory		1,553	2,075	2,017	407
Tin	ton	—	—	—	59
New South Wales		342	272	25	—
Victoria		31	25	2	—
Queensland		292	730	770	129
Western Australia		76	80	119	56
Tasmania		788	947	853	163
Northern Territory		24	20	3	—

Footnotes: See end of Table.

TABLE 6: PRINCIPAL CONTENTS OF METALLIC MINERALS, AND QUANTITY OF COAL PRODUCED: STATES AND AUSTRALIA (continued).

Content and States	Unit of Quantity	1953	1954	1955(a)	Jan-Mar 1956(b)
CONTENTS OF METALLIC MINERALS PRODUCED (continued).					
Tungsten (in terms of WO₃)	ton	1,406	1,372	1,482	377
New South Wales		57	8	8	1
Victoria		—	—	—	—
Queensland		126	38	51	3
Western Australia		4	3	5	—
Tasmania		1,052	1,272	1,337	341
Northern Territory		157	51	61	32
Zinc	ton	239,324	252,659	256,564	60,973
New South Wales		189,526	202,646	211,478	50,425
Queensland		19,961	19,515	17,138	3,520
Western Australia		68	74	—	—
Tasmania		29,769	30,324	27,948	7,028

QUANTITY OF COAL PRODUCED					
Coal, Black	'000 tons	18,410.8	(a) 19,763.0	19,274.8	3,770.6
Semi-anthracite	'000 tons	81.9	73.6	83.9	18.7
New South Wales		—	—	1.7	0.1
Queensland		81.0	72.4	80.4	18.2
Tasmania		0.9	1.2	1.8	0.4
Bituminous	'000 tons	16,764.3	17,848.2	17,608.5	3,427.3
New South Wales		14,164.6	15,065.0	14,716.4	2,838.4
Victoria		151.9	141.3	132.9	25.6
Queensland		2,215.1	2,377.9	2,459.7	499.1
Tasmania		232.7	263.0	297.5	64.2
Sub-bituminous	'000 tons	1,564.6	(a) 1,841.2	1,582.4	324.6
New South Wales		9.2	17.3	16.3	3.9
Queensland		220.7	310.5	207.0	38.1
South Australia		448.5	(a) 495.1	455.3	117.4
Western Australia		866.2	1,018.3	903.8	165.2
Coal, Brown	'000 tons	8,257.3	9,331.3	10,112.2	2,438.7
Victoria		8,257.3	9,331.3	10,112.2	2,438.7

(a) Revised. (b) Subject to revision. (c) Less than half. (d) Estimated. (e) For particulars of sulphur from spent oxide recovered in acid manufacture, see Table 4.

TABLE 7: SMELTER AND REFINERY PRODUCTION OF PRINCIPAL METALS, AUSTRALIA.

(Note: Particulars in Table exclude secondary recovery of metal (i.e., from scrap) unless otherwise stated).

Period	Copper (Blister)	Copper (Refined) (a)	Gold (Refined)			Silver (Refined) (b)
			Australian Origin	Overseas Origin	Total	
	Tons	Tons	Fine oz.	Fine oz.	Fine oz.	Fine oz.
1939	18,375	17,867	(c) 1,637,031	(c) 384,223	(c) 2,021,254	9,552,411
1951	15,241	13,543	850,236	179,344	1,029,580	6,878,832
1952	20,008	(d) 19,623	978,956	261,834	1,240,790	6,772,624
1953	34,159	16,682	1,052,779	202,405	1,255,184	6,595,440
1954	38,047	29,287	1,063,457	189,913	1,253,370	8,474,087
1955 Jan.	1,694	2,046	84,392	13,991	98,383	697,234
Feb.	2,947	2,786	80,204	11,345	91,539	527,051
Mar.	3,948	1,468	100,396	20,847	121,243	806,698
Apr.	3,426	1,906	78,770	11,515	90,285	574,718
May	3,796	2,539	86,199	22,610	108,809	552,149
June	3,489	4,002	64,087	13,344	97,431	528,339
July	3,235	3,296	123,985	14,243	138,228	(e) 773,674
Aug.	4,157	2,786	88,043	8,311	96,354	(e) 585,730
Sept.	2,968	2,172	80,866	12,597	93,463	(e) 756,107
Oct.	2,853	1,807	85,635	17,947	103,582	(e) 835,884
Nov.	3,853	1,814	78,799	9,936	88,735	(e) 565,476
Dec.	1,073	1,526	83,338	10,871	94,209	(e) 614,527
Year	37,439	28,148	1,054,714	167,547	1,222,261	(e) 7,817,587
1956 (f)						
Jan.	3,799	1,936	99,016	12,783	111,799	473,532
Feb.	3,915	2,578	75,969	12,442	88,411	547,530
Mar.	5,373	3,035	78,620	16,132	94,752	764,026
Jan.-Mar.	13,087	7,549	253,605	41,357	294,962	1,785,088

Period	Tin (Refined)	Pig Iron	Steel Ingots	Lead (Refined)	Lead Content of Lead Bullion (g)	Zinc (Refined) (h)
	Tons	Tons	Tons	Tons	Tons	Tons
1939	3,294	(i) 1,104,605	(i) 1,170,103	(d) 199,437	43,955	71,228
1951	1,459	1,325,145	1,462,751	185,758	31,872	77,016
1952	1,700	1,549,157	1,625,940	156,639	37,709	87,438
1953	1,443	1,842,408	2,043,123	172,468	34,050	90,178
1954	2,063	1,856,013	2,210,611	200,409	38,146	104,523
1955 Jan.	75	(e) 159,439	173,607	14,888	3,734	8,763
Feb.	165	(e) 137,934	156,315	11,677	3,128	7,820
Mar.	145	(e) 157,366	182,235	14,145	3,158	8,197
Apr.	123	(e) 137,999	158,111	18,399	3,565	7,058
May	223	(e) 147,406	189,979	18,403	3,426	7,573
June	228	141,781	178,644	14,512	3,426	8,156
July	149	157,713	195,811	14,058	3,629	8,793
Aug.	228	145,256	197,692	17,569	3,649	8,994
Sept.	207	136,736	189,073	17,366	3,356	8,804
Oct.	142	147,654	(e) 194,187	16,725	3,332	9,023
Nov.	130	162,124	192,207	14,708	2,602	8,872
Dec.	169	166,135	192,686	(e) 14,674	387	9,037
Year	2,004	(e) 1,797,533	(e) 2,200,555	(e) 187,134	37,392	101,090
1956 (f)						
Jan.	47	169,306	197,464	17,550	3,441	8,665
Feb.	163	163,241	192,733	14,487	2,855	8,028
Mar.	164	172,210	202,252	14,508	3,108	8,527
Jan.-Mar.	374	504,757	592,449	46,545	9,404	25,237

(a) Excludes quantities refined from imported blister copper. (b) Includes small quantities recovered from imported materials. (c) Year ended 31st December, 1940. (d) Includes small quantity recovered from scrap. (e) Revised. (f) Subject to revision. (g) Exports as lead bullion; lead content 99.3 per cent. (h) Includes zinc dust produced for sale and for use in zinc refining plant. (i) Year ended 31st May, 1939.

Note: Particulars of refined copper, lead, silver, tin and zinc in the above table were collected by the Bureau of Mineral Resources.

TABLE 8: IMPORTS (a) OF MINERALS, MINERAL PRODUCTS AND METALS, AUSTRALIA.

Name and Country of Origin	Unit of Quantity	METALLIC GROUP			
		1953	1954	1955	1956(b) Jan.-Mar.
Aluminium—					
Ore (Bauxite)	ton	(c)	(c)	19,287	9,261
Ingot (Refined)	ton	7,525	10,421	14,861	2,958
Canada		3,757	6,516	10,617	1,834
Other		3,768	3,905	4,244	1,124
Rods, Bars	ton	180	96	336	2
Plates, Sheets, Foil, Tubes	ton	2,824	3,718	5,021	1,077
United Kingdom		2,649	3,063	4,183	948
Other		175	685	838	129
Scrap (inc. remelt)	ton	2	5	42	—
Antimony—					
Ore and Concentrates	ton	596	1,023	872	104
Metal	ton	15	(d) 101	(d) 368	(d) 6
Asbestos-Trioxide	ton	2,145	2,648	3,492	791
Smelted Metal	lb.	36,509	44,449	35,975	1,422
Chromium—					
Ore and Concentrates	ton	4,080	5,282	9,582	(c)
Copper—					
Ore and Concentrates	ton	19	30	21	7
Blister	ton	(e)	500	—	—
Plas. Ingots, etc. (refined)	ton	1,666	14,409	21,303	—
Belgian Congo		1,500	—	—	—
Rhodesia and Nyasaland		—	5,458	4,032	—
Other		166	8,951	17,271	—
Bars, Rods	ton	828	1,867	2,942	210
Plates, Sheets, Strip	ton	861	1,122	1,156	289
Pipes, Tubes	ton	73	81	117	6
Scrap (inc. remelt)	ton	6	36	10	2
Gold—					
Refined Ingot or Bar	fine oz.	—	—	—	—
Refined or Standard	fine oz.	—	(c)	—	—
Sheet, etc.		—	—	—	—
Unrefined Gold or Silver					
Bullion (Gold content)	fine oz.	158,366	211,018	150,479	97,246
New Guinea		83,315	98,775	64,950	39,519
Other		75,051	112,243	85,529	47,727
In Matte (gold content)	fine oz.	—	—	127	—
Minerals	ton	(f)	14,054	9,146	8,346
Iron and Steel—					
Iron Ore	ton	1	17	32	—
Pig	ton	—	—	—	—
Permanganese	ton	111	1,517	5,630	413
Ingots and Billets (high grade Carbon & Alloy Steels)	ton	21	306	557	30
Ingots & Billets (other)	ton	206	118	171	319
Bars & Rods (stainless)	ton	725	409	462	73
Bars & Rods (other)	ton	8,430	21,491	110,715	16,999
United Kingdom		6,156	18,749	37,283	5,907
Other		2,274	2,742	73,432	11,092
Sheet, Galvanized	ton	9,217	51,474	42,474	5,382
Thin Plate and Sheet	ton	160	797	2,084	437
Throat (plain)	ton	82,758	126,503	149,854	36,672
United Kingdom		57,149	86,568	119,745	32,994
U.S.A.		25,644	39,887	24,040	3,678
Other		5	38	69	—
Plate, Sheet (other)	ton	34,158	69,952	122,889	14,706
Lead Refined (Pigs, Ingots)	ton	—	—	—	—
Manganese Ore—					
Metallurgical	ton	114	89	30	20
Battery grade	ton	1,117	1,110	3,129	1

Footnotes: See end of Table.

TABLE 8: IMPORTS (a) OF MINERALS, MINERAL PRODUCTS AND METALS: AUSTRALIA—(Continued).

Item and Country of Origin	Unit of Quantity	1953	1954	1955	Jan-Mar. 1956(b)
METALLIC GROUP (continued).					
Mercury	lb.	45,777	133,218	82,470	15,147
Spain		35,890	108,131	41,882	10,126
Other		9,887	25,087	40,588	5,021
Nickel—					
Pigs, Ingots, etc.	ton	632	527	572	186
Bars, Rods, etc.	ton	20	17	18	6
Platinum—					
Blocks, powder, etc.	oz.	1,450	4,716	(d) 3,473	99
Platinum Group Metals	oz.	1,484	—	—	290
Silver—					
Refined Ingot, Bar, Sheet, Dust, etc.	fine oz.	101	—	—	43,993
Unrefined Silver or Gold Bullion (Silver content) In Matte (silver content)	fine oz.	63,123	103,518	69,123	—
Tin (Ingots)	ton	823	(f) 300	6,748	97
Titanium Oxide	ton	4,816	5,905	506	104
Zinc (Blocks, Ingots)	ton	—	—	(d) 4,617	—
FUEL GROUP.					
Coal (Black)	ton	22,200	3,040	4,026	(c)
Petroleum & Shale Oils—	'000 gal.	1,491,846	1,781,308	(h) 2,285,834	681,476
Crude	'000 gal.	240,139	510,149	(h) 1,266,124	483,891
Aviation, Motor Spirit	'000 gal.	646,874	611,703	534,896	103,000
Residual, Diesel Fuel, Furnace Oil	'000 gal.	437,518	448,740	248,386	27,798
Other	'000 gal.	167,315	210,716	236,428	66,787

NON-METALLIC (excl. Fuel) GROUP.					
Asbestos—					
Chrysotile	ton	17,868	25,655	27,681	4,554
Canada		15,767	17,611	19,657	3,693
Other		2,101	8,044	8,024	861
Crocidolite	ton	603	309	104	—
Amosite	ton	7,839	7,874	12,061	3,046
Other	ton	206	50	147	157
Barite (ground)	ton	18	18	281	60
Bentonite	ton	2,446	4,761	5,274	793
Calcium Carbide	ton	2,629	9,504	9,610	3,120
Cement (Portland)	ton	90,805	99,646	89,040	2,898
United Kingdom		55,064	56,994	75,942	2,463
Japan		16,075	17,456	4,128	—
Other		9,666	25,196	8,970	435
Clays—					
Ball Clay	ton	229	358	479	295
China Clay	ton	123	433	5,553	753
Fire Clay	ton	587	672	736	230
Clay, nei.	ton	587	1,865	2,393	585
Diamonds, Industrial	carat	150,350	141,955	267,365	66,761
South Africa		114,685	123,241	217,268	58,451
Other		41,845	18,714	50,097	8,310
Diatomite	ton	2,179	2,435	4,823	1,136
Felspar	ton	150	212	138	—
Fluorspar	ton	869	427	445	126
Fuller's Earth	ton	96	172	257	21
Graphite—					
Flake	ton	94	281	209	10
Crystalline	ton	130	97	106	8
Amorphous	ton	483	594	635	103
Maagnetite	ton	401	2,364	4,588	1,326

Footnotes: See end of Table.

TABLE 8: IMPORTS (a) OF MINERALS, MINERAL PRODUCTS AND METALS: AUSTRALIA—(Continued).

Item and Country of Origin	Unit of Quantity	1953	1954	1955	Jan-Mar. 1956(b)
NON-METALLIC (excl. Fuel) GROUP.					
Mica—					
Block or Sheet Trimmed	lb.	—	60,476	39,535	2,085
Condenser Film (not cut or stamped)	lb.	—	—	—	—
Spillings (not cut or stamped)	lb.	201,948	3,600	200	—
Cut or Stamped	lb.	—	119,850	245,710	3,600
Ground or Pulverised	lb.	—	1,752	5,693	23
Scrap	lb.	—	30,037	107,103	14,163
Phosphate Rock	ton	1,181,709	454,749	(h) 1,250,929	152,650
Nauru		747,347	693,557	725,137	247,614
Christmas Is.		249,989	307,819	290,700	34,028
Gilbert & Ellice Is.		184,370	159,021	226,476	33,823
Other		3	—	(h) 8,616	2,239
Potash Salts (Chloride)	ton	17,704	13,416	26,841	7,152
Salt—					
Rock	ton	5,415	2,349	2,276	441
Other	ton	3,470	5,106	6,558	1,203
Sillimanite	ton	1	5	—	—
Sulphur	ton	146,281	187,916	195,482	12
U.S.A.		127,720	157,926	177,181	59,181
Other		18,561	29,990	18,301	38,961

(a) Cleared for home consumption prior to 1st January, 1955. (b) Subject to revision. (c) Less than half. (d) Includes antimonial lead. (e) Included with pigs, ingots (refined). (f) Not available. (g) From 1st July. (h) Revised.

TABLE 9: EXPORTS OF MINERALS, MINERAL PRODUCTS AND METALS: AUSTRALIA.

Item and Country of Destination	Unit of Quantity	1953	1954	1955	Jan-Mar. 1956(a)
METALLIC GROUP					
Aluminium—					
Pigs, Ingots, etc. (refined)	ton	659	—	—	1
Rolled & Drawn Shapes	ton	76	48	50	1
Scrap (incl. remelt)	ton	680	450	115	—
Beryllium Ores and Concentrates	ton	—	163	210	44
Cadmium—					
Ingots	ton	61	21	97	25
Bars, Rods, etc.	ton	222	151	70	(c)
Copper—					
Ore & Concentrates	ton	126	2,050	4,933	1,143
Blister	ton	—	9,789	8,159	—
Pigs, Ingots, etc. (refined)	ton	9,978	14	2	(c)
Rolled, Drawn & Extruded Shapes (excl. wire)	ton	1,330	392	468	37
Scrap (incl. remelt)	ton	749	60	55	—
Gold—					
Ores and Concentrates	ton	54	42	75	—
Refined Ingot, Bar, Sheet, Dust, etc.	fine oz.	1,204,518	568,230	1,120,618	477
United Kingdom		770,499	22,762	20	—
France		345,357	—	—	—
Hong Kong		—	425,870	999,838	—
Other		88,662	119,598	120,760	477
Unrefined Gold or Silver Bullion (Gold content)	fine oz.	—	502	15,957	—
Antimonial Concentrates	ton	93	171	434	50
Iron and Steel—					
Pig Iron	ton	211,216	33,738	44,892	1,842
U.S.A.		148,389	8,301	2,669	100
Other		62,827	25,437	42,223	1,742

Footnotes: See end of Table.

TABLE 9: EXPORTS OF MINERALS, MINERAL PRODUCTS AND METALS:
AUSTRALIA (continued).

Item and Country of Destination	Unit of Quantity	1953	1954	1955	Jan-Mar 1956(a)
METALLIC GROUP (continued).					
Iron and Steel (contd.)					
Ingots, Blooms, etc.	ton	161,678	26,561	211	13
United Kingdom		121,917	15,383	149	—
Other		39,761	11,178	62	13
Bars and Rods	ton	25,077	20,541	9,729	1,189
Plate and Sheet (excl. galvanized)	ton	14,397	14,957	11,936	3,016
Sheet, Galvanized	ton	13,221	11,997	7,242	1,571
Lead—					
Ores and Concentrates	ton	64,528	58,237	59,336	8,048
Bullion	ton	42,319	36,153	38,493	1,768
United Kingdom		42,337	36,153	38,493	1,768
Other		2	—	—	—
Pig	ton	148,433	159,328	145,874	24,584
United Kingdom		88,373	95,490	81,630	11,649
U.S.A.		51,763	55,156	56,096	10,989
Other		8,297	8,682	8,148	1,946
Sheet, Piping	ton	213	1,224	86	9
Other Shapes	ton	50	—	—	—
Scrap	ton	12,146	13,680	12,125	1,302
Monazite Concentrate	ton	(b)	76	107	25
Platinum and Platinum Group Metals	oz.	516	519	690	50
Rutile Concentrates	ton	36,076	44,417	59,687	12,328
United Kingdom		8,662	9,894	12,234	2,910
U.S.A.		13,417	14,418	21,248	5,130
Other		13,997	20,108	26,205	4,288
Silver—					
Refined Ingot or Bar	fine oz.	5,162,656	7,367,518	5,941,202	1,155,407
United Kingdom		5,160,616	3,107,374	269,137	70,014
Other		2,040	4,260,144	5,672,065	1,085,393
Refined or Standard Sheet, Dust, etc.	fine oz.	—	50,152	715	—
Unrefined Silver or Gold Bullion (Silver content)	fine oz.	—	13,500	72,182	—
Tantalum and Columbium Ores and Concentrates	ton	59	39	58	5
Tin—					
Concentrates	ton	20	8	137	—
Ingots	ton	81	96	96	4
Tungsten—					
Scheelite Concentrates	ton	1,122	1,174	1,344	319
U.S.A.		824	854	926	188
United Kingdom		290	303	404	125
Other		8	17	14	—
Wolfram Concentrates	ton	1,250	838	984	200
U.S.A.		641	303	362	139
United Kingdom		411	455	477	39
Other		198	80	125	22
Zinc—					
Concentrates	ton	233,309	264,263	229,601	31,494
United Kingdom		141,530	170,437	132,398	21,782
Other		91,779	93,826	97,213	9,712
Blocks	ton	36,938	38,262	33,002	5,425
United Kingdom		15,322	14,513	9,906	1,500
Other		21,616	23,749	23,096	3,925
Plates, Sheets	ton	59	94	106	13
Circles, Strips	ton	2,698	3,650	2,098	542
Scrap	ton	1,557	809	816	147
Zircon Concentrates	ton	31,173	36,512	46,685	8,495
U.S.A.		23,574	13,631	24,738	3,617
United Kingdom		4,150	7,769	9,685	1,883
Other		3,449	15,112	12,262	2,995

Footnotes: See end of Table.

TABLE 9: EXPORTS OF MINERALS, MINERAL PRODUCTS AND METALS:
AUSTRALIA (continued).

Item and Country of Destination	Unit of Quantity	1953	1954	1955	Jan-Mar. 1956(a)
FUEL GROUP.					
Coal	ton	376,779	376,774	202,062	44,150
New Caledonia		171,879	170,970	158,070	44,132
Other		204,900	205,804	43,992	18
Petroleum & Shale Oils	gal.	4,617,431	16,525,158	84,517,462	46,371,215
Crude		—	—	—	—
Other		—	—	—	—
Australian Produce		1,294,500	14,895,419	81,755,372	45,877,757
Other Produce		3,322,173	3,629,739	2,762,090	493,458

NON-METALLIC (excl. Fuel) GROUP.

Asbestos—					
Chrysotile	ton	2,303	1,688	65	—
Crocidolite	ton			6,476	515
Other	ton			(c)18	—
Barite	ton			940	200
Calcium Carbide	ton	160	82	23	—
Cement (Portland)	ton	13,316	50,681	12,836	1,099
New Zealand		5,770	43,551	7,127	—
New Guinea		2,895	1,201	392	83
Fiji		2,142	1,629	888	90
Other		2,509	4,300	4,431	926
Clays	ton	1,537	3,156	1,779	95
Diamonds—Industrial	carat	63,656	91,628	79,265	31,034
Felspar	ton	158	183	220	65
Graphite—					
Flake	ton	1	—	—	—
Crystalline	ton	—	15	22	1
Amorphous	ton	9	—	—	—
Gypsum	ton	27,638	42,262	38,743	11,351
New Zealand		22,258	35,049	38,743	11,351
Other		5,380	7,213	—	—
Mica	lb.	14,382	19,808	7,784	1,200
Salt	ton	16,705	20,809	21,556	4,138
New Zealand		15,422	18,487	20,101	3,565
Other		1,283	2,322	1,455	573
Superphosphate	ton	1,323	2,340	1,330	315

(a) Subject to revision. (b) Not available. (c) Less than half.

III. APPENDIX

The following later information has become available since compilation of statistical tables for periods up to the 31st March, 1956. The figures are preliminary and subject to revision.

SMELETER AND REFINERY PRODUCTION OF PRINCIPAL METALS: AUSTRALIA.

(Note: Particulars in Table exclude secondary recovery of metals (i.e., from scrap) unless otherwise stated).

Metal	Unit of Quantity	Production (a)			
		Apr. 1956	May 1956	June 1956	Apr.-June 1956
Copper (Blister)	ton	4,839	4,233	3,677	12,749
Copper (Refined)	ton	2,350	3,383	2,375	8,108
Gold (Refined)—					
Australian Origin	f. oz.	79,459	73,410	88,420	241,289
Overseas Origin	f. oz.	9,355	17,385	13,132	39,872
Total	f. oz.	88,814	90,795	101,552	281,161
Lead (Refined)	ton	13,955	14,271	14,619	42,845
Lead Content of					
Lead Bullion (b)	ton	3,203	3,461	3,267	9,931
Pig Iron	ton	167,334	180,349	171,773	519,456
Steel Ingots	ton	187,630	218,242	217,044	622,916
Silver (Refined)	f. oz.	700,412	822,971	690,009	2,213,392
Tin (Refined)	ton	152	210	146	508
Zinc (Refined)	ton	8,373	8,844	7,927	25,144

(a) Figures subject to revision. (b) Lead bullion produced for export; lead content 99.3%.

Note: Particulars of refined copper, lead, silver, tin and zinc in the above table were collected by the Bureau of Mineral Resources.

PRODUCTION OF GOLD AND COAL: AUSTRALIA.

Item.	Unit of Quantity	Production (a)			
		Apr. 1956	May 1956	June 1956	Apr.-June 1956
Gold (b)	f. oz.	76,035	86,278	(c)	(c)
Coal—					
Black	ton	1,536,593	1,776,358	1,720,332	5,033,283
Brown	ton	837,884	927,863	906,434	2,672,181

(a) Figures subject to revision. (b) Gold content of minerals produced. (c) Not available.