

THE AUSTRALIAN MINERAL INDUSTRY

PART 1 – QUARTERLY REVIEW

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iii

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SECRETARY—H. G. RAGGATT

Bureau of Mineral Resources, Geology and Geophysics, Melbourne

DIRECTOR—P. B. NYE.

THE
AUSTRALIAN MINERAL INDUSTRY

VOL. 9. No. 4

PART 1 — QUARTERLY REVIEW

MAY, 1957.

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.

CONTENTS

VOL. 9.

	No. 1	No. 2	No. 3	No. 4
	Page	Page	Page	Page
The Significance of Non-Metallic Mineral Production	1	—	—	—
Some Factors in Mining Investment	—	19	—	—
Australian Titanium Mineral Developments	—	—	41	—
Australian Minerals & Metals — 1956 and Current Review	—	—	—	61
Mineral & Metal Prices	16	38	58	80
Aluminium	7	27	47	72
Antimony	7	28	—	—
Asbestos	7	28	47	72
Beryllium	8	—	—	—
Coal—Black	8	28	47	—
Coal—Brown	8	29	48	—
Copper	9	29	48	73
Gold	9	30	49	73
Iron & Steel	9	30	49	74
Lead	10	30	50	74
Manganese	—	—	50	74
Mica	—	—	51	—
Mineral Oils	10	31	51	75
Nickel	—	—	52	—
Sulphur	11	32	53	76
Tin	11	32	53	76
Titanium	14	33	54	77
Tungsten	14	36	54	78
Uranium	15	36	55	78
Zinc	15	37	55	79
Zirconium	15	37	56	79

AUSTRALIAN MINERAL INDUSTRY

QUARTERLY REVIEW

MAY, 1957

AUSTRALIAN MINERALS AND METALS — 1956 AND CURRENT REVIEW.

In many countries, during 1956, credit restrictions and other Governmental measures to combat inflation had the anticipated effect of restraining the rising demand for raw materials. But, even though production increased, any surplus that there may have been over normal usage of the more important metals and minerals was absorbed by stockpiling; shortages of some commodities such as aluminium and copper disappeared. The Middle East crises in the latter part of the year did not have a particularly pronounced immediate effect on demand, although, with other political tensions and strikes, they were factors in maintaining the level of prices of several internationally traded minerals and metals.

However, the Middle East crises probably contributed to the prolongation of slackness in demand well into 1957. Some mineral commodities, particularly copper, tungsten, lead and zinc have shown a definite statistical weakness, and stockpile intakes have been generally rather less than in the latter part of 1956, but other commodities have experienced fairly well-balanced market conditions. At the moment world consumption of raw materials generally shows some signs of resuming an upward trend.

The drastic falls in the prices of lead and zinc in April-May, 1957, have given rise to further criticism of London Metal Exchange trading. Maybe an imposed limitation of daily rises and falls within, say, half or one per cent. of the previous day's L.M.E. quotation would curb the acute and unsettling effect of market nervousness on L.M.E. prices.

Since early 1956 certain events in the Australian mineral industry have created an unprecedented upsurge of confidence in the future development of mineral resources in this country. During recent years, mineral exploration had been accelerated; there have been some important successes in uranium, but the search for oil has been disappointing so far. Then, quite abruptly, information emerged of new mineral resources which will greatly influence the future development of Australia. The vast reserves of bauxite around the Gulf of Carpentaria seem likely to provide the foundation for an alumina industry and perhaps ultimately for a large aluminium industry. The greatly increased reserves of copper and lead-zinc ores at Mt. Isa will have a far-reaching influence on the development of northern Queensland within the next 10 years; it is too early as yet to assess the prospects of the new lead find at Borroloola. The deposits of ilmenite now being opened up in the south-west corner of the continent may, with foresight, provide an important contribution to the development of Western Australia. Even at the old established mining centre of Broken Hill, signs of further developments have become apparent, whilst in the Centre, at Tennant Creek, new evidence of base metal mineralisation suggests possibilities of future developments in that region; the nickel find by Montana Silver Lead N.L. in Tasmania is also of interest.

Other important events in the Australian mineral industry since early 1956 have been the commencement of construction of the copper refinery at Townsville, and of the uranium plant at Mary Kathleen; the commencement of steel production in the two new furnaces at Port Kembla, and of the steel rolling mill at Kwinana, W.A.; the decision to expand the iron and steel plant at Port Kembla to the extent of £100 million; the use of Mt. Morgan pyrite in

AUSTRALIAN MINERAL PRODUCTION (1956 PRELIMINARY)

Product	Unit of Quantity	1955	1956(a)
Antimony in Mine Products	ton	922	897
Asbestos	ton	5,352	8,801
Barite	ton	6,264	5,919
Bauxite	ton	7,563	7,056
Beryllium Ore (BeO content)	unit	2,428	3,735
Bismuth Content all Mine Products	lb.	—	110
Building Stone and Road Materials	ton	29,874,416	n.a.
Cadmium in Mine Products	ton	844	918
Chromite	ton	—	6,096
Clays—			
Bentonite and Bentonitic Clay	ton	785	(d)1,472
Brick Clay and Shale	ton	3,556,118	3,293,205
Dunourite	ton	436	(c)
Fuller's Earth	ton	71	246
Kaolin and Ball Clay	ton	45,054	(d)14,224
Other Clays	ton	731,275	(d)159,249
Coal—black	ton	19,274,750	19,280,642
brown	ton	10,112,206	10,559,801
Copper in Mine Products (incl. for Fertilizers)	ton	46,165	53,344
Diamond (Industrial)	carat	731	383
Diatomite	ton	5,042	4,135
Dolomite	ton	111,417	110,054
Felspar	ton	20,833	14,697
Fluorspar	ton	282	(d)128
Glaucanite	ton	197	85
Gold in Mine Products	f. oz.	1,049,039	1,029,926
Graphite	ton	22	448,539
Gypsum	ton	470,014	(e)4,274
Ilmenite Cons.	ton	(e)535	3,923,965
Iron Ore	ton	3,572,609	9,212
Iron Oxide	ton	12,911	297,909
Lead in Mine Products	ton	295,944	(d)4,122,971
Limestone (inc. shell & coral)	ton	(d)3,997,696	63,614
Magnesite	ton	57,674	57,531
Manganese Ore—			
Metallurgical	ton	45,343	1,815
Dioxide	ton	2,013	28,337
Mica—block	lb.	56,649	—
scrap	lb.	20,160	—
Mineral Pigments	ton	408	496
Molybdenite Cons.	cwt.	57	—
Monazite Cons.	ton	(e)164	(e)102
Opal	f.	46,875	(c)
Osmiridium — Native	oz.	21	26
Pebbles for grinding	ton	791	671
Phosphate Rock	ton	6,371	(c)
Pyrite Ore & Cons.	ton	228,764	187,210
Sulphur in pyrite, lead and zinc cons.	ton	(f)263,560	337,810
Rutile Cons.	ton	59,613	96,327
Salt	ton	(b)370,000	(d)331,965
Sapphire	f.	3,412	(c)
Serpentine	ton	927	910
Silica (glass, chemical, etc.)	ton	139,551	(d)32,616
Sillimanite	ton	2,679	2,181
Silver content of Mine Products	f. oz.	14,555,412	14,394,399
Slate (filler)	ton	138	369
Talc (incl. Steatite and Pyrophyllite)	ton	12,833	13,353
Tantalite-Columbite Cons.	lb.	27,139	159,655
Tin content tin cons.	ton	2,017	1,982
Tungsten Cons. (65% WO ₃)	ton	2,280	2,381
Zinc in Mine Products	ton	256,564	277,976
Zircon Cons.	ton	46,673	72,458

(a) Subject to revision. (b) Partly estimated. (c) Not available. (d) Incomplete. (e) Sales or despatches as distinct from production. (f) Excludes sulphur in lead cons.

AUSTRALIAN OVERSEA MINERAL TRADE

Principal Exports		1955		1956	
		Quantity	Value (£A)	Quantity	Value (£A)
item	Unit of Quantity				
Copper in base materials (a)	ton	12,042	4,454,662	22,918	8,325,811
Lead in base materials (a)	"	227,935	28,695,839	241,802	32,432,228
Zinc in base materials (a)	"	162,158	7,388,475	175,038	8,470,038
Tungsten concentrates	"	2,308	3,557,421	2,212	3,349,564
Rutile concentrates	"	59,687	3,109,441	89,887	6,597,570
Silver in all forms (a)	f. oz.	11,239,943	2,466,606	22,282,768	5,565,224
Coal, black	ton	202,062	843,913	239,379	943,873
Zircon concentrates	"	46,685	537,570	68,838	822,008
Asbestos — all types	"	6,559	522,054	6,893	720,823
Other minerals excl. gold	value only		2,323,290		1,672,895
Total value			53,999,271		68,900,034
Gold in all forms	f. oz.	1,151,819	17,490,037	549,137	8,321,530
Total value including gold			71,489,308		77,221,564
Principal Imports		1955		1956	
		Quantity	Value (£A)	Quantity	Value (£A)
item	Unit of Quantity				
Aluminium (ingot metal)	ton	14,861	3,255,665	10,223	2,695,827
Copper (metal)	"	24,245	9,219,659	859	384,024
Asbestos	"	39,993	3,034,216	26,410	1,842,112
Phosphate Rock	"	1,250,929	2,575,117	1,331,636	2,770,315
Sulphur (elemental)	"	195,482	2,688,306	202,977	2,619,567
Nickel (metal)	"	590	595,330	813	593,434
Diamonds, industrial	carat	267,365	559,146	245,472	497,197
Tin	ton	506	454,254	516	496,938
Other excl. gold & crude oil	value only		1,920,333		1,501,760
Total value excl. gold & crude oil			24,102,026		13,401,174
Gold in all forms	f. oz.	150,606	2,347,484	201,871	3,181,803
Crude oil	'000 gal.	1,266,124	34,960,069	1,985,146	52,578,792
Total value			61,409,579		69,161,769

(a) The quantity of copper, lead and zinc in base materials and silver in all forms, in each case includes the quantity contained in all ores and concentrates, drosses and lead bullion where applicable. The value of copper, lead and zinc in base materials and silver in all forms, in each case includes the total value of the particular ore and concentrate. In the case of copper in base materials the total value of copper-lead dross is included but excluded from the value of lead in base materials. The value of silver in lead bullion is included in the value of lead in base materials but excluded from the value of silver in all forms.

the new acid plant at Cockle Creek, and the decision to erect there a zinc smelter with by-product acid plant over the next 4 years; the change over of the new acid plant at Port Pirie to lead sinter gases; the opening of the new ammonia plant at Risdon, and the decision to expand zinc refining capacity there during 1957; the opening of the Lurgi gas plant in Victoria, based on brown coal; and the rapid expansion of the beach sand industry on the East Coast as well as in Western Australia.

In the administrative sphere, the Government decided in 1956 to extend the Assistance to Gold Mining Act to June, 1959. Recently the Tariff Board has been requested to examine the continuing problems associated with the subsidy on sulphuric acid production from indigenous raw materials, and to review the position of copper producers consequent on the recent fall in price of copper.

Of interest to Australian mining was the promise by the U.K. Chancellor of the Exchequer in June, 1956, to bring down legislation in 1957 which would

ease the taxation position of overseas trade corporations having headquarters in the United Kingdom; the decision was brought into effect with the Budget in April, 1957. An important event in the metal industry was the commencement of the International Tin Agreement as from 1st July, 1956; the smooth functioning of the agreement was illustrated by the recent decision of the Tin Council to raise the floor price under the agreement from £640 to £730, more or less in step with cost increases over the last 3 years; the ceiling price, £880, was left undisturbed.

Preliminary figures of mineral production in 1956 are given in the accompanying Table. The total value of primary products of the mineral industry, £199 million in 1955, was raised to about £205 million in 1956, consequent mainly upon the higher production of zinc and rutile with higher average prices, and the higher average price of lead. During 1957 a further increase in total value is not expected, mainly because of lower general average prices for base metals and rutile; the final result could be a slight fall in value.

The total value of mineral exports, excluding gold, was £68.9 million in 1956 (£54.0 million in 1955). The increase was due mainly to rutile, lead and copper — the abnormal silver exports are explained by the return of leasehold silver to U.S.A. Consequent upon expected lower average prices the total value of exports will probably be rather less during the current year.

Imports during 1956, excluding gold, were £66.0 million, of which crude oil was responsible for £52.6 million. Apart from crude oil, mineral imports were £10.6 million less than in 1955. Some increase in these imports may be expected in 1957, as, although aluminium imports may be less, refined copper may increase, as also tin.

Gold. Since the post-war peak gold production of 1,049,011 ounces in 1954, there has been a decline in each of the two succeeding years, to 1,029,926 ounces in 1956. The main decrease was in Western Australia and Queensland; the decline in Queensland was attributable to a lower grade of ore treated at Mt. Morgan. In the Northern Territory the newly opened mine, Northern Hercules, proved disappointing; however, in the Tennant Creek district, a vigorous prospecting programme may lead ultimately to increased production from that area. Probably the decrease would have been much greater had the sustaining influence of the subsidies not been available to gold producers under the Gold Mining Industry Assistance Act; the total subsidies paid under this Act during the year were £596,161.

During the current year, the continuance of payment of the gold subsidy seems likely to maintain production more or less at its present level. However, recent rationalisation of gold mining companies, and plant renewals, leave little immediate scope for further efficiency improvement and the general tendency is for costs to increase; the subsidy takes care of three-quarters of the cost above £13/10/-, so that as more mines become marginal the subsidy does not meet the full amount of the cost rise.

Lead. Mine output of lead during 1956 was 297,909 tons, little different from the record established in 1955. Primary pig lead increased to 195,089 tons, but was well below the peak of some earlier years; in addition lead bullion increased to 41,950 tons. Domestic sales of primary lead were 37,750 tons. Exports were: refined lead 149,061 tons, bullion 38,190 tons, lead in lead concentrates 48,600 tons, with a total value (including silver in bullion) of £32,432,228.

There was no happening of note in the production of lead during 1956, and 1957 seems likely to be uneventful so far as can be judged at present, with a mine production around 300,000 tons. Pig lead and bullion seem likely to be maintained at about the previous year's figures. Consumption of lead may rise to around 50,000 tons, and exports should show little general change.

The state of the Australian lead industry depends, of course, on the overseas lead market. Since the war, each successive year has created a new record in world lead production, and 1956 saw a total mine production of some 2,170,000 tons, U.S.A. continuing as the leading producer with Australia, and perhaps U.S.S.R., lagging not far behind. Although world real consumption of lead was slightly less in 1956 than in 1955, increased U.S. stockpiling absorbed the surplus, and maintained the price at a favourable level. U.S. lead consumption represents around 40 per cent of the world total excluding U.S.S.R., and it was the reduced activity in the U.S. automobile industry in the latter part of 1956 which was mainly responsible for reduced world consumption.

Statistically, the world supply position of lead in relation to consumption scarcely justified the price levels of recent months. But whilst the U.S. stockpile authorities were prepared to absorb large amounts of lead at 16 cents a lb., either by direct buying of domestic metal or by barter arrangement of agricultural products for foreign metal (or concentrates), the stockpiles were a determining factor in world lead pricing. The course of lead prices on the London Metal Exchange in 1956 provides a classic example of the effect of U.S. stockpile buying. In the early part of the year U.S. industrial activity was at such a high level that all available lead was absorbed and the L.M.E. price continued at the peak which it had attained late in 1955 — the maximum for 1956 was £126/7/6 quoted on 4th January. The Australian dock strike led to the continuation of these peak prices until March, when the U.S. industrial demand began to slacken, metal became readily available in Europe and the L.M.E. price fell sharply in April to below the U.K. equivalent of the U.S. price (around £stg.112, allowing for U.S. duty, freight, etc.). The lowest price for metal during the year reached £stg.109/12/6 on 31st May. However, the U.S. stockpile thereafter began to absorb increasing amounts of metal, and the L.M.E. price took an upward trend towards the U.K. equivalent of the U.S. price and, during the Middle East crises, went beyond it. The average price for the year, £116/10/-, was some £10 above the 1955 average.

These movements illustrate that in periods of ready metal availability the L.M.E. price tends to remain below the U.K. equivalent (£112 when lead was at 16 cents in U.S.) of the price at which metal is attracted west across the Atlantic, but moves up towards the equivalent and with a tendency to exceed it as stockpile dealings exert their full influence.

U.S. stockpiling of lead has continued to date in 1957, but the amounts purchased in recent months have been insufficient to prevent producer stocks from increasing. A growing tendency to test the floor price on the L.M.E. was accelerated at the end of April and early May by doubts, following certain official statements, on future stockpiling policy. With the sensitivity characteristic of recent years, the fall was precipitous, to £stg.95½ and was accompanied by a downward adjustment of the U.S. price to 15 cents. A period of uncertainty and price adjustment lies ahead, until U.S. price support policy becomes clear; it may be expected that U.S. lead-zinc producers will express strong views should the price recession be prolonged. However, despite the European oil shortage in the early months of 1957, and slackness in the U.S. automobile industry, lead consumption may be expected to improve over the year to a world total not less than that of 1956. The average price will be well below that of 1956, but probably not very different from the quite reasonable average of 1955. The sale of 30,000 tons different from the quite reasonable average of 1955. The sale of 30,000 tons different from U.K. Government-held lead stocks should not, of itself, unduly affect prices; 4,000 tons are to be sold by competitive tender, the remainder has been offered to the original suppliers for disposal, presumably through their normal marketing channels.

Zinc. Mine production of zinc in concentrates during 1956 was 278,000 tons, a considerable increase over that of 1955. Refined zinc production was a record at 104,993 tons, made possible by improved power availability at Risdon. Domestic sales of refined zinc totalled 69,912 tons. Exports were: 31,594 tons of refined zinc, 122,000 tons of recoverable zinc in concentrates, with a combined value of £8,470,038.

The main increase in mine production during 1956 was from Broken Hill. During 1957 it is likely that the total mine production of zinc will reach and perhaps exceed 29,000 tons, and the projected increased refining capacity at Risdon may become operative by the end of the year. Domestic consumption should be higher, with greater absorption for galvanising. Assuming continuance of overseas demand, exports should not be greatly different from those of 1956.

As with lead, the world zinc market determines the position of Australian zinc. World mine production of zinc was of the order of 2,850,000 tons in 1956, the highest recorded to date. U.S.A. continues to be the leading producer with Canada, Australia, U.S.S.R. and Mexico in sequence behind. As with lead, increased U.S. stockpiling absorbed surplus zinc as consumption fell away in the latter half of the year. In the U.S., consumption, stockpiling and stock movements required the import of over 600,000 tons of zinc and zinc in concentrates, or about 30 per cent. of the production in countries other than U.S., U.S.S.R. and Poland. These U.S. imports represent a considerable factor in the world zinc markets.

U.S. stockpile purchases supported world zinc prices by maintaining the U.S. price at 13½ cents per lb. In the early part of 1956 the demand for zinc was strong and on the London Metal Exchange the peak price for the year, on 4th January, was £stg.105/2/6, g.o.b.; the high plateau continued until mid-March but thereafter as industrial demand declined the price trended downward to a nadir for the year of £91/10/- on 1st June. The influence of U.S. stockpile dealings then became apparent, and the L.M.E. price trended upwards to £96, the London market equivalent of the U.S. price of 13½ cents, and went beyond it according to the degree of availability of prompt metal. The Middle East crises had little effect on zinc prices at the time. Over the year the average price for prompt g.o.b. metal was £97/10/-, about £7 above that of 1955.

Statistically, the position of zinc has become increasingly weaker. As with lead, stockpile dealings have been insufficient in recent months, producer stocks have increased and, with doubts on stockpiling policy, L.M.E. prices receded sharply at the end of April-early May to £82½; the U.S. price reacted immediately to 12 cents and later 11½ cents. As with lead, a period of uncertainty and price adjustment will follow until U.S. policy is made clear. For the present, the rate of consumption is about on a par with the latter part of 1956, but improved industrial activity later this year should increase demand. The average price in 1957 will be below that of 1956, and probably nearer to that of 1955 — still a reasonable figure.

In looking at the prospects for zinc, the various grades virtually constitute different commodities. The world-wide attention to lower costs in industry must result in increasing demands for die-cast zinc. Even should the U.S. automobile industry not fully recover in 1957, increase in the amount of zinc on each car is expected to lead to a greater consumption of die-cast metal. With this in mind, and with requirements for galvanising, brass-making and other purposes now apparently holding their positions, world consumption of zinc in 1957 could pass the 1955 record.

Copper. Mine production of copper continues to rise and in 1956 was 53,344 tons, some 7,000 tons above that for 1955. Output of primary blister

was also higher at 49,742 tons, and refined copper was 26,488 tons. Refined production from scrap, not included in these figures, was higher in 1956. Consumption of primary copper, which early in the year fell to the low rate of 35,000 tons per annum, increased as the year progressed, and the over-all consumption was about 40,000 tons. Exports of blister copper were 15,465 tons (copper content).

With the establishment of enormously increased reserves at Mt. Isa, the company's plans for expansion of output should shortly get into the construction phase once the decision on reconstruction of the Mt. Isa-Townsville railway has been made by the Commonwealth and State Governments. The first stage of the increase, to 60,000 tons copper annually, will not become effective before 1961, but in the meantime the refinery at Townsville, now under construction, will be capable of taking care of present blister production from 1958.

At Peko Mine, Tennant Creek, proved and probable ore reserves have increased to justify a higher output, now at around 4,500 tons copper in concentrates annually, which it is expected to double in the near future.

The mine and mill at Ravensthorpe, Western Australia, will be in operation during 1957 and, on immediate plans, should add rather over 1,000 tons to the Australian total production of copper.

Until the Townsville refinery is in operation in 1958, domestic output of refined copper will not be fully adequate for local requirements and some imports will be necessary, but exports of blister and of some concentrates for treatment overseas must continue.

Until September, 1956, the Australian copper price was based on the London Metal Exchange average monthly price, plus an allowance for freight. Thereafter the price was adjusted weekly. The average L.M.E. price for the year was £stg.328/7, the highest Australian price, £537/5, was recorded in April, the lowest, £353, in October, the average for the year was £436/5. Since January, 1957, the Copper Producers' Association has maintained the domestic price at £A350 despite the fall in the L.M.E. price to around £stg.240. How long the price disparity between imported and locally produced copper can continue, would seem to be dependent on the attitude of consumers who may wish to import copper — pending the enquiry which the Tariff Board has now been requested to undertake.

The problem is related to the general trend of copper prices over the next few years. Since 1954 and until recent months, strikes in various countries reduced copper production well below capacity; this reduction, aggravated in part by stockpiling, led to supply shortages and abnormally high prices. The excess of world copper production capacity over real consumption is now being felt, with consequent effect on prices. Statistically, even at £stg.240 a ton, the market position of copper remains weak, and the price could fall further. However, intermittent strikes will continue to affect production, and amongst the more powerful factors likely to influence prices in the near future are: the intentions of the Chilean Government in copper trading, the pricing policies of the large U.S. producers and of customs smelters, the ease and rapidity with which large American open-cut mines can adjust production, the possibility of U.S. stockpiling being used as a support to prices having in mind that some of the U.S. Government's arrangements for encouraging mine development are at prices around 28.5 to 30 cents, and the price-steadying policy of the Rhodesian Selection Trust. Today, the London Metal Exchange price represents the open market availability of that fringe amount of metal not passing direct from producer to consumer on period contracts. Already, some large U.S. producers have cut production. Unless a world-wide industrial recession occurs, no great or prolonged fall below £stg.240 should be

anticipated and, as demand improves below the low point of late 1956 and early 1957, a general fluctuation in price between this level and £270-£280 would not be unexpected. It may well prove that over a term of one or two years the present price problem of local producers will find its own reasonable solution.

Tin. Production of tin in concentrates declined slightly in 1956 to 1982 tons. Refined tin production was also lower at 1,850 tons. The decline is temporary, however, and due to a run of lower grade ground encountered by Tableland Tin Dredging and the lower tenor of ore and the employees' strike in October-November at Abertoyle. The Ravenshoe dredge, in the Mt. Garnet area, Queensland, is expected to be in production shortly. Output in 1957 may be as high as 2,300 tons.

Consumption of primary tin has been between 2,400 and 2,500 tons annually, but when the tinplate works, Port Kembla, starts to operate about September this year, requirements will move up to about 3,500 tons.

The Australian producers receive for their concentrates a price based on Singapore tin quotations, which in turn are a reflection of the London Metal Exchange price. The Australian metal price was well maintained, the average over 1956 being £1,019. On the London Metal Exchange the average cash price was £1,078.7; shortage of available stocks in the latter part of the year maintained the cash price at a high level. The Texas Smelter, the tin from which entered the U.S. stockpile, latterly absorbed tin in excess of the surplus between production and real consumption. However, with cessation of the smelter's activities on behalf of the U.S. Government, such surplus as there is now becomes available to world markets. With increase in consumption over the last 3 years, and decrease in production in Bolivia and Indonesia, the surplus has narrowed.

The International Tin Agreement came into force at the beginning of July, 1956, and made the first call for contributions by producer countries to the Buffer Stock. These contributions were made in cash, the equivalent of 15,000 tons at the floor price (£640 at the time). As the L.M.E. price remained well above the range at which the Buffer Stock manager could buy tin (below £720 at the time), it was not possible for the manager to buy tin, and he therefore had no tin available to sell if the price rose above £800. The position was fully appreciated by the member countries on the International Tin Council, and, at the recent March meeting, having regard to the rise in mining costs since the Tin Agreement was drawn up at the end of 1953, the floor price was raised thus raising the price below which tin can be bought by the Buffer Stock to £780. The new and old price ranges are as follows:—

	Old	New
Buffer Stock—		
Must sell tin at ...	£880	£880
May sell tin above ...	800	830
Remains inoperative		
May buy tin below ...	720	780
Must buy tin at ...	640	730

As the amount of surplus tin available is small, for the present the Buffer Stock manager is unlikely to be able to acquire any considerable amount; as far as can be judged his purchases will necessarily be small and spread over many months whilst building up the Buffer Stock. The real significance of the increase in the floor price is its effect on the L.M.E. price which, in general, will later tend to remain above £780 once the Buffer Stock has been accumulated. If, as might appear from the statistics, there were a real danger of consumption overtaking production during the next two years or so, the higher average price will be an incentive to marginal producers, and should bring out more tin, thus improving the supply position.

Aluminium. The plant of the Australian Aluminium Production Commission at Bell Bay had a full year's production in 1956, output being gradually stepped up as more furnaces came into operation. The total metal for the year was 9,143 tons. As adequate power is now available, capacity output of 13,000 tons aluminium should be reached by June, 1957. Australian consumption of primary aluminium metal and alloys is about 22,000 tons, requiring considerable imports. In addition to the imports of 10,223 tons ingot metal shown in the accompanying table, 4,649 tons of rods, sheets, powder, and other semi-fabricated forms were imported during 1956. There was a tendency to over-import, so that considerable stocks accumulated at Bell Bay, from where a recent shipment was made to Japan. At present the price of Bell Bay aluminium is being held at £277/10/-, c.i.f. capital cities; Canadian 1-20K ingot is priced at £260, c.i.f. Sydney.

For capacity production, the Bell Bay plant requires about 50,000 tons bauxite annually, imported to date first from Malaya and latterly from Indonesia for processing and economic reasons. Whether it will prove equally economic at Bell Bay to treat Cape York Peninsula bauxite, when this becomes available, will need to be determined.

In recent years very extensive deposits of suitable grade bauxite have been found on Marchinbar Island (off Arnhem Land), around Gove (on the western side of the Gulf of Carpentaria) and more particularly last year on the western side of Cape York Peninsula. These deposits run into several hundred million tons, constituting a reserve of bauxite comparable with that of any other country. For the present, the only decided programme is by Commonwealth Aluminium Corporation Pty. Ltd. for the mining of bauxite on Cape York Peninsula, and for the erection of an alumina plant of 500,000 tons alumina capacity annually — the project will require the investment of over £30 million. The location and construction of a suitable port will be an initial requisite.

Other organisations also are interested in these northern bauxites. If the final stage of reduction to metal is to be undertaken eventually, enormous blocks of power will be required. Hydro power in New Guinea has long been under consideration. But generation of power close to the deposits themselves may yet prove economic, from oil or coal; with further reduction of costs nuclear power may become a possibility. Even the high tidal range in parts of the north may yet receive attention as a possible power source, as in France at present. However, these are considerations for the rather distant future and would require hundreds of millions of pounds of capital investment; over the next year or so developments are likely to be concerned with production of bauxite.

For the present, world aluminium production capacity has moved ahead of consumption. This position of excess capacity will not be improved by new plants over the next two or three years, despite the vigorous marketing programmes of large aluminium producers to expand usage. Australian entry into this international trade must take this background into consideration, not in the short term however, but over the long term of rising demand. Other countries besides Australia have possibilities of large scale production, and it is clear that the aluminium industry will become increasingly competitive for a while. As in other metals, in which Australia has shown herself well able to meet this competition, there should be a place for Australia in this market and, indeed, must be so, if we extrapolate 10-20 years ahead.

Rutile, Zircon and Ilmenite. During 1956, production of rutile increased by 60 per cent. to 96,327 tons, and of zircon by 55 per cent. to 72,458 tons. As domestic consumption is small, the industry is virtually entirely dependent on overseas markets; exports of rutile were 89,887 tons and of zircon 68,838 tons.

The position of the beach sand industry has been discussed in detail previously in this Review. At present the position is, briefly, that, attracted by prices for rutile around £140 a ton at the end of 1955 and early 1956, many small producers entered the industry, with the result that expansion of production by the end of 1956 had caught up with demand and the price collapsed — it is now nominally around £60-65. Whether expanded capacity in 1957, between 150,000 tons and 180,000 tons, will be fully used is doubtful. The bulk of business is on medium term contracts; those producers who depend on spot sales will be anxious to avoid reductions of output, but at the present reasonable level of prices spot sales may continue fairly satisfactorily. Slowness in some overseas mines in getting into production is helping Australian exports, and the total for the year could exceed 120,000 tons.

Zircon demand, which had also increased during 1956 with improvement in price from £13 to £20 a ton, has now also slackened off, and the price has dropped to £13-15.

The ilmenite industry in Western Australia, which came into production at the end of 1956, already shows evidence of following the same pattern as rutile — rapid prospecting for deposits, plans by many intending producers new to the industry, little detailed co-ordinated examination of the international market; if production is overdone the position of the more solid producers with worthwhile plans could be weakened. The profit margin for ilmenite is small enough, but fortunately the world market is on a far bigger scale than for rutile, and the effect on price of rapidly increased production cannot be so drastic. The position will simply be that some of the smaller new producers will not be able to enter the market as early as they expected.

Producers of rutile, zircon and ilmenite should continue to look to established usages for their main permanent markets — rutile for welding rods, zircon for ceramics and refractory purposes, ilmenite for titanium white pigment. The requirement of either Australian rutile or ilmenite in permanent large quantities for titanium metal production is some years off yet. Those who, because of recent publicity on zirconium for nuclear reactor purposes, may have ideas of a great demand for Australian zircon, should examine the position — the use of hafnium-free zirconium for this purpose is virtually confined to U.S.A. as hafnium is a by-product of treatment a high hafnium zircon would be preferred for processing. As between Indian, American and Australian (East Coast) zircon, Australia has the lowest hafnium content (1.7%), and India the highest (5.7%), Australian zircon may not have preference for this purpose. In any case, on present programmes the amount of zircon required for this purpose would represent only about 2 per cent. of world production.

Tungsten. The total of tungsten concentrates in 1956 was 2,381 tons (65% WO₃), a little higher than the 1955 total. From a peak of 274/- (stg.) a unit in London during January, 1956, the price trended downward, closing the year at 222/6, the average for the year being 253/3. The trend continued and in March collapsed to 145/-, recovering in April-May to 165/-. This is below the cost of production of much tungsten concentrate from western countries, and several mines may be expected to go out of production. The collapse has followed several uncertain factors — U.S. subsidy and stockpiling policy, renewal of sales of Korean tungsten to Japan, appearance of Chinese wolfram on western markets, new defence programmes — but the appearance of a surplus has been evident since early last year; that the price was so well maintained was in part due to accumulation of stocks by producers, but in the end this accelerated the downfall. However, depending on stock holdings,

the price should not remain at its present nadir for any prolonged interval with output considerably reduced. The general production, marketing and consumption characteristics of tungsten are such that its history has been one of acute short-term rather than prolonged long-term price fluctuations. The general average over a period should be closer to 200/-. For the present it is difficult to assess the reflection on tungsten of the new armament programmes; at first sight one would expect a greatly reduced requirement of tungsten for armament purposes.

Iron and Steel. With the opening of the two new steel furnaces at Port Kembla, steel production was higher in 1956, at 2,602,130 tons; pig iron production was also higher at 2,073,201 tons. There will be a further increase to around 3,000,000 tons steel in 1957. Prospecting of extensive low grade deposits of iron ore is being pursued. The most important event in the iron and steel industry during the current year will be the opening of the tinplate works at Port Kembla. Other important events will be the completion of the iron-ore sintering plant at Port Kembla, and of the skelp mill at Newcastle. The great new £100 million development plan of the B.H.P. organisation will be in its preliminary stages in 1957.

Coal. Production of black coal in 1956 was 19,290,642 tons, slightly higher than in 1955. However, mechanical mining methods and greater output per manshift are leading to cheaper coal. Stocks remain high, but there is a trend to increased coal consumption in power generation. The steel industry is also a large user and will be operating in 1957 at a higher level. Hence 1957 may see a cessation of the downtrend of production of the last 3 years.

Brown coal production increased to 10,559,801 tons in 1956. The first of two large-capacity bucket-wheel dredgers for overburden removal began operating in May, and mining began in mid-year at an extension to the Yallourn North open-cut. During October the Lurgi gas plant at Morwell, operating on Yallourn briquettes, began the supply of gas to Melbourne. Brown coal production should exceed 11 million tons in 1957.

Uranium. The main events relating to uranium in 1956 were the commencement of construction work at Mary Kathleen, Queensland, the mining of high grade pitchblende at El Sharana on the South Alligator River, and important new discoveries in this area and the Calvert Hills region on the Queensland border. Rum Jungle continues as the main producer; to increase capacity a new sulphuric acid plant is being erected. Some deliveries of ore were made from the Adelaide River.

Prospecting continues. During 1956, the Bureau of Mineral Resources air-borne and ground surveys covered extensive areas in exploratory work; two Dakotas and two Auster aircraft were continuously engaged over long periods. The Dakotas are generally used in reconnaissance surveys over wide areas, and the Austers for more detailed surveys of selected areas at lower altitudes. Most of this work has been in the Northern Territory and Western Australia, but there has been some also in New South Wales, Victoria and Tasmania, and on the Queensland-Northern Territory border.

Oil Exploration. The search for oil continues, although perhaps with less public interest. The total footage drilled in 1956 was 83,200 feet, some 71,400 feet less than in 1955.

Apart from Papua the main activity has been in Western Australia, but exploration increased in Victoria and South Australia. It is interesting to note that the first license to prospect for oil offshore was granted along the Victorian coast to Woodside (Lakes Entrance) Oil Co. Ltd. Oil Search Ltd. have announced that, during 1957, total oil exploration in Papua will be £4½ million, but that final conclusive results may not be expected until 1958.

6-5-1957

J. A. DUNN.

ALUMINIUM.

Production of primary refined aluminium at Bell Bay during the first three months of 1957 totalled 2,460 tons, a decrease of 128 tons from the final quarter of 1956. This slight fall may be attributed to furnace maintenance during February and March. Attainment of full plant capacity is expected towards the end of June, when all furnaces will have been installed and abnormal furnace maintenance will have been completed.

Australian plant capacity for production of semi-fabricated aluminium shapes has been increased and is being further increased with expenditure of about £2 million on buildings and plant. In addition, plans have been announced for the construction of a new rolling mill to produce aluminium strip which will be the source material for an aluminium foil industry to be established by a group of oversea companies. Another oversea company has also stated that it may build an aluminium foil plant in Australia. Australian imports of aluminium leaf and foil were 1,938 tons in 1956 and 1,987 tons in 1955.

In U.S.A., which leads the world in aluminium production, Aluminium Co. of America, Kaiser Aluminium and Chemical Corp., and Reynolds Metal Co. have exercised rights contained in agreements made with the Government under the expansion programme, whereby they are able to dispose of excess stocks of aluminium to the Government's General Services Administration. So far the three companies have asked the G.S.A. to purchase a total of 185,000 s. tons of primary metal which amounts to approximately 90 per cent. of the expected excess supply in 1957. Preliminary figures put U.S.A. first quarter 1957 production at 401,500 s. tons of primary aluminium, compared with 419,052 s. tons in the first quarter and 442,597 s. tons in the fourth quarter of 1956. The decrease was due to shut downs caused by power shortages and with these no longer restricting production, full capacity output has been resumed. Judging from output and from the sales to G.S.A., it seems likely that the major U.S.A. producers at present have no intention of restricting output voluntarily, nor, probably, of reducing prices. Power supplies are still restricting Canadian aluminium production but, with spring melting of snow, this condition is expected to end very soon.

At present U.S.A. imports about three-quarters of its bauxite requirements. Plans for and present construction of new aluminium plants will call for even greater bauxite imports. However, of interest is the U.S.A. hope for successful commercial extraction of alumina from clays. While manufacture of alumina from clays has been achieved previously the processes used have always been too costly to compete with extraction from the high grade bauxite ores used by industry: such ores were recently proved in immense quantity in Northern Australia. Extraction of alumina from clay is never likely to be as cheap as extraction from high-grade bauxite but a process producing alumina from clay at a cost only slightly higher than the cost by conventional methods could lead to substantial production in U.S.A. which has large quantities of alumina-rich clays.

ASBESTOS.

Of the record asbestos production of 8,801 tons in 1956, 8,179 tons were from Western Australia (7,417 tons crocidolite and 762 tons chrysotile); the balance, all chrysotile, was from New South Wales.

Exports of crocidolite during 1956 were 6,767 tons, somewhat greater than in 1955. The average value of crocidolite exported was approximately £105 per ton, f.o.b. Fremantle.

At Wittenoom Gorge, Western Australia, Australian Blue Asbestos Ltd. has increased plant capacity to produce 15,000 tons of "bre annually. The oversea

demand for crocidolite has remained particularly firm and the company expects to export 11,500 tons of fibre in 1957.

Imports of asbestos declined sharply during 1956 and at 26,410 tons (including 16,379 tons of chrysotile and 9,504 tons of amosite) were about 34 per cent. below those of 1955. This reduction followed the extreme high rate of imports in 1955, which were in excess of local demand and resulted in a considerable accumulation of stocks.

Slackening off in the building industry is reflected in the decreased production of asbestos cement sheets. During 1956, the production of asbestos cement sheets was 25.082 million sq. yards, about 2.368 million sq. yards less than in 1955.

COPPER.

Mine production of copper in the fourth quarter of 1956 was 13,831 tons and the total for the year 53,344 tons. Production in 1957 should be maintained at about the same level.

The general decline in world copper prices that had been a feature of the market since March, 1956, continued in the early months of 1957. However, by March the price had steadied with minor fluctuations between £stg.235-£stg.245. The R.S.T. price was reduced from £stg.250 to £stg.240 late in February at which level it had remained unchanged to the end of May. In the U.S. the domestic producers' price for copper was reduced from 34 cents to 32 cents per pound late in February and was unchanged to the end of May — the U.S. custom smelter price was reduced to 30.5 cents late in March.

The substantial fall in copper prices since March, 1956, to the present level has aroused some speculation as to whether the U.S. Government would in the face of further pressure on the market, resort to a price support programme similar to that operating for lead and zinc.

A recent statement by the U.S. Business and Defence Services Administration points out that under existing Government contracts, if the price of refined copper falls below 29 cents, 4,000 short tons may be delivered to Government account. If the price should drop below 27 cents the quantity involved would increase to about 10,000 short tons monthly.

Notwithstanding the decline in copper prices oversea, the Australian price of copper has been maintained at £350 per ton by the Copper Producers' Association. A Tariff Board enquiry as to what assistance, if any, should be given to copper production in Australia opened in May.

GOLD.

Mine production of gold in the January-March period of 1957 was 253,257 oz., an increase of 16,112 ozs., compared with the corresponding period of 1956. Increased production was recorded in Western Australia and Victoria — production in Queensland was somewhat lower.

The recent decision of the United Kingdom Government to exempt companies (with certain exceptions) registered in that country from company tax derived from operations in oversea countries will be of considerable benefit to Lake View & Star Ltd. and North Kalgurlu Ltd.

In the period January-April, 1957, oversea sales of gold by the Gold Producers' Association amounted to 246,825 ounces on which an average profit, before administration charges, of 4.6 pence per ounce was realised.

Preliminary statistics indicate that world gold production in 1956 was 28.6 million ounces, an increase of 1.1 million ounces compared with 1955. The increase in production for the year was mainly from South Africa where a record of 15.9 million ounces was established. Canadian production at 4.4

million ounces was slightly below that of 1955 — production from the U.S.S.R., 2.1 million ounces and U.S.A., 1.9 million ounces, was constant at recent yearly levels.

IRON AND STEEL.

First quarter production of pig iron and of ingot steel in 1957 were respectively 535,176 tons and 752,384 tons. The figure for ingot steel is a record, some 31,000 tons higher than the output in the final quarter of 1956 and 160,000 tons higher than in the first quarter of 1956. For comparisons of monthly, quarterly and annual production figures, Tables 7 and 10 in Part II of this Review should be consulted.

Iron ore production during the last quarter, 1956, was 1,012,927 tons, making a total of 3,923,985 tons for the year. Imports for 1956 were 14,052 tons, of which the bulk came from New Caledonia. Imports from this source may be expected to continue.

Australian prices for iron and steel have remained constant since May, 1956. During this period U.K. prices increased (in mid-December) by about 6 per cent. and U.S.A. prices increased (early in March) an average of \$2 per ton, or about 3 per cent. This speaks well for the efficiency of the Australian industry, as Australian prices are relatively cheap in comparison with overseas prices.

LEAD.

Mine production of lead in the fourth quarter of 1956 was 79,306 tons; preliminary statistics for 1956 show the total Australian mine production as 297,909 tons compared with 295,944 tons in 1955.

During the first quarter of 1957, production of pig lead at Port Pirie, and of lead bullion at Mt. Isa was 43,323 tons and 10,625 tons respectively. Provided production of bullion is maintained at the first quarter level, the total for 1957 will exceed the record of 41,950 tons established in 1956. Exports of pig lead and bullion in the first two months of the year were 31,691 tons and 10,566 tons.

Despite the general strong price position of lead on the London Metal Exchange during the second half of 1956, the picture for the year was one of an overall decline in the level of prices. In the latter part of first quarter of 1957 the downturn in price was resumed; late in April and early May a relatively sharp fall to £stg.95½ was recorded following uncertainty as to the future of the U.S. stockpiling programme. In the U.S., the price of lead dropped from 16.0 cents, at which level it had been unchanged since December, 1955, to 15 cents in May. The average price of pig lead, f.o.b. Port Pirie in January, February, March and April was £139/13/7 per ton, £136/7/6 per ton, £136/3/- and £135/8/4 per ton respectively.

MANGANESE.

Shipments of metallurgical grade manganese ore from Western Australia in 1956 amounted to just over 56,000 tons, of which the bulk went to the Australian iron and steel industry where the market has been growing steadily; 2,852 tons were exported to Japan. Small amounts of battery grade, metallurgical grade and other grade manganese ores were won from Queensland, New South Wales and Western Australia, making total Australian production during the year of the order of 60,000 tons.

Increased prospecting and pegging of claims in Western Australia has followed the decision to permit the export of up to one-third of additional manganese ore reserves proved since 21st June, 1956. Application for permission to export should be made to the Minister for National Development.

Overseas, the world market for metallurgical grade manganese ore is becoming easier with the advent of Brazilian ore. Open market quotations for 48% Mn ores, c.i.f. European ports have fallen from the high level of

stg.12/6 per unit to around stg.11/3 per unit and indications are that buyer resistance will further reduce the market price. Australian prices are unaltered.

MINERAL OILS.

During the first quarter of 1957 approximately 15,000 feet of drilling was carried out by companies engaged in the search for oil in Australia and Papua. The Bureau of Mineral Resources, Geology & Geophysics has undertaken aeromagnetic, seismic and gravity surveys at Comet, Queensland; in the Sydney Basin, N.S.W.; in the vicinity of Heywood, Victoria; in the Perth, Canning and Carnarvon Basins, and at Busselton, Cookernup and Rockingham, Western Australia.

Queensland. Associated Australian Oil Fields N.L. commenced drilling on the eastern flank of the Arcadia anticline in the Carnarvon Ranges about 60 miles north of Roma; by the middle of April the drill was at 327 feet in fine grained hard calcareous sandstone.

Australasian Oil & Gas Corporation Ltd. reports that the Department of Mines has granted the company an additional area of 16,600 sq. miles adjoining its holding in the Thallon Basin.

Oil Drilling & Exploration Ltd. has reported that arrangements have been completed to drill for South Pacific Pty. Ltd. The first well will be a test hole near Tambo.

New South Wales. Australian Oil & Gas Corporation has resumed drilling at Dural and the bore was at 5,187 feet by the middle of April.

Directors of Clarence River Basin Oil Exploration have decided to cease operations on the old racecourse bore at Grafton, after it had been found impossible to remove the obstruction at 2,900 feet and obtain a satisfactory test of the gas volume. Investigations are being made at the Halfway Creek bore at Grafton, and the new bore on the racecourse.

Victoria. Woodside (Lakes Entrance) Oil Co. N.L. expects to begin drilling early in May in the vicinity of Hedley, near Geelong in southern Gippsland. Testing of the No. 2 hole has been completed and has failed to show any evidence of flow oil — the depth reached was 8,862 feet. No. 4 hole, in which the drill pipe became stuck at 2,572 feet, has been abandoned.

Oil & Mineral Quest N.L. and Oil Holdings Pty. Ltd. are to sponsor a new company, Victoria Oil N.L., to finance drilling for oil on Gippsland leases.

The Westralian Oil Ltd. joined in the search for oil in Gippsland and their stratigraphic bore at Yarram has reached 1,292 feet in tertiary sediments.

South Australia. Santos Ltd. reports that small amounts of grease were recovered at approximately 720 feet during examination of the brines in No. 3A hole. Drilling advanced to 793 feet by the middle of the third week in March. In the Wilkintana area a new hole is now at a depth of 810 feet in limestone. The company proposes to send a survey party into the Great Australian Artesian Basin and a site for test drilling will be selected. The detailed gravity survey of the Lake Torrens Plains, in the Parachilna area is nearing completion.

Western Australia. West Australian Petroleum Pty. Ltd. reports that preparations are now being made to resume active geophysical field work in the Canning and Fitzroy basins in the Kimberley district. The Bore No. 17B was advanced to 4,062 feet by middle of April.

Associated Freney Oil Fields N.L. late in May reported a showing of oil at 8,896 feet in the Sisters well in the Fitzroy Basin.

Northern Territory. The Administrator of the Northern Territory has announced that the search for oil is being intensified and that six oil permits covering an area of 45,000 sq. miles in widely separated parts of the Territory have been granted.

Papua. A new test well was spudded in by Australasian Petroleum Co. Pty. Ltd. and Island Exploration Co. Ltd. during April. A new drilling site has been chosen at Sireru, about eight to nine miles north of Kuru. The Kuru No. 2 well has been deepened to 7,503 feet and the Barikewa well to 3,946 feet after cementing 13½ in. casing at 2,531 feet. The Morehead hole has been abandoned at 8,087 feet.

The Papuan Apinaipi Petroleum Co. Ltd. expect to begin drilling in August or September, 1957.

SULPHUR.

World supplies of elemental sulphur increased during 1956 due mainly to increased production from the United States and Mexico. Production of sulphur in the United States rose from 7,050 million tons in 1955 to 7,875 million tons in 1956 and in Mexico from 516,000 tons to 750,000 tons in 1956.

Australian imports of elemental sulphur during 1956 were at a record high level of 202,977 tons (195,482 tons in 1955). The Pool price of sulphur to acid manufacturers remains unchanged at £21/10/- per ton, c.i.f. & e.

Export prices in the United States were reduced from \$31.00 per long ton, f.o.b. Gulf ports, to \$28.00 in February, 1956, by Freeport Sulphur Co. Similar reductions were subsequently made later by other U.S. producers. There was no change in the domestic price in the U.S. during 1956, which continued at \$26.50 per long ton, f.o.b. mine.

Domestic production of sulphuric acid during 1956 was 841,225 tons, compared with 895,765 tons in 1955. The decrease was primarily due to some cut-back in demand for superphosphate following an extremely wet season in the Eastern States during the first half of 1956.

In May, 1957, a Bill was introduced into the House of Representatives to amend the present Sulphuric Acid Bounty Act. The purpose of the Bill is to extend the bounty to cover all sulphuric acid produced from prescribed materials, irrespective of the use to which the acid is put and to remove the present ceiling of £600,000 payable annually under the Act.

TIN.

Production of tin concentrate in 1956 was 2,812 tons (1,982 tons tin content) compared with 2,890 tons (2,017 tons tin content) in 1955. Queensland production for the year was 347 tons below that of 1955 but this was largely offset by increased production in Tasmania, New South Wales and Western Australia.

Throughout the first quarter of 1957, the price of tin on the L.M.E., under the influence of many disturbing factors, was subject to considerable fluctuations. The strike at the Butterworth smelter, Malaya, the promise of an easier supply position with the reopening of the Suez Canal, the unsettled industrial conditions in the U.K. and the raising of the floor price under the International Tin Agreement all had their effect on the level of prices over the period. The maximum price was £stg.799½ on 29th January, the minimum £stg.754½ on 25th February. The announcement by the International Tin Council at the March meeting that the buffer stock manager could purchase tin at or below £stg.780 (compared with £stg.720 previously) brought immediate reaction and the L.M.E. price rose from £stg.769½ to £791½. Throughout April, the price although somewhat weaker fluctuated between £stg.770 and £780. Although there have been press surmises that purchases have been made for the buffer stock, no official announcement to this effect is likely for some time. Certainly the price has been within the range at which the buffer stock manager may buy tin. It is not unlikely that he took advantage of a backwardation in March-April and bought forward, or, possibly bought on the Singapore market; however, the backwardation narrowed in May. There is not enough surplus tin available for a large intake into the buffer pool to be possible.

TITANIUM.

Rutile. Production of rutile in the fourth quarter of 1956 was 30,726 tons, bringing the total for the year to 96,327 tons compared with the previous record production of 59,613 tons established in 1955. Of the total for 1956, 31,413 tons were from Queensland and 64,914 tons from New South Wales. Exports in 1956 were 89,887 tons of which 46,209 tons went to the United States, 12,494 tons to United Kingdom; Western European countries took the bulk of the remainder. During the first quarter of 1957, exports were 27,978 tons.

Although rutile production capacity will be increased by at least 50 per cent. in 1957, the extent to which this capacity will be utilised will depend on the trend in spot prices. During the first quarter of 1957 prices steadied at £60-65 per ton, f.o.b. after falling from £120-140 per ton in the first half of 1956. Indications are that the major consumers have their requirements for the immediate future covered by contract and new producers will find it difficult to market their production on such favourable terms. It could well be that if production reaches 150,000 tons in 1957, new production not contracted for may be sold at even lower prices to consumers who are willing to finance such purchases for stockpile purposes.

Ilmenite. The first overseas shipments of ilmenite from Western Australia were made in the first quarter of 1957 — production for the year could reach 100,000 tons.

It was recently announced that Westralian Oil Ltd. will erect a plant, 100,000 tons capacity, south-east of Capel, Western Australia. In addition, Western Titanium N.L. are to proceed with plans to increase the capacity of the Capel plant from 72,000 tons annually to 100,000 tons annually. Cable (1956) Ltd. operating on the shore of Koombana Bay, Bunbury, will also increase plant capacity to 90,000 tons of concentrate annually. The possibility of producing a titanium rich slag at Albany, Western Australia, is also under investigation.

With the completion of these projects the installed capacity for ilmenite production in Western Australia will be approximately 300,000 tons annually, a figure which could well be exceeded if other parties at present engaged in prospecting work decide to enter this field. The shipping of this quantity of concentrate from Western Australia is likely to be a major problem.

The rapidly increasing demand for ilmenite has promoted world wide interest in the industry and outside of Australia production is to be greatly expanded both in present producing countries and from the exploitation of deposits in other countries.

It has recently been announced that Norwegian production is to be increased from 180,000 tons to 400,000 tons annually — Canadian production of titanium rich slag, a competitor of ilmenite, is to be substantially increased. In the United States, at present the world's leading producer, production has been steadily expanded whilst in India, reserves are such that the potential production from that country is almost unlimited. The Anglo American Corporation has recently announced that it will invest £stg.1.5 million in the production of ilmenite in South Africa. Production is also likely in the near future from Ceylon. Whether Malayan production can be further expanded or maintained at the 1956 rate of 120,000 tons seems doubtful but it is of interest to note that output in 1956 increased by over 100 per cent. compared with 1955.

To what extent world markets can absorb these proposed increases in ilmenite production is yet undetermined but it is certain that the industry over the next few years will become highly competitive. The geographical position of producers with respect to markets will be a major factor in determining the prosperity of the industry in various producing countries. On a low priced

commodity such as ilmenite the question of freight costs is probably the most important factor in a competitive world market.

Titanium metal. Production of titanium metal sponge in the United States in 1956 was 13,000 tons, an increase of 80 per cent. compared with 1955; production in 1957 is expected to exceed 20,000 tons. During the year the price of sponge was reduced from \$3.45 per lb. to \$2.75.

Although no statistics of sponge production in the U.K. are yet available, it is believed that production for the year was considerably below the rated plant capacity of 1,500 tons per annum. Production of titanium in Japan is believed to have been of the order of 1,250 tons.

TUNGSTEN.

The total production of tungsten concentrates in 1956 was 2,381 tons (65% WO₃) comprising 1,518 tons of scheelite and 863 tons of wolfram. Production of scheelite and wolfram concentrates (65% WO₃) in 1955 was 1,477 tons and 805 tons respectively.

Compared with 1955, production of wolfram from Queensland fell by 55 tons but was compensated by a rise of 81 tons from Tasmania and 30 tons from Northern Territory. Tasmanian production of scheelite from King Island increased from 1,458 tons to 1,515 tons.

The present contract under which King Island Scheelite (1947) Ltd. is disposing of its production to the United States expires in April, 1958. From information published in the annual report of the company, the average price received during 1956 was approximately £25 per unit.

Throughout the first quarter of 1957, the downward trend in the overseas tungsten price continued and reached stg.145/- in mid-March — however there has been a subsequent firming in prices and by the end of April the quotation was stg.165/- per unit.

In the U.S. it would now appear that the recommendation of the House of Representatives Appropriations Committee will be enforced despite opposition from the Senate and the appropriation of \$21 million for the purchase of domestic tungsten ores will not be granted. This will mean that there will be no purchase of domestic tungsten ores for stockpile purposes from production in the December, 1956, to June, 1957, period. Prices paid by the U.S. Government for domestic concentrate during 1956 were \$63 per short ton unit to mid-July and \$55 per short ton unit throughout the second half of the year.

URANIUM.

Exploration during the first quarter of 1957 disclosed no important new occurrences of uranium mineralisation in Australia. Prospecting in northern Australia was on a lower scale during the quarter. A scintillograph survey of part of north-eastern Tasmania was carried out from the air without significant results. Otherwise much of the activity of the Bureau of Mineral Resources in its uranium prospecting campaign was devoted to the checking and maintenance of equipment in preparation for resumption of field operations in northern Australia. One or two drill holes were radio-metrically assayed. Interpretation of geophysical and aerial surveys was continued.

Company activity was chiefly confined to known deposits, but exploration, development and mining of these in the past three months has not led to any significant increase in known resources. A proposition for mining by open-cut the Crookers Well deposits in South Australia is under consideration, and erection of an ore concentrating plant has been suggested. The uranium treatment plant at Mary Kathleen is expected to be completed within two years.

The first dividend to investors in uranium mining in Australia was paid on 31st May to shareholders of Uranium Mines N.L. and Northern Uranium Development N.L., joint owners of United Uranium N.L., which is operating the small rich El Sharana deposit in the Northern Territory. Developed reserves at the mine are just over 100,000 tons of ore containing 0.43 per cent. U₃O₈. Reserves at other Australian deposits have not yet been disclosed. U.S.A. uranium ore reserves have recently been estimated at 60 million tons of grade 0.25 per cent U₃O₈.

ZINC.

During the fourth quarter of 1956, mine production of zinc was 72,262 tons and the total for the year 277,976, representing an increase of approximately 21,000 tons over the 1955 production. The bulk of the increase was from Broken Hill although Tasmanian mine production increased by approximately 5,000 tons.

At Risdon, Tasmania, production of refined zinc in the first quarter of 1957 was 26,259 tons, the highest ever recorded for the January-March period. Provided power supplies are maintained, the record production of 1956, 104,993 tons, should be exceeded in 1957.

After opening at fsg.101½ per ton, in January, the price of g.o.b. zinc on the L.M.E. reached a peak of £105½ in the middle of the month. However, following upon the unsettled industrial conditions in February, the L.M.E. price fell to fsg.95½ late in February.

Throughout March and during most of April the price fluctuated between fsg.96-99, reaching a minor peak of fsg.99/12/6 on 26th April. Conflicting reports as to the future of the American zinc stockpiling programme created an uneasy tone on the L.M.E. and caused a sharp fall in prices in the first week of May. The price position on the L.M.E. was further influenced by the reduction in the American price from 13.5 cents to 12 cents and to 11.5 cents per lb., and on the 13th May the price reached fsg.82½ per ton, its lowest point since January, 1955. There has been some later recovery.

The future trend in the zinc price will, of course, depend upon the policy of the U.S. Government with respect to stockpiling purchases and barter transactions. The barter of surplus agricultural products by the U.S. Government for metals (notably lead and zinc) has aroused considerable protest by other exporters of agricultural products. Barter deals in zinc were temporarily suspended in May.

The average price of refined zinc in Australia during January, February, March and April, 1957, was £128½ per ton, £124½ per ton, £121½ per ton and £122½ per ton — all prices being f.o.b. Risdon.

ZIRCONIUM.

Zircon production in the fourth quarter of 1956 was 24,089 tons, the highest production recorded to date. Of the total production of 72,458 tons in 1956, 21,798 tons were from Queensland and 50,660 tons from New South Wales. Exports for the year were 68,838 tons and in the first quarter of 1957, 21,388 tons.

The potential zircon production from the east coast will be further increased during 1957 as a result of the rapid expansion in the number of companies entering the rutile industry. However, there seems little likelihood of this potential capacity being utilised to anything like its maximum as prices have already shown some decline and at £13-15 per ton, f.o.b. there is no great incentive for increased production.

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						
February	£350/-	£245/11/1	33.1	£136/ 7/6	£113/ 3/-	16.0
March	£350/-	£239/10/11	32.0	£136/ 3/-	£113/ 2/1	16.0
April	£350/-	£241/19/1	32.0	£135/ 8/4	£111/17/5	16.0
ZINC						
February	£124/12/6	£99/ 8/10	13.5	n.a.	£770/16/9	100.5
March	£121/10/-	£96/12/3	13.5	£1,007/-	£770/14/6	99.6
April	£122/10/-	£98/ 7/6	13.5	£1,024/ 1/1	£774/ 4/9	99.5
TIN						

MAXIMUM AND MINIMUM SPOT METAL PRICES, 1st JANUARY - 30th APRIL, 1957.

	Max.	Min.	Max.	Min.	Max.	Min.
	Australia	U.K. Stg.	U.S.A. (a)			
Copper	£357/-	£350/-	£272/ 5/-	£235/ 2/6	36.0	32.0
Lead	£141/12/6	£133/-	£118/ 7/6	£107/17/6	16.0	16.0
Zinc	£129/15/-	£120/10/-	£105/10/-	£93/17/6	13.5	13.5
Tin	n.a.	n.a.	£803/-	£754/10/-	104.0	98.2

METAL PRICES AS AT 1st MAY, 1957.

	Australia	U.K. Stg.	U.S.A. (a)
Aluminium	(e) £277/10/- per ton (d) £260 per ton nom.	£197 per ton	(i) £24.50
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	—	16/- per lb.	\$2.02
Copper	(b) £350 per ton	£240/7/6 per ton (c) 32 R.S.T. £240 per ton (c) 32	
Gold, per fine oz.	£15/12/6	£12/8/-	\$35
Lead	£130/5/-	£109/2/6 per ton	16
Mercury	—	£85½ per flask	\$255-257 per flask
Nickel	—	£600 per ton	(g) 70
Pig Iron	£21/2/6 per ton	£19/13/3 per ton	\$65-68 per ton
Silver, per fine oz.	8/3½	6/8	91.375 cents
Tin	(h) £1,024 per ton	£769/15/- per ton	98.75
Zinc	£121/12/6 per ton (electro)	£94/7/6 per ton (g.o.b.)	13½ (Prime West- ern)

(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, delivered Sydney. (i) 99.6% Sb. (j) 99.5% Sb.

ORE AND CONCENTRATE PRICES AS AT 1st MAY, 1957.

	Australia 30/- per unit 60% Sb.	U.K. Stg. 23/6-24/3 per unit 60% Sb.	U.S.A. \$360-400 per s. ton unit 60-65% Sb. Nom.
Antimony			
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 (Nom.), f.o.b., mine, domestic; c.i.f. Atlantic ports foreign per s. ton unit 10-12% BeO \$37 (Nom.).
Bismuth	7/- per lb. metal content 65% concentrate	8/6 per lb. metal content 65% concentrate.	—
Chromium Ore	Nom.	£17/8/- 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, \$55-58.5 48% Cr ₂ O ₃ , no ratio \$46-50.
Columbite- Tantalite	—	65% combined oxides c.i.f. 9/12:1 ratio, 185/- - 197/6 per unit. 4/1 ratio 160/- - 170/-	\$1.15 - 1.40 per lb. pentoxide.
Manganese Ore	Metallurgical Ore £10 f.o.b. Geraldton. Battery grade £20 per ton at rail. N.S.W. railway siding, for 75% MnO ₂ .	11/8 - 12/6 per unit long ton unit 48- European ports.	\$1.58 - 1.63 (nom.) per long ton unit 48- 50% ore, c.i.f. U.S. ports.
Molybdenum Ore	Nom.	8/9½ per lb. metal, c.i.f. 85% MoS ₂ cons.	\$1.18-1.23 per lb. con- tained Mo. f.o.b. mines.
Monazite cons.	Nom. About £150 per ton f.o.b. 90-95% mona- zite cons.	—	Per lb. c.i.f. U.S. ports, total rare earths and ThO ₂ 55% 18 cents 66%, 20 cents.
Rutile	£60-62 per ton, nom.	£62½-67½ per ton 95-97% TiO ₂ cons. c.i.f. Nom.	85 - 90 cents per lb. of 94% TiO ₂ cons. f.o.b.
Ilmenite	£5-6 per ton, f.o.b. Bunbury.	£12-12½ per ton 52-54% TiO ₂ c.i.f.	\$26.25 - 30.0 per ton Atlantic ports, nom. 59.5% TiO ₂ , f.o.b.
Tantalite	—	Nominal	Nominal
Tin	£81-8½ per unit of contained metal delivered Sydney.	—	—
Tungsten	175/- per unit f.o.b.	156/- - 161/- per unit, c.i.f.	(b) \$55 per s. ton unit. (c) \$21 (nom.) per s. ton unit.
Zircon	£13-15 per ton 66-67% ZrO ₂ cons. f.o.b.	£18½-20 per ton c.i.f.	\$64-68 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	Draftage 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	£7/7/6	11/6	15/-	4/5
Mt. Isa (2)	1.3 unit of copper per ton of ore	£5/5/-	14/-	No payment for gold and silver.	
Mt. Morgan (3) (4)	1% of weight of ore plus 1.3 units of copper per ton of ore	£6/-/-	20/-	17/-	5/-

(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 MAY, 1957.**Asbestos.**

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

Barite—

Crude: £11 per ton, f.o.r. Hawker, South Australia.
Ground: £15-£42 per ton according to grade, f.o.b. Sydney.

Fluorspar.**Buying.**

90% CaF_2 f.o.b. Mungana, Queensland—£11/2/6 per ton.
85% CaF_2 f.o.b. Mungana, Queensland—£9/17/6 per ton.

Selling.

90% CaF_2 delivered Sydney—£30/-/- per ton.
85% CaF_2 delivered Sydney—£28/-/- 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. 4

PART 2 — QUARTERLY STATISTICS

QUARTER ENDED 31st DECEMBER, 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 output and of production of the mining and quarrying industries, (ii) value of individual minerals produced, (iii) value of imports and of exports of principal minerals, mineral products and metals, on a **calendar year basis**, and (iv) value of smelter and refinery production on a **fiscal year basis**, appeared for the first time in this Bulletin in Vol. 9, No. 2. It is intended to include this information in future in the first quarterly issue each year.

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.

CONTENTS

Table No.	Page No.
I.—SUMMARY TABLES.	
1. Production of Principal Minerals: Australia, Years 1939, 1952, 1953, 1954, 1955, Quarter and Year ended 31st December, 1956	1
2. Smelter and Refinery Production of Principal Metals: Australia, Years 1939, 1952, 1953, 1954, 1955, Quarter and Year ended 31st December, 1956	2
3. Imports and Exports of Principal Minerals and Metals: Australia, Years 1938-39, 1954, 1955, Quarter and Year ended 31st December, 1956	3
4. Summary of Production, Imports and Exports of Principal Metals, Coal and Sulphur, Australia, Years 1939, 1954, 1955, Quarter and Year ended 31st December, 1956	3
II.—DETAILED TABLES.	
5. Quantities and Contents (or Grade) of Minerals Produced: Australia, Years 1954, 1955, Quarter and Year ended 31st December, 1956	7
6. Principal Contents of Metallic Minerals and Quantity of Coal Produced: Producing State and Australia, Years 1954, 1955, Quarter and Year ended 31st December, 1956	10
7. Smelter and Refinery Production of Principal Metals: Australia, Years 1939, 1951, 1952, 1953, 1954, 1955, Quarter and Year ended 31st December, 1956	12
8. Imports of Minerals, Mineral Products and Metals, from Principal Countries of Origin: Australia, Years 1954, 1955, Quarter and Year ended 31st December, 1956	13
9. Exports of Minerals, Mineral Products and Metals, to Principal Countries of Destination: Australia, Years 1954, 1955, Quarter and Year ended 31st December, 1956	15
III.—APPENDIX.	
10. Smelter and Refinery Production of Principal Metals: Australia, months available after 31st December, 1956	18
11. Production of Gold and Coal: Australia, months available after 31st December, 1956	18

SUMMARY

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

(i) **Production of Minerals (Table 1):** The quarterly average production of metals (i.e., metal contents of ores, concentrates and other minerals produced) during the year ended 31st December, 1956, was greater than the quarterly average of 1955 for rutile (TiO₂ content) 62.1%, copper 19.0%, iron 10.3%, zinc 8.4%, tungsten (WO₃ content) 5.7%. Silver and lead showed small increases. There were decreases in tin (4.4%) and gold (1.8%).

Brown coal recorded an increase of 4.4%, whereas black coal average production was practically the same for 1956 as for 1955.

Production of sulphur (i.e., sulphur content of zinc concentrate, lead concentrate and pyrite produced and of spent oxide roasted) was 19.7% 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):** Quarterly average production for the year ended 31st December, 1956, compared with the average quarterly production for 1955, showed increases for blister copper (32.9%), pig iron (15.3%), steel ingots (18.2%), lead content of lead bullion (11.4%), silver (5.7%), refined lead (4.2%), and refined zinc (3.9%). Refined tin (7.6%), refined copper (5.9%), and refined gold (1.4%) recorded decreases.

Production of refined aluminium commenced in August, 1955. The average quarterly production during the year 1956 is therefore not compared with previous production.

Compared with the quarterly average for 1939, main increases were in the case of blister copper (170.7%), steel ingots (122.4%), pig iron (87.7%), refined copper (48.2%), and refined zinc (47.4%). Principal decreases were refined tin (43.8%), refined gold (40.4%), and refined silver (13.5%).

(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, 1954, 1955, 1956, and the quarter ended 31st December, 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
	Tons	'000 fine oz.	'000 tons	Tons	Tons	'000 fine oz.
Annual Totals	20,560	1,645.7	1,548.0	280,003	707	15,320.4
1939	18,578	980.4	1,883.1	228,196	36,861	11,278.4
1952	36,565	1,075.2	2,131.9	269,344	37,067	12,539.2
1953	40,857	1,117.7	2,274.3	284,862	43,011	13,827.0
1954	45,496	1,049.0	2,304.2	295,944	57,232	14,555.4
1955	52,669	1,029.9	2,542.8	297,909	92,773	14,394.4
1956						
Quarterly Averages—						
1939	5,140	411.4	387.0	70,001	177	3,830.0
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	568.6	71,216	10,753	3,455.8
1955	11,063	262.2	576.1	73,263	14,308	3,522.0
1956	13,167	257.5	635.7	74,477	23,193	3,598.6
Oct.-Dec., '56	13,680	265.4	658.4	79,306	29,612	3,975.7
% Change	%	%	%	%	%	%
Quarterly Average 1956 on Quarterly Average						
1939	+156.2	—37.4	+64.3	+6.4	13,003.4	—6.0
1955	+19.0	—1.8	+10.3	+1.7	+62.1	+2.2

Period	Contents of Metallic Minerals Produced				Quantity Produced	
	Sulphur (b)	Tin	Tungsten (WO ₃ Content)	Zinc	Black Coal	Brown Coal
	Tons	Tons	Tons	Tons	'000 tons	'000 tons
Annual Totals	151,008	3,067	612	214,823	13,535.1	3,651.0
1939	217,242	1,611	1,282	196,450	19,404.0	8,103.8
1952	225,197	1,553	1,406	239,324	18,410.8	8,257.3
1953	254,403	2,075	1,372	252,659	19,763.0	9,331.3
1954	267,183	2,017	1,492	256,564	19,274.8	10,112.2
1955	337,810	1,982	1,548	277,976	19,290.6	10,578.8
1956						
Quarterly Averages—						
1939	37,752	767	153	53,706	3,383.8	912.8
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	343	63,165	4,940.4	2,332.8
1955	70,548	519	366	64,105	4,820.8	2,528.1
1956	84,453	496	387	69,494	4,822.7	2,639.9
Oct.-Dec., '56	87,503	479	343	72,262	5,025.7	2,566.4
% Change	%	%	%	%	%	%
Quarterly Average 1956 on Quarterly Average						
1939	+123.7	—35.3	+152.9	+29.4	+42.5	+189.2
1955	+19.7	—4.4	+5.7	+8.4	+0.0	+4.4

(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	Aluminium (Refined)	Copper (Blister)	Copper (Refined)	Gold (Refined)	Lead (Refined)	Lead Con- tent of Lead Bullion
Annual Totals		Tons	Tons	'000 f. oz.	Tons	Tons
1939	—	18,375	17,867	(d)2,021.3	(e)199,437	43,955
1952	—	20,008	(e)19,623	1,240.8	156,639	37,704
1953	—	34,159	16,682	1,255.2	172,468	34,050
1954	—	38,047	29,287	1,253.4	200,409	38,146
1955	(f)1,248	37,439	28,148	1,222.3	187,134	37,392
1956(h)	9,143	49,742	26,488	1,205.2	195,089	41,658
Quarterly Averages—						
1939	—	4,594	4,467	(d)505.3	(e)49,859	10,989
1952	—	5,002	(e)4,906	310.2	39,160	9,427
1953	—	8,540	4,171	313.6	43,117	8,513
1954	—	9,512	7,322	313.4	50,102	9,537
1955	(g)	9,360	7,037	305.6	46,784	9,348
1956(h)	2,286	12,436	6,622	301.3	46,772	10,415
Oct.-Dec. '56	2,588	12,954	7,902	302.2	50,611	11,137
(h)	%	%	%	%	%	%
% Change						
Quarterly Av- erage 1956 on Quarterly Average—						
1939		+170.7	+48.2	-40.4	-2.2	-5.2
1955	(a)	+32.9	-5.9	-1.4	+4.2	+11.4

Particulars	Pig Iron	Steel Ingots	Silver (Refined)	Tin (Refined)	Zinc (Refined)
Annual Totals—	'000 tons	'000 tons	'000 f. oz.	Tons	Tons
1939	(k)1,104.6	(k)1,170.1	9,552.4	3,294	71,220
1952	1,549.2	1,625.9	9,524.6	1,700	87,438
1953	1,842.4	2,043.1	6,772.6	1,443	90,178
1954	1,856.0	2,210.6	3,595.4	2,063	104,523
1955	1,797.5	2,200.6	8,474.1	2,004	101,090
1956(h)	2,073.2	2,062.1	8,263.1	1,850	104,993
Quarterly Averages—					
1939	(k)276.2	(k)292.5	2,388.1	824	17,805
1952	387.3	406.5	1,693.2	425	21,860
1953	460.6	510.8	1,648.9	361	22,545
1954	464.0	552.7	2,118.5	516	26,131
1955	449.4	550.2	1,954.4	501	25,273
1956(h)	518.3	650.5	2,065.8	463	26,248
Oct.-Dec. 1956(h)	539.1	721.2	2,137.8	426	27,193
Percentage Change	%	%	%	%	%
Quarterly Average, 1956, on Quarterly Aver- age—					
1939	+87.7	+122.4	-13.5	-43.8	+47.4
1955	+15.3	+18.2	+5.7	-7.6	+3.9

(a) Excludes quantities refined from imported blister copper. (b) Includes quantities from gold-bearing minerals of overseas origin; see Table (7). (c) Lead content of lead bullion produced for export. (d) Year ended 31st December, 1940. (e) Includes small quantities recovered from scrap. (f) Production commenced August. (g) Not available. (h) Subject to revision. (i) Includes small quantities recovered from silver-bearing minerals of overseas origin. (j) Includes zinc dust produced for sale and for use in the zinc refining plant. (k) Year ended 31st May, 1939.

Note: Particulars of refined aluminium, 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	1954	1955	1956	Oct.-Dec. 1956
IMPORTS.						
Metals (b)—	ton		(a)			
Copper	fine oz.	878	17,975	25,518	2,313	312
Gold	—	376,417	211,018	150,606	201,883	46,491
Iron & Steel	—	—	—	423,206	(d)221,266	42,275
(c)	ton	137,041	271,050	—	—	—
Lead	—	110	—	76	102	26
Silver	'000 f. oz.	201	104	506	516	162
Tin	—	160	—	—	—	—
Zinc (e)	ton	86,970	3,040	4,026	5,075	—
Coal (Black)	—	—	—	—	—	—
Petroleum	'000 gal.	602,761	1,781,308	2,285,834	2,623,771	648,383
Shale Oils	—	115,101	187,916	195,482	202,977	63,057
Sulphur (f)	ton	—	—	—	—	—
EXPORTS.						
Metals (b)—	ton					
Copper	fine oz.	3,057	12,586	12,510	24,499	5,985
Gold	—	2,012,972	578,963	1,151,819	549,137	246,277
Iron & Steel	—	—	—	—	—	—
(c)	ton	187,767	107,794	74,010	134,563	87,621
Lead	—	232,029	241,706	228,021	241,884	78,853
Silver	'000 f. oz.	14,266	12,283	11,240	22,283	3,669
Tin	—	178,654	193,319	164,362	177,321	59,297
Zinc	—	382,085	376,774	202,062	239,379	55,677
Coal (Black)	—	—	—	—	—	—
Petroleum	'000 gal.	1,313	18,525	84,517	182,150	41,412
Shale Oils	—	78,373	84,564	73,472	96,429	31,264
Sulphur (g)	ton	—	—	—	—	—

(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) Jan.-Sept. revised. (e) Blocks, ingots. (f) Elemental sulphur. (g) 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 (CLEARED FOR HOME CONSUMPTION), 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	1954	1955	1956(a)	Oct.-Dec. 1956(a)
ALUMINIUM (Tons)					
Bauxite Produced (Al ₂ O ₃ Content)	3,900	2,440	3,406	3,261	943
Production of Refined Aluminium	—	—	(b)1,248	9,143	2,588
Imports—					
Bauxite (Al ₂ O ₃ Content)	(c)	—	10,640	21,229	5,253
Ingots, etc.	(c)	10,421	14,861	10,223	1,906
Rods, Sheet, Powder, etc.	(c)	4,143	5,705	(d)5,157	1,088
Exports—					
Ingots, etc.	(c)	—	—	4	3
Rods, Sheet, etc.	(c)	48	50	30	5

(a) Subject to revision. (b) Production commenced August. (c) Not available. (d) Jan.-Sept. revised.

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

Item	1939	1954	1955	1956(a)	Oct.-Dec. 1956(a)
COPPER (Tons)					
Copper Content of Minerals Produced	20,560	40,857	45,496	52,669	13,680
Production of Blister Copper	18,375	38,047	37,439	49,742	12,954
Production of Refined Copper (b)	17,867	29,287	28,148	26,488	7,902
Imports (c)—					
Blister (copper content)	(d)	496	—	(l)—	—
Ingots, etc. (refined)	(e)72	14,409	21,303	(l)250	100
Rods, Bars, Sheets, Tubes etc.	(e)806	3,070	4,215	2,063	212
Exports—					
Blister (copper content)	(d)	9,711	8,077	15,465	4,336
Ingots, etc. (refined)	(e)16	14	2	1,002	(f)
Rolled, Drawn and Extruded Shapes (excluding wire)	(e)150	392	468	1,581	570
Copper in all concentrates, etc.	(e)2,891	2,469	3,963	6,451	1,079
GOLD (Fine oz.)					
Gold Content of Minerals Produced	1,645,697	1,117,742	(m)1049039	1,029,926	265,408
Production of Refined Gold					
Australian Origin	(g)1,637,031	1,063,457	1,054,714	1,044,164	260,559
Overseas Origin	(a)384,223	189,913	167,547	161,065	41,603
Total Refined Gold	2,021,254	1,253,370	1,222,261	1,205,229	302,162
Imports (c)—					
Bar, Dust, Ingot, Sheet in matte (gold content)	(e)376,417	211,018	150,606	201,883	46,491
Exports—					
Ores, Concentrates (gold content)	(e)42,732	10,231	15,244	18,127	3,841
Bar, Dust, Ingot, in matte, etc. (gold content)	(e)1,970,240	568,732	1,136,575	531,010	242,436
Change in Stock of Gold in Australia (h)	(e)+15,840	+749,797	(m)+47,826	+682,672	+65,622
IRON AND STEEL (Tons)					
Iron Content of Ore Produced (i)	1,548,031	2,274,330	2,304,165	2,542,826	656,411
Production of Pig Iron	(j)1,104,605	1,656,013	1,797,533	2,073,201	539,092
Production of Ingot Steel	(j)1,170,103	2,210,611	2,200,555	2,602,130	721,186
Imports (c)—					
Iron Ore	(f)17	—	32	14,052	14,050
Pig Iron	(e)51	—	—	—	—
Iron and Steel					
Ingots, Blooms, Billets	(e)4,390	424	728	538	106
Bars, Rods, Plates, Sheets, etc. (k)	(e)132,600	270,626	422,478	220,728	42,169
Exports—					
Iron Ore	(e)132,163	—	—	(l)117	57
Pig Iron	(e)52,321	33,738	44,892	16,420	4,695
Iron and Steel—					
Ingots, Blooms, Billets	(e)17,656	26,561	211	1,747	1,660
Bar, Rod	(e)104,714	20,541	9,729	16,842	8,183
Plate, Sheet (excl. galvanized)	(e)11,471	14,957	11,936	61,070	49,546
Plate, Sheet (galvanized)	(e)1,605	11,997	7,242	38,484	23,537

(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 ingots, etc. (refined) prior to 1st July, 1953. (e) Year ended 30th June. (f) Less than half. (g) Year ended 31st December, 1940. (h) Excludes gold specie; includes gold content of minerals awaiting refining. (i) Estimated. (j) Year ended 31st May, 1939. (k) Includes terneplate, tinplate, galvanized sheet. (l) Jan.-Sept. revised. (m) Revised.

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

Item	1939	1954	1955	1956(a)	Oct.-Dec. 1956(a)
LEAD (Tons)					
Lead content of Minerals Produced	280,003	284,862	295,944	297,909	79,306
Production of Refined Lead	(b)199,437	200,409	187,134	195,089	50,611
Production of Lead Bullion (c) (lead content)	43,955	38,146	37,392	41,658	11,137
Imports (d)—					
Pig, other unwrought shapes, Sheet, Pipe	(e)110	—	—	—	—
Exports—					
Ores, Concentrates (lead content)	(e)26,410	45,261	43,830	54,818	13,351
Lead Bullion (lead content)	(e)204,999	35,894	38,231	37,923	13,112
Refined Lead					
Pigs, etc.	(f)	159,328	145,874	149,061	52,366
Sheet, Pipe, etc.	(e)620	1,224	86	82	24
RUTILE (TiO₂ Content) (Tons)					
Concentrates Produced (TiO ₂ content)	707	43,011	57,232	92,773	29,612
Imports (d)—					
Concentrates (TiO ₂ content)	—	—	—	—	—
Exports—					
Concentrates (TiO ₂ content) (i)	(h)	42,267	57,208	(g)89,450	28,600
SILVER (Fine oz.)					
Silver content of Minerals Produced	15,320,116	13,827,038	14,555,412	14,394,399	3,975,695
Production of Refined Silver (j)	9,552,411	8,474,087	7,817,587	8,263,142	2,137,771
Imports (d)—					
Bars, Ingots, etc.	(e)200,568	103,818	75,871	102,268	26,281
Exports—					
Ores and Concentrates (silver content)	(e)1,840,159	1,943,150	1,907,303	2,172,482	556,867
Silver-Lead Bullion (silver content)	(e)3,000,000	2,908,945	3,318,541	3,518,763	1,188,464
Bars, Ingots, Sheets, etc.	(e)9,426,059	7,431,170	6,014,099	16,591,523	1,923,841
TIN (Tons)					
Tin content of Minerals Produced	3,067	2,075	2,017	1,982	479
Production of Refined Tin	3,294	2,063	2,004	1,850	426
Imports (d)—					
Ingots	(e)39	571	506	516	162
Exports—					
Ores, Concentrates (tin content)	(e)309	19	132	63	14
Ingots	(e)1,476	94	98	24	4

(a) Subject to revision. (b) Includes small quantities recovered from scrap. (c) Exported as lead bullion. (d) Cleared for home consumption; total imports as from 1st January, 1955. (e) Year ended 30th June. (f) Included with lead bullion. (g) Jan.-Sept. revised. (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	1954	1955	1956(a)	Oct.-Dec. 1956(a)
TUNGSTEN (WO₃ Content) (Tons)					
WO ₃ Content of Minerals Produced					
In Wolfram concs. (b)	452	511	522	563	123
In Scheelite concs. (b)	160	861	960	985	220
Total WO ₃ content	612	1,372	1,482	1,548	343
Imports (c)—					
Concs (WO ₃ content)	—	—	—	—	—
Exports—					
Wolfram concentrates (WO ₃ content)	(d)(e)610	537	605	563	130
Scheelite concentrates (WO ₃ content)	(d)(e)75	755	886	865	198
ZINC (Tons).					
Zinc Content of Minerals Produced	214,823	252,659	256,554	277,976	72,262
Production of Refined Zinc (f)	71,220	104,523	101,030	104,993	27,193
Imports (c)—					
Blocks, Ingots	(d)160	—	—	—	—
Exports—					
All Concentrates (zinc content)	(d)134,017	151,313	128,216	143,444	49,131
Ingots, Blocks	(d)44,617	38,262	33,912	31,594	9,678
Plates, Sheets, etc.	20	3,744	2,214	2,283	488
COAL (Tons).					
Production—					
Black Coal					
Semi-anthracite	72,227	73,621	83,864	82,116	18,836
Bituminous	12,809,284	17,848,220	17,608,498	17,696,953	4,620,447
Sub-Bituminous	653,631	1,841,198	1,582,388	1,511,733	386,403
Total, Black	13,535,142	19,763,039	19,274,750	19,290,642	5,025,686
Underground	13,492,057	16,773,244	16,959,182	17,152,535	4,498,313
Open-cut	43,085	2,989,795	2,315,568	2,138,107	527,373
Brown Coal inc. lignite (h)	3,651,014	9,331,255	10,112,206	10,559,801	2,566,444
Imports (c)—					
Black Coal	(d)86,970	3,040	4,026	5,075	—
Exports—					
Black Coal	(d)382,085	376,774	202,062	239,379	55,677
SULPHUR (Tons).					
Sulphur content of Materials produced—					
Zinc concentrates	123,968	152,074	155,836	168,396	43,705
Lead concentrates (e)	(f)	(f)	(f)	81,277	22,825
Pyrites	27,040	97,649	107,724	88,137	20,973
Spent Oxide Roasted	(g)	(e)4,680	5,511	5,877	1,077
Total, Sulphur content	151,008	254,403	269,071	343,877	88,580
Recoverable Sulphur	129,709	221,265	232,552	268,269	68,385
Production of Mono Acid Sulphur in Mono Acid produced from—	(d)484,493	778,008	895,765	841,225	194,331
Sulphur (elemental) (i)	(e)114,500	154,337	187,015	146,816	31,114
Zinc concentrate (e)	25,300	33,564	30,412	29,061	8,405
Lead concentrate (e)	—	—	—	16,090	3,931
Pyrites (e)	27,040	62,533	71,179	76,780	18,596
Spent Oxide (e)	(h)	3,973	4,295	4,643	848
Other materials	—	—	—	1,694	652
Total	166,840	254,407	292,901	275,084	63,546
Imports (c)—					
Sulphur (elemental)	(d)115,101	187,916	195,482	202,977	63,057
Exports—					
Sulphur content (e)	(d)78,373	84,554	73,472	85,569	28,804
Lead concentrate (e)	(f)	(f)	(f)	10,862	2,460

(a) Subject to revision. (b) Includes bismuth-wolfram and tungsten-wolfram concentrates. (c) Cleared for home consumption, total imports less from 1st January, 1955. (d) Year ended 31st March, June, etc. (e) Estimated. (f) Includes zinc dust produced for sale and for use in zinc refining plant. (g) Not available. (h) As at open cut. (i) Not recorded, sulphur acid not produced from lead concentrate in Australia prior to 1954. (j) As imported.

II. DETAILED TABLES

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

Mineral	Unit of Quantity	1954	1955	1956(a)	Oct.-Dec. 1956(a)
METALLIC MINERALS					
Antimony Ore & Concentrate	ton	—	650	536	62
Antimony content	ton	117	307	281	35
Gold content	fine oz.	2	—	7,056	2,022
Bauxite	ton	5,487	7,563	9,261	943
Al ₂ O ₃ content	ton	2,440	3,466	3,111	163
Beryllium Ore	ton	147	—	3,735	1,939
BeO content	unit	1,723	2,428	1,006	—
Bismuth Concentrate	lb.	3,926	—	(b)110	—
Bismuth content	lb.	1,393	—	—	—
WO ₃ content	ton	—	—	—	—
Silver content	f. oz.	—	—	—	—
Gold content	f. oz.	4,943	—	6,096	6,096
Chromite	ton	2,094	—	2,624	2,624
Cr ₂ O ₃ content	ton	—	—	—	—
Copper Ore, Concentrate, etc.	ton	194,269	211,851	226,849	58,351
Copper content	ton	37,041	41,474	48,558	12,602
Gold content	f. oz.	97,202	48,800	64,038	17,945
Cadmium content	f. oz.	1,069,600	854,722	1,016,809	278,903
Lead content	ton	2,845	2,171	2,355	578
Silver content	ton	102	171	115	48
Gold Ore & Concentrate	ton	324	543	301	141
Gold content	f. oz.	357	433	219	89
Silver content	f. oz.	(c)	(c)	(c)	(c)
Copper content	ton	—	—	—	—
Gold Matte, Slag, etc.	f. oz.	—	—	—	—
Gold content	f. oz.	—	—	—	—
Silver content	ton	—	—	—	—
Copper content	oz.	(d)	(d)	(d)	(d)
Gold — other forms	f. oz.	1,006,842	966,289	951,142	243,626
Gold content	f. oz.	245,334	210,899	215,761	48,840
Silver content	ton	469	535	4,274	4,084
Iron content	ton	446	510	(e)4,014	3,841
Ilmenite Concentrate	ton	3,118,804	3,572,609	3,923,985	1,012,927
Iron content	ton	2,274,330	2,304,165	2,542,826	658,411
Iron Ore	ton	—	—	—	—
Iron content (b)	ton	—	—	—	—
Iron Oxide—	ton	3,512	5,328	5,527	1,120
For Gas purification	ton	—	—	—	—
For Fluxing and other purposes	ton	8,751	7,583	5,685	1,747
Lead Ore, Concentrate, etc.	ton	454,631	506,424	487,833	134,019
Lead content	ton	276,675	287,058	288,442	76,956
Silver content	f. oz.	11,868,083	(f)12,872,241	12,526,866	3,486,789
Gold content	f. oz.	9,307	9,556	10,776	2,819
Antimony content	ton	614	615	616	164
Copper content	ton	3,241	3,224	3,407	891
Cadmium content	ton	67	69	69	17
Sulphur content (b)	ton	(g)	(g)	81,277	22,825
Zinc content	ton	74	—	—	—
Manganese Ore—	ton	27,335	45,343	57,531	29,235
Metallurgical Grade	ton	12,718	20,462	25,967	14,003
Manganese content	ton	867	551	489	216
Battery Grade	ton	644	403	349	152
MnO ₂ content	ton	—	—	—	—
Other Grades	ton	—	—	—	—
MnO ₂ content	lb.	1,904	5,328	—	—
Molybdenite Concentrate	lb.	1,620	5,381	—	—

Footnotes: See end of Table.

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

Mineral	Unit of Quantity	1954	1955	1956(a)	Oct-Dec. 1956(a)
METALLIC MINERALS (continued).					
Manganese Concentrate	ton	79	164	102	71
Manganese content	ton	71	149	93	69
Cadmium-Native	oz	16	21	26	16
Platinum Concentrate	oz	32	—	12	12
Platinum content	oz	23	7	8	8
Palladium content	oz	—	—	(c)	(c)
Osmium content	oz	2	—	1	1
Gold content	oz	2	(c)	—	—
Pyritic Ore & Concentrate	ton	206,778	(1)228,764	187,210	43,905
Sulphur content	ton	97,449	(1)107,724	88,137	20,973
Buttle Concentrate	ton	44,719	59,613	(e)96,327	30,726
TiO ₂ content	ton	43,011	57,232	(e)92,773	29,612
Silver Ore	ton	—	—	—	—
Silver content	f. oz.	—	—	—	—
Gold content	f. oz.	—	—	—	—
Tantalite-Columbite Concentrate	lb.	117,767	37,139	159,655	22,924
Ta ₂ O ₅ + Nb ₂ O ₅ content	lb.	40,348	15,454	81,181	11,291
Tin Concentrate (b)	ton	2,975	2,891	2,912	678
Tin content	ton	2,075	2,017	1,982	479
Gold content	f. oz.	481	404	223	70
WO ₃ content	ton	(c)	(c)	—	—
Tungsten Concentrates—					
Scheelite Concentrate (b)	ton	1,331	1,434	1,490	338
WO ₃ content	ton	861	960	985	220
Wolfram Concentrate	ton	722	788	830	174
WO ₃ content	ton	511	522	563	123
Zinc Ore & Concentrate	ton	481,749	492,549	530,550	137,741
Zinc content	ton	252,585	256,564	277,976	72,262
Lead content	ton	5,342	6,715	7,112	1,772
Silver content	f. oz.	643,664	610,117	844,744	161,074
Gold content	f. oz.	3,592	3,447	3,446	807
Copper content	ton	575	598	704	187
Sulphur content	ton	152,074	155,836	168,194	43,705
Cobalt content	ton	936	775	849	220
Cobalt content	ton	29	61	58	14
Manganese content	ton	4,566	4,592	4,949	1,298
Zinc Concentrate	ton	41,451	48,773	(e)72,458	24,089
Zinc content	ton	40,920	48,209	(e)71,769	23,800

FUEL MINERALS.

Coal Block—	ton	73,631	83,964	82,116	18,836
Seed Anthracite	ton	17,646,220	17,608,498	17,696,953	4,620,447
Bituminous	ton	1,941,188	1,582,368	1,311,573	398,403
Sub-bituminous	ton	19,763,039	19,274,750	19,290,642	5,025,686
Total Block Coal	ton	9,331,255	10,112,666	10,559,801	2,566,444
Coal Brown (and Lignite)	ton	—	—	—	—
Oil (Petroleum)—Crude	ton	—	—	—	—
Shale—Oil-bearing	ton	—	—	—	—
Crude Oil content	gal	—	—	—	—

NON-METALLIC (excl. Fuel) MINERALS.

Alumina	ton	—	—	—	—
Potash content	ton	—	—	—	—
Asbestos—					
Chrysotile—Fibre	ton	919	895	1,384	700
—Fines	ton	—	—	—	—
Crocidolite—Fibre	ton	3,794	4,487	7,417	2,177
—Fines	ton	6,872	6,264	5,919	1,788
Berils	ton	—	—	—	—
Clays—					
Ballclay	ton	1,122	647	1,403	587
Ballclay Clay	ton	180	138	(e)169	—
Brick Clay & Shale	ton	3,518,810	3,556,318	3,293,205	818,519

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

Mineral	Unit of Quantity	1954	1955	1956(a)	Oct-Dec. 1956(a)
NON-METALLIC (excl. Fuel) MINERALS (continued).					
Cement Clay & Shale	ton	146,703	166,871	(1)18,314	(1)2,754
Dumouritic Clay	ton	514	436	(d)	(d)
Fireclay and	ton	127,131	119,846	(1)36,457	(1)10,551
Fuller's Earth	ton	73	71	246	103
Kaolin (incl. Ball Clay)	ton	41,253	45,054	(1)14,224	(1)1,838
Stoneware Clay	ton	110,852	163,809	(d)	(d)
Tile Clay	ton	150,184	142,945	(d)	(d)
Other Clays	ton	138,091	117,804	(1)106,476	(1)23,400
Corundum	ton	—	9	—	—
Cuprous Ore & Concentrate	ton	4,766	7,731	7,753	2,175
For Fertilizer	ton	8	9	8	39
Average grade	% Cu	1,584	731	363	946
Diamonds, Industrial	carat	5,439	5,042	4,135	27,226
Diatomite	ton	127,994	111,417	110,054	—
Colomite	ton	—	8	—	—
Emery	ton	—	—	—	—
Felspar (incl. Cernish Stone)	ton	16,384	20,833	14,697	3,911
Fluorite	ton	19	262	(1)128	(1)15
Average grade	% CaF ₂	72	(d)	85	—
Garnet Concentrate	ton	—	—	—	—
Gems—					
Opal	Value only	46,476	46,875	(d)	(d)
Sapphire	(EA)	313	3,412	(d)	(d)
Other	ton	258	197	85	19
Glaucophane	ton	—	—	—	—
Graphite—					
Pure	ton	—	16,122	1	1
Average grade	% Carb	70	86	86	86
Amorphous	ton	40	—	—	—
Average grade	% Carb	419,716	470,014	448,519	134,453
Gypsum	ton	—	—	—	—
Limestone (incl. Shell and Coral)	ton	(1)3,459,354	3,997,696	4,122,971	1,078,377
Magnesite	ton	43,152	57,674	63,614	18,999
Crude	ton	84,619	56,649	28,807	11,507
Mica—					
Muscovite—Trimmed	lb.	80,864	20,160	—	—
Crude & Film	lb.	—	—	—	—
Soap	lb.	—	—	—	—
Mineral Pigments—					
Red Ochre	ton	435	351	390	263
Yellow Ochre	ton	161	57	106	17
Other	ton	16	—	—	—
Pebbles for grinding	ton	624	791	671	178
Petals	ton	15	—	—	—
UO ₂ Content	unit	62	—	—	—
Phosphate Rock	ton	6,120	5,371	(d)	(d)
Pyrophyllite	ton	184	266	(e)328	68
Quartz Crystals	ton	—	—	—	—
Salt	ton	(1)380,000	(1)370,000	(1)331,965	(1)164,878
Serpentine	ton	758	927	910	207
For Laboratories	ton	—	—	—	—
Silica (Glass, Chemical etc.)	ton	150,319	139,551	(1)92,616	(1)15,180
Sillimanite	ton	2,137	2,679	2,181	623
Slate	ton	204	369	138	46
Spodumene	unit	—	4	—	—
Talc (incl. Shellite)	ton	12,940	12,567	13,025	3,068
Vermiculite	ton	—	—	—	—
Zinciferous Ore—for Fer-tilizer	ton	—	—	—	—
Average grade	% Zn	—	—	—	—

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

Footnotes: See end of Table.

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

Content and States	Unit of Quantity	1954	1955	1956(a)	Oct-Dec 1956(a)
CONTENTS OF METALLIC MINERALS PRODUCED.					
Antimony	ton	731	922	897	199
New South Wales		697	850	872	199
Victoria		3	3	2	—
Queensland		8	10	—	—
Western Australia		23	59	23	—
Tasmania		—	—	—	—
Copper	ton	40,857	45,496	52,669	13,680
New South Wales		3,182	3,492	4,200	1,055
Queensland		27,207	30,738	34,618	8,672
South Australia		(b)	—	1	—
Western Australia		—	3	45	22
Tasmania		9,880	8,394	8,807	2,590
Northern Territory		588	2,869	4,998	1,340
Gold	000 f. oz	1,117.7	1,049.0	1,029.9	265.4
New South Wales		31.4	30.1	29.1	8.2
Victoria		52.7	38.0	38.9	12.4
Queensland		97.9	64.3	55.9	15.1
South Australia		0.0	0.0	0.0	0.0
Western Australia		862.0	834.3	813.5	207.5
Tasmania		19.4	16.9	17.1	4.7
Northern Territory		54.3	65.4	75.4	17.5
Iron (c)	000 tons	2,274.3	2,304.2	2,542.8	658.4
South Australia		1,893.6	1,978.6	2,331.6	622.8
Western Australia		410.7	325.6	211.2	35.6
Lead	ton	284,362	295,544	297,909	79,306
New South Wales		230,392	244,684	237,447	61,317
Queensland		41,424	48,814	42,398	12,878
South Australia		14	2	17	6
Western Australia		1,497	1,007	5,830	2,260
Tasmania		11,533	11,267	12,217	2,845
Northern Territory		2	—	—	—
Rutile	tons TiO.	43,011	57,232	(d)92,773	29,612
New South Wales		21,872	33,034	(d)62,470	19,791
Queensland		21,139	24,198	30,303	9,821
Silver	000 f. oz	13,827.0	14,555.4	14,394.4	3,975.7
New South Wales		8,680.1	8,823.2	9,136.2	2,459.2
Victoria		3.4	1.6	2.5	1.0
Queensland		3,583.8	4,303.4	3,685.6	1,112.6
South Australia		0.6	0.1	0.7	0.2
Western Australia		237.6	200.8	192.9	44.0
Tasmania		1,321.4	1,166.3	1,372.9	358.0
Northern Territory		0.1	—	—	—
Sulphur (e)	ton	249,723	(f)263,560	(d)337,810	(g)87,503
New South Wales		127,648	140,120	188,124	48,235
Queensland		53,348	47,515	46,692	12,675
South Australia		—	13,790	31,244	6,870
Western Australia		24,458	(f)23,892	(d)25,295	(g)5,382
Tasmania		44,249	38,243	(d)46,455	14,341
Tin	ton	2,075	2,017	1,982	479
New South Wales		272	270	270	82
Victoria		26	2	—	—
Queensland		730	770	532	113
Western Australia		80	119	240	90
Tasmania		947	853	939	194
Northern Territory		20	3	1	(b)

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	1954	1955	1956(a)	Oct-Dec 1956(a)
CONTENTS OF METALLIC MINERALS PRODUCED (continued).					
Tungsten (in terms of WO.)	ton	1,372	1,482	1,548	343
New South Wales		8	8	4	1
Victoria		38	51	15	3
Queensland		3	5	—	—
Western Australia		1,272	1,337	1,428	323
Tasmania		51	81	101	16
Northern Territory		—	—	—	—
Zinc	ton	252,659	256,564	277,976	72,262
New South Wales		202,646	211,478	229,027	59,279
Queensland		19,615	17,138	16,231	4,569
Western Australia		74	—	—	—
Tasmania		30,324	27,948	32,718	8,414
QUANTITY OF COAL PRODUCED					
Coal, Black	'000 tons	19,763.0	19,274.8	19,290.6	5,025.7
Semi-anthracite	'000 tons	73.6	83.9	82.1	18.8
New South Wales		—	0.7	0.7	0.1
Queensland		72.4	80.4	79.6	18.2
Tasmania		1.2	1.8	1.8	0.5
Bituminous	'000 tons	17,848.2	17,608.5	17,696.9	4,620.5
New South Wales		15,066.3	14,718.4	14,825.7	3,874.1
Victoria		141.3	132.9	117.7	31.5
Queensland		2,377.9	2,459.7	2,456.6	637.8
Tasmania		263.0	297.5	296.9	77.1
Sub-bituminous	'000 tons	1,841.2	1,582.4	1,511.6	386.4
New South Wales		17.3	16.3	17.4	4.6
Queensland		310.5	207.0	182.8	53.0
South Australia		495.1	455.3	481.4	127.9
Western Australia		1,018.3	903.8	830.0	200.9
Coal, Brown	'000 tons	9,331.3	10,112.2	10,559.8	2,566.4
Victoria		9,331.3	10,112.2	10,559.8	2,566.4

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

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	Aluminium (Refined)	Copper (Blister)	Copper (Refined)		Gold (Refined)		Silver (Refined) (c)	
			(a)	(b)	Australian Origin	Total (b)		
		Tons	Tons	Fine oz.	Fine oz.	Fine oz.		
1939	—	18,375	17,867	(d) 1,637,031	(d) 2,021,254	9,552,411		
1951	—	15,241	13,543	850,236	1,029,580	6,878,832		
1952	—	20,008	(e) 19,623	978,956	1,240,790	6,772,624		
1953	—	34,159	16,682	1,052,779	1,255,184	6,595,440		
1954	—	36,047	29,287	1,063,457	1,253,370	8,474,087		
1955	Jan.-Mar.	—	8,589	6,300	264,992	311,165	2,030,983	
	Apr.-June	—	10,711	8,447	249,056	296,525	1,655,206	
	July-Sept.	1,248	10,360	8,254	292,894	326,045	1,115,511	
	Oct.		2,853	1,807	85,335	103,582	835,884	
	Nov.		3,853	1,914	78,799	88,735	565,476	
	Dec.		1,073	1,526	83,338	94,209	614,527	
Year	1,248	37,439	28,148	1,054,714	1,222,261	7,817,587		
1956 (f)								
	Jan.-Mar.	4,271	12,041	5,249	253,605	294,962	1,787,205	
	Apr.-June	—	12,458	5,822	241,289	281,161	2,217,368	
	July-Sept.	2,284	12,289	7,515	288,711	326,944	2,120,798	
	Oct.	889	4,021	1,294	79,668	90,343	770,800	
	Nov.	851	4,724	3,561	89,741	104,859	692,668	
	Dec.	848	4,209	3,047	91,150	106,960	674,303	
Year	9,143	49,742	26,488	1,044,164	1,205,229	8,263,142		
Period	Tin (Refined)	Pig Iron	Steel Ingots	Lead (Refined)	Lead Con- tent of Lead Bullion (g)	Zinc (Refined) (h)		
	Tons	Tons	Tons	Tons	Tons	Tons		
1939	3,294	(i) 1,104,605	(i) 1,170,103	(e) 199,437	43,955	71,220		
1951	1,459	1,325,145	1,462,751	165,758	31,872	77,010		
1952	1,700	1,549,157	1,625,940	156,639	37,709	87,438		
1953	1,443	1,842,408	2,043,123	172,458	34,050	90,178		
1954	2,063	1,856,013	2,210,611	200,409	38,146	104,523		
1955	Jan.-Mar.	385	454,729	512,157	40,710	10,020		
	Apr.-June	574	427,186	526,742	51,314	10,417		
	July-Sept.	584	439,705	582,576	49,003	10,634		
	Oct.	142	147,654	194,187	16,725	3,332		
	Nov.	130	162,124	192,207	14,708	2,602		
	Dec.	189	166,135	192,686	14,674	3,387		
Year	2,004	1,797,533	2,200,555	187,134	37,392	101,090		
1956 (f)								
	Jan.-Mar.	374	504,757	592,449	46,545	9,404		
	Apr.-June	489	519,456	622,916	42,845	9,931		
	July-Sept.	561	509,896	665,579	55,088	11,186		
	Oct.	173	158,035	226,487	17,475	3,888		
	Nov.	107	187,683	247,731	16,769	3,778		
	Dec.	146	193,374	246,968	16,367	3,471		
Year	1,850	2,073,201	2,602,130	195,089	41,658	104,993		

(a) Excludes quantities refined from imported blister copper. (b) Includes "Overseas Origin". (c) Includes small quantities recovered from imported materials. (d) Year ended 31st December, 1940. (e) Includes small quantity recovered from scrap. (f) Subject to revision. (g) Exported 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 aluminium, 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.

Item and Country of Origin	Unit of Quantity	1954	1955	1956(b)	Oct.-Dec. 1956(b)
METALLIC GROUP					
Aluminium—					
Ore (Bauxite)	ton	(c)	19,287	38,391	9,500
Ingots (Refined)	ton	10,421	14,861	10,223	1,906
Canada		6,516	10,617	4,983	1,032
Other		3,905	4,244	5,240	874
Rods, Bars	ton	96	336	300	15
Plates, Sheets, Foil, Tubes	ton	3,748	5,021	(e) 4,293	883
United Kingdom		3,063	4,183	(e) 3,553	713
Other		685	838	740	170
Powder	ton	299	348	564	190
Scrap (inc. remelt)	ton	5	42	139	28
Antimony—					
Ores and Concentrates	ton	1,023	872	690	213
Metal (d)	ton	101	368	21	6
Arsenic Trioxide	ton	2,648	3,492	2,170	397
Bismuth-Metal	lb.	44,449	35,975	35,992	7,560
Chromium—					
Ores and Concentrates	ton	5,282	9,582	3,073	1,030
Copper—					
Ores and Concentrates	ton	30	21	7	—
Blister	ton	500	(e) —	—	—
Pigs, Ingots, etc. (refined)	ton	14,409	21,303	(e) 250	100
Belgian Congo		5,458	4,032	250	100
Rhodesia and Nyasaland		8,951	17,271	—	—
Other	ton	1,867	2,942	609	80
Bars, Rods	ton	1,122	1,156	1,440	132
Plates, Sheets, Strip	ton	81	117	14	(e)
Pipes, Tubes	ton	36	10	12	4
Scrap (inc. remelt)	ton	—	—	—	—
Gold—					
Refined Ingot or Bar	fine oz	—	—	—	—
Refined or Standard Sheet, etc.	fine oz	(c)	—	12	—
Unrefined Gold or Silver					
Bullion (Gold content)	fine oz	211,018	150,479	201,871	46,491
New Guinea		98,775	64,950	90,809	23,251
Bullion (Silver content)		112,243	85,529	111,062	23,238
Other		—	127	—	—
In Matte (gold content)	fine oz	—	—	—	—
Ilmenite	ton	14,054	9,146	13,540	—
Iron and Steel—					
Iron Ore	ton	17	32	14,052	140,050
Pig	ton	—	—	—	—
Ferromanganese	ton	1,517	5,630	7,339	356
Ingots and Billets (high grade Carbon & Alloy Steels)	ton	306	557	203	106
Ingots & Billets (other)	ton	118	171	335	—
Bars & Rods (stainless)	ton	409	462	346	109
Bars & Rods (other)	ton	21,491	110,715	55,536	7,993
United Kingdom		18,749	37,283	202,294	4,375
Other		2,742	73,432	352,242	3,618
Sheet, Galvanized	ton	51,474	42,474	6,099	255
Terne Plate and Sheet	ton	797	2,084	1,883	318
Tinplate (plain)	ton	126,503	143,854	(e) 119,034	29,457
United Kingdom		86,568	119,745	99,957	22,868
U.S.A.		39,887	24,040	18,189	5,721
Other		38	69	868	868
Plate, Sheet (other)	ton	69,952	122,889	37,850	4,037
Lead, Refined (Pigs, Ingots)	ton	—	—	—	—
Manganese Ore—					
Metallurgical	ton	89	30	20	—
Battery grade	ton	1,110	3,129	2,010	1,000

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	1954	1955	1956(b)	Oct.-Dec. 1956(b)
METALLIC GROUP (continued).					
Mercury	lb.	133,718	82,470	68,441	23,376
Spain		108,131	41,882	48,360	15,967
Other		25,087	40,588	20,081	7,409
Nickel—					
Pigs, Ingots, etc.	ton	527	572	683	68
Bars, Rods, etc.	ton	17	18	130	2
Platinum—					
Blocks, powder, etc.	oz	4,716	3,473	1,991	890
Platinum Group Metals	oz			1,232	40
Silver—					
Refined Ingot, Bar, Sheet, Dust, etc.	fine oz.	—	—	16	—
Unrefined Silver or Gold Bullion (Silver content)	fine oz.	103,518	69,123	102,252	26,281
In Matte (Silver content)	fine oz.	(8)300	6,748	—	—
Tin (Ingots)	ton	571	506	516	162
Titanium Oxide	ton	5,905	7,252	(e)7,817	1,881
Zinc (Blocks, Ingots)	ton	—	—	—	—

FUEL GROUP.

Coal (Black)	ton	3,040	4,026	5,075	—
Petroleum and Shale Oils—					
Crude	'000 gal.	1,781,368	2,285,834	2,623,771	648,383
Aviation, Motor Spirit	'000 gal.	510,149	1,266,124	1,985,146	527,164
Residual, Diesel Fuel	'000 gal.	611,703	534,896	306,868	59,266
Furnace Oil	'000 gal.	448,740	248,386	(e)63,004	12,764
Other	'000 gal.	210,716	236,428	(e)248,753	49,189

NON-METALLIC (excl. Fuel) GROUP.

Asbestos—					
Chrysotile	ton	25,655	27,681	16,379	3,850
Canada		17,611	19,657	12,900	3,002
Other		8,044	8,024	3,479	848
Crocidolite	ton	309	104	58	20
Amosite	ton	7,874	12,061	9,504	1,997
Other	ton	50	147	469	35
Barite (ground)	ton	18	281	174	35
Bentonite	ton	4,761	5,274	4,800	1,034
Calcium Carbide	ton	8,644	9,610	15,137	3,494
Cement (Portland)	ton	99,646	89,040	11,402	931
United Kingdom		56,994	75,942	7,596	579
Japan		17,456	4,128	1,600	—
Other		25,196	8,970	2,206	352
Clays—					
Ball Clay	ton	358	479	773	142
China Clay	ton	433	5,553	9,168	1,973
Fire Clay	ton	672	736	789	129
Clay, nat.	ton	1,865	2,393	1,920	456
Diamonds, Industrial	carat	141,935	267,365	245,472	52,437
South Africa		123,241	217,268	196,696	42,011
Other		18,714	50,997	48,776	10,426
Diatomite	ton	2,435	4,823	4,394	1,063
Fluorapatite	ton	212	138	—	—
Fluorspar	ton	427	445	—	—
Fuller's Earth	ton	172	257	385	56
Graphite—					
Flake	ton	281	209	172	15
Crystalline	ton	97	106	107	14
Amorphous	ton	594	635	(e)500	142
Margarite	ton	2,364	4,588	2,238	106

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	1954	1955	1956(b)	Oct.-Dec. 1956(b)
NON-METALLIC (excl. Fuel) GROUP.					
Mica—					
Block or Sheet Trimmed	lb.	60,476	39,535	(e)16,244	6,058
Condenser Film (not cut or stamped)	lb.	3,600	200	100	—
Splittings (not cut or stamped)	lb.	119,850	245,710	(e)121,922	58,850
Cut or Stamped	lb.	1,752	5,693	1,599	220
Ground or Pulverised	lb.	30,097	107,103	81,702	7,724
Scrap	lb.	454,749	221,160	204,170	—
Phosphate Rock	ton	1,160,397	1,250,929	1,331,636	327,939
Nauru		693,557	725,137	804,885	192,737
Christmas Is.		307,819	290,700	284,776	87,033
Gilbert & Ellice Is.		159,021	226,476	203,736	48,169
Other		—	8,616	2,239	—
Potash Salts (Chloride)	ton	13,416	26,841	28,264	4,825
Salt—					
Rock	ton	2,349	2,276	1,988	431
Other	ton	5,106	6,558	4,684	1,194
Sulfur	ton	5	45	161	38
Sulphur	ton	187,916	195,482	202,977	63,057
U.S.A.		157,926	177,181	(e)143,720	41,597
Other		29,990	18,301	(e)59,257	21,460

(a) Cleared for home consumption prior to 1st January, 1955. (b) Subject to revision. (c) Less than half. (d) Includes antimonial lead. (e) Jan.-Sept. revised. (f) From 1st July.

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

Item and Country of Destination	Unit of Quantity	1954	1955	1956(a)	Oct.-Dec. 1956(a)
METALLIC GROUP					
Aluminium—					
Pigs, Ingots, etc. (refined)	ton	—	—	4	3
Rolled & Drawn Shapes	ton	48	50	30	5
Scrap (incl. remelt)	ton	450	115	6	5
Beryllium Ores and Concentrates	ton	163	210	309	121
Cadmium—					
Ingots	ton	21	97	71	10
Bars, Rods, etc.	ton	151	70	71	12
Copper—					
Ore & Concentrates	ton	2,050	4,933	11,519	593
Blister	ton	9,789	8,159	15,574	4,367
Pigs, Ingots, etc. (refined)	ton	14	2	1,002	(b)
Rolled, Drawn & Extruded Shapes (excl. wire)	ton	392	468	1,581	570
Scrap (incl. remelt)	ton	60	55	15	1
Copper-Lead Dross	ton	4,803	6,995	6,936	2,066
Gold—					
Ores and Concentrates	ton	42	75	—	—
Refined Ingot, Bar, Sheet, Dust, etc.	fine oz.	568,230	1,120,618	530,968	242,436
United Kingdom		22,762	20	5,113	—
France		425,870	992,838	523,374	240,940
Hong Kong		119,598	120,760	2,481	1,496
Other		—	—	—	—
Unrefined Gold or Silver Bullion (Gold content)	fine oz.	502	15,957	42	—
Ilmenite Concentrates	ton	171	434	1,130	790
Iron and Steel—					
Iron Ore	ton	—	—	117	57
Pig Iron	ton	33,738	44,892	16,420	4,695
U.S.A.		8,301	2,669	1,066	450
Other		25,437	42,223	15,354	4,245

Footnotes: See end of Table

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

Item and Country of Destination	Unit of Quantity	1954	1955	1956(a)	Oct.-Dec. 1956(a)
METALLIC GROUP (continued).					
Iron and Steel (cont'd.)	ton	26,561	211	1,747	1,660
Ingots, Blooms, etc.	ton	15,383	149	—	—
United Kingdom	ton	11,178	62	1,747	1,660
Other	ton	20,541	9,729	16,842	8,183
Bars and Rods	ton	14,957	11,945	61,070	49,546
Plate and Sheet (excl. galvanized)	ton	11,997	7,242	38,484	23,537
Sheet, Galvanized	ton	58,237	59,336	77,614	17,616
Lead—	ton	36,153	38,493	38,190	13,204
Ores and Concentrates	ton	36,153	38,493	38,190	13,204
Bullion	ton	159,328	145,674	149,061	52,366
United Kingdom	ton	95,490	81,630	64,362	18,178
U.S.A.	ton	55,156	56,096	73,478	30,531
Other	ton	8,682	8,148	11,221	3,657
Sheet, Piping, etc.	ton	1,224	86	82	24
Scrap	ton	13,680	12,125	10,708	2,134
Monazite Concentrate	ton	76	107	56	31
Platinum	oz.	519	690	805	225
Group Metals	ton	44,417	59,687	89,887	29,659
Rutile Concentrates	ton	9,891	12,234	12,494	3,223
United Kingdom	ton	14,418	21,248	46,210	16,020
U.S.A.	ton	20,108	26,205	31,053	20,301
Other	ton	—	—	—	—
Silver—	fine oz.	7,367,518	5,941,202	16,411,627	1,882,051
Refined Ingot or Bar	fine oz.	3,107,374	2,69,137	1,473,718	1,220,365
United Kingdom	fine oz.	4,260,144	5,672,065	14,937,909	661,686
Other	fine oz.	—	—	—	—
Refined or Standard Sheet, Dust, etc.	fine oz.	50,152	715	31,846	—
Unrefined Silver or Gold Bullion (Silver content)	fine oz.	13,500	72,182	148,050	41,790
Tantalum and Columbium Ores and Concentrates	ton	39	58	48	18
Tin	ton	8	137	48	8
Concentrates	ton	94	98	24	4
Ingots	ton	—	—	—	—
Tungsten—	ton	1,174	1,344	1,341	350
Scheelite Concentrates	ton	854	926	1,067	302
U.S.A.	ton	303	404	250	24
United Kingdom	ton	17	14	24	24
Other	ton	838	964	871	187
Wolfram Concentrates	ton	303	362	489	97
U.S.A.	ton	455	477	177	53
United Kingdom	ton	80	125	205	37
Other	ton	—	—	—	—
Zinc	ton	264,263	240,844	267,402	90,012
Concentrates	ton	170,437	132,888	143,072	44,302
United Kingdom	ton	93,826	108,456	124,330	45,710
Other	ton	38,262	33,802	31,594	9,678
Blocks	ton	14,513	9,906	10,568	3,501
United Kingdom	ton	23,749	23,996	21,026	6,177
Other	ton	94	106	91	25
Plates, Sheets	ton	3,650	2,098	2,192	463
Circles, Strips	ton	609	816	527	23
Scrap	ton	36,512	46,685	68,838	21,273
Zircon Concentrates	ton	13,631	24,738	28,026	7,598
U.S.A.	ton	7,769	9,685	15,090	5,082
United Kingdom	ton	15,112	12,262	25,722	8,593
Other	ton	—	—	—	—

Footnotes See end of Table

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

Item and Country of Destination	Unit of Quantity	1954	1955	1956(a)	Oct.-Dec. 1956(a)
FUEL GROUP.					
Coal	ton	376,774	202,062	239,379	55,677
New Caledonia	ton	170,970	158,070	152,629	31,239
Other	ton	205,804	43,992	86,750	24,438
Petroleum & Shale Oils	'000 gal.	18,525	84,517	182,150	41,412
Crude	'000 gal.	—	—	—	—
Other—	'000 gal.	14,895	81,755	179,229	40,450
Australian Produce	'000 gal.	3,030	2,762	2,921	962
Other Produce	'000 gal.	—	—	—	—
NON-METALLIC (excl. Fuel) GROUP.					
Asbestos—	ton	65	36	36	3
Chrysotile	ton	1,686	6,476	(c) 6,767	2,235
Crocidolite	ton	—	18	(c) 90	—
Other	ton	1932	940	757	5
Barite	ton	82	23	51	11
Calcium Carbide	ton	50,681	12,835	6,444	2,428
Cement (Portland)	ton	43,551	7,127	5	—
New Zealand	ton	1,201	392	903	373
Pure Guano	ton	1,629	888	546	376
Fill	ton	4,300	4,431	4,990	1,679
Other	ton	3,156	1,779	1,123	480
Clays	ton	91,628	79,265	114,311	15,859
Diamonds—Industrial	carat	183	(d) 205	357	60
Pelaspas	ton	—	—	—	—
Graphite—	ton	15	22	5	2
Flake	ton	—	—	—	—
Crystalline	ton	—	—	—	—
Amorphous	ton	42,252	38,743	37,618	12,216
Gypsum	ton	35,049	38,743	37,618	12,216
New Zealand	ton	7,213	—	—	—
Other	ton	18,808	7,784	(c) 6,490	310
Mica	value £A	91,115	122,957	173,835	57,981
Opal	ton	20,809	21,556	22,848	3,567
Salt	ton	18,487	20,101	20,537	3,082
New Zealand	ton	2,322	1,455	2,311	485
Other	ton	2,340	1,330	1,026	566
Superphosphate	ton	—	—	—	—

(a) Subject to revision. (b) Less than half. (c) Jan-June revised. (d) Revised.

III. APPENDIX

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

TABLE 10: SMELTER 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)			
		Jan. 1957	Feb. 1957	Mar. 1957	Jan.-Mar. 1957
Aluminium (Refined)	ton	939	739	782	2,460
Copper (Blister)	ton	3,573	3,697	4,203	11,473
Copper (Refined)	ton	1,366	3,555	3,498	8,419
Gold (Refined)—					
Australian Origin	f. oz.	79,440	78,518	87,652	245,610
Overseas Origin	f. oz.	15,238	13,078	17,414	45,730
Total	f. oz.	94,678	91,596	105,066	291,340
Lead (Refined)	ton	15,475	13,722	14,126	43,323
Lead Content of					
Lead Bullion (b)	ton	3,257	3,396	3,898	10,551
Pig Iron	ton	189,868	170,897	174,411	535,176
Steel Ingots	ton	260,420	237,457	254,507	752,384
Silver (Refined)	f. oz.	822,667	499,281	734,382	2,056,330
Tin (Refined)	ton	107	161	99	367
Zinc (Refined)	ton	9,077	8,152	9,030	25,259

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

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

TABLE 11: PRODUCTION OF GOLD AND COAL: AUSTRALIA.

Item.	Unit of Quantity	Production (a)			
		Jan. 1957	Feb. 1957	Mar. 1957	Jan.-Mar. 1957
Gold (b)	f. oz.	84,278	80,516	88,463	253,257
Coal—					
Black	ton	1,085,208	1,623,189	1,608,368	4,316,765
Brown	ton	832,520	837,852	894,297	2,564,669

(a) Figures subject to revision. (b) Gold content of minerals produced.