

CHAPTER XXVI.
MINERAL INDUSTRY.

§ 1. The Mineral Wealth of Australia.

1. Place of Mining in Australian Development.—The value of production from the mineral industry is now considerably less than that returned by the agricultural, the pastoral or the dairying industry; nevertheless it was the discovery of gold in payable quantities that first attracted population to Australia in large numbers and thus accelerated its national development.

2. Extent of Mineral Wealth.—The extent of the total mineral wealth of Australia cannot yet be regarded as completely ascertained, as large areas of country still await systematic prospecting. More detailed reference to this matter will be found in preceding issues of the Official Year Book. (See No. 22, p. 755.)

During the years 1934 to 1940 a survey of certain areas in Australia north of the 22nd parallel of south latitude was undertaken by the Governments of the Commonwealth, Queensland and Western Australia. This survey is referred to in § 15 below.

3. Quantity and Value of Production in 1943.—The quantities (where available) and the values of certain of the principal minerals produced in each State, and in Australia as a whole, during 1943 are given in the tables immediately following. It must be clearly understood that the figures quoted in these tables refer to the quantities and values of the various minerals in the form in which they were reported to the State Mines Departments, and represent amounts which the Mines Departments consider may fairly be taken as accruing to the mineral industry as such. They are not to be regarded as representative of Australia's potentiality as a producer of metals, this matter being dealt with separately in § 16 below. New South Wales is, of course, in normal times, a large producer of iron and steel from ironstone mined in South Australia. As the table shows, the latter State receives credit for this ironstone in its mineral returns. The iron and steel produced therefrom cannot be assigned to the mineral industry of New South Wales, but the value of the transformation from ore to metal is credited to the manufacturing industry of that State. Similarly lead, silver lead, cadmium, cobalt and zinc are credited in the form reported to the State of origin—chiefly New South Wales—although the actual metal extraction is carried out principally in South Australia and Tasmania.

The quantities of cadmium and cobalt recovered in Tasmania from zinc ores mined in New South Wales during 1943 are given in § 8, par. 3 (page 992.)

MINERAL PRODUCTION : QUANTITIES, 1943.

Mineral.	Unit.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
Antimony and Ore	ton	418	45	16	..	1,476	..	..	1,955
Arsenic and Ore	..	..	..	..	..	2,283	..	..	2,283
Asbestos	cwt.	8,300	..	..	220	4,860	365	..	13,745
Barytes	ton	1,525	..	..	3,012	..	..	..	4,537
Bismuth and Ore	cwt.	24	..	40	..	560	6	..	630
Cadmium	..	(a)	..	..	..	..	807	..	(b) 807
Chalk, Talc, Soapstone, etc.	ton.	1,331	..	..	3,283	73	..	..	4,687
Coal—	..	..	..	..	..	..	..	..	..
Black	..	11,528,893	287,100	1,699,521	..	531,546	145,882	..	14,192,942
Brown	..	..	5,091,729	..	..	..	..	..	5,091,729
Copper (Ingot and Matte)	..	..	..	..	..	..	..	..	..
Copper Ore	..	3,798	..	10,758	102	..	11,148	88	25,894
Diatomaceous earth	..	2,747	1,164	124	..	40	..	..	4,075
Felspar	..	3,828	..	..	514	2,314	..	..	6,656
Fireclay	..	..	..	..	7,737	2,112	..	..	9,849
Graphite	cwt.	2,240	..	7,080	1,740	220	140	..	11,420
Gold	fine oz.	63,779	56,511	62,838	39,523	546,475	17,245	3,912	751,279
Gypsum	ton	35,818	8,930	..	39,523	935	..	..	85,206
Iron-stone and Ore	..	7,363	..	3,046	2,182,831	1,799	..	7	2,193,331
Kaolin	..	(a)	3,740	..	1,799	..	1,655	..	7,194
Lead	..	..	..	8,579	1	1,250	8,633	..	(b) 18,463
Limestone Flux	..	278,256	..	3,677	122,909	..	133,625	..	538,467
Magnesite	..	64,069	..	..	791	..	..	..	64,860

(a) See letterpress preceding this table.

(b) Incomplete.

MINERAL PRODUCTION: QUANTITIES, 1943—*continued*

Mineral.	Unit.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
Manganese Ore ..	ton	604	..	..	5,590	..	..	..	6,194
Mica ..	cwt.	..	..	..	1,220	124	..	..	1,344
Molybdenite ..	..	164	200	177	..	..	..	..	541
Ochre and Other Pigment Clays ..	ton	1,737	..	..	72	397	380	1,345	3,931
Osmiridium ..	oz.	..	..	..	..	..	90	..	90
Phosphate ..	ton	120	(c)	..	12,777	43	..	..	12,940
Salt ..	..	..	..	..	184,312	(c)	..	..	(b)184,312
Scheelite ..	cwt.	460	..	48	..	..	3,984	..	4,497
Shale (Oil) ..	ton	116,875	..	..	..	5	..	..	116,875
Shale ..	..	88,352	..	..	9,027	..	8,184	..	105,630
Silver ..	oz.	(a)281,285	17,423	775,072	352	118,803	1,116,576	..	b2,309,511
Silver-lead Ore, Concentrates, etc.	ton	249,484	..	..	..	..	..	..	249,484
Tantalite ..	..	..	..	..	..	12	..	1	13
Tin and Tin Ore ..	..	1,074	60	785 (d)	128	11	949	26	2,905
Wolfram ..	cwt.	840	282	3,027	3	..	4,600	3,769	12,521
Zinc and Concentrates ..	ton	283,964	..	5,077	..	..	21,078	..	310,119

(a) See letterpress preceding this table.

(b) Incomplete.

(c) Not available.

(d) lb.

The values of the minerals raised in each State in 1943 are given in the following table:—

MINERAL PRODUCTION: VALUES, 1943.

Mineral.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
	(a) £	£	£	£	£	(a) £	£	£
Antimony and Ore ..	17,161	2,096	519	..	52,913	..	..	72,689
Arsenic and Ore ..	..	..	..	..	47,943	..	..	47,943
Asbestos ..	18,189	..	..	245	12,975	365	..	31,774
Barytes ..	2,511	..	..	9,052	..	..	..	11,563
Bismuth and Ore ..	958	..	791	..	137	241	..	2,127
Cadmium ..	(b)	..	..	..	..	18,072	..	(c) 18,072
Chalk, Talc, Soap- stone, etc. ..	3,376	..	..	10,133	170	..	..	13,679
Coal— Black ..	9,290,095	429,358	1,824,591	..	489,721	117,361	..	12,151,126
Brown ..	..	528,666	..	..	..	..	..	528,666
Copper (Ingot and Matte) ..	379,800	..	1,111,049	10,100	33	691,199	2,393	2,194,574
Copper Ore ..	..	..	..	..	..	..	..	..
Diatomaceous earth ..	2,427	4,047	341	..	640	..	..	7,455
Felspar ..	9,632	..	..	1,221	6,924	..	..	17,777
Fireclay ..	..	..	..	4,836	1,387	..	..	6,223
Gems ..	124	..	2,350	..	..	..	..	2,474
Gold ..	666,491	590,541	656,657	5,423	5,710,663	180,209	40,880	7,850,864
Graphite ..	558	..	4,248	4,238	55	10	..	9,109
Gypsum ..	27,569	5,303	..	29,642	880	..	..	63,394
Iron-stone and Ore ..	5,822	..	3,725	2,510,256	128	14	..	2,519,945
Kaolin ..	..	6,482	..	2,699	..	2,438	..	11,619
Lead ..	(b)	..	129,109	13	1,100	215,817	..	(c)346,039
Limestone Flux ..	75,960	..	4,769	57,624	..	54,680	..	193,033
Magnesite ..	117,149	..	..	1,585	..	..	..	118,734
Manganese Ore ..	3,592	..	..	12,836	..	..	..	16,428
Mica ..	..	..	..	(n)131	715	..	17,919	18,765
Molybdenite ..	3,363	5,098	3,637	..	..	..	..	12,098
Ochre and Other Pigment Clays ..	2,902	..	..	108	3,866	1,681	4,800	13,357
Opal ..	2,288	..	..	13,881	..	..	..	16,169
Osmiridium ..	..	..	..	..	..	2,087	..	2,087
Phosphate ..	150	..	..	17,078	21	..	..	17,249
Salt ..	..	(d)	(d)	368,624	(d)	..	..	(c)368,624
Scheelite ..	9,185	..	889	..	2,664	68,908	..	81,646
Shale (Oil) ..	160,215	..	..	..	..	..	..	160,215
Silica ..	19,345	..	26	6,664	..	3,523	..	29,558
Silver ..	(b) 29,741	2,278	101,728	49	15,375	117,241	..	(c)266,412
Silver lead Ore, Concentrates, etc.	3,722,931	..	..	..	..	..	..	3,722,931
Tantalite ..	..	..	..	..	11,833	..	1,043	12,876
Tin and Tin Ore ..	403,320	14,162	167,176	10	2,315	246,218	5,594	838,795
Wolfram ..	14,033	5,041	56,778	10	80	82,965	58,166	217,073
Zinc and Concentrates ..	781,737	..	76,158	..	..	574,398	..	1,432,293
Unenumerated ..	(*)197,954	922	(f)69,984	4,258	21,217	1,106	..	295,441
Total ..	15,968,528	1,593,994	4,214,525	3,070,716	6,383,751	2,378,531	130,705	33,740,896

(a) For items excluded see letterpress below.

(b) See letterpress preceding this table.

(c) Incomplete.

(d) Not included with mineral production.

(e) Includes zircon-rutile-ilmenite

£115,331, dolomite, £36,805.

(f) Includes zircon-rutile-ilmenite £65,029.

(g) Damourite.

It should be pointed out in connexion with the figures given in the foregoing table that the totals exclude certain commodities, such as stone for building and industrial uses, sand, gravel, brick and pottery clays, lime, cement and slates, which might be included under the generic term "mineral". Particulars of the production of some of these items are given in par. 6, Quarries, below. Items excluded, such as cement, carbide and sulphuric acid, are included in manufacturing production, and, in any case, only the raw material could properly be included in mineral production. The items excluded from the total for New South Wales in 1943 consisted of—lime, £36,521; building stone, £18,617; Portland cement, £1,061,895; coke, £2,400,593; road material and gravel, £1,043,624; shell grit, £33,636; sulphur and sulphuric acid, £126,926; and brick and pottery clays, £90,573. Carbide and cement, £356,947, have been excluded from the Tasmanian figures.

4. Value of Production, 1938 to 1943.—The values of the minerals produced in each State during the six years 1938 to 1943 are given in the table hereunder:—

MINERAL PRODUCTION : VALUES.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
	£	£	£	£	£	£	£	£
1938 ..	10,731,391	1,884,015	3,966,119	2,932,473	10,844,469	1,889,804	214,724	32,462,995
1939 ..	12,123,751	2,248,169	4,556,962	3,320,181	12,288,532	2,056,741	244,478	36,838,814
1940 ..	12,791,408	2,596,117	5,105,629	3,218,237	13,230,552	2,749,817	311,024	40,002,784
1941 ..	15,073,833	2,371,568	5,300,600	3,187,093	12,399,351	2,650,271	274,172	41,256,888
1942 ..	16,258,694	1,980,972	5,023,495	3,012,973	9,487,562	2,494,119	204,366	38,462,181
1943 ..	15,968,578	1,593,994	4,214,525	3,070,716	6,383,755	2,378,533	130,795	33,740,896

The value of mineral production in Australia during 1941 was the highest ever recorded. Decreases were recorded in every State except New South Wales in 1942 and in every State except South Australia in 1943.

Since 1941 the greatest decrease has occurred in Western Australia, £6,016,000; followed by Queensland, £1,085,000; Victoria, £778,000; Tasmania, £272,000; Northern Territory, £143,000 and South Australia, £116,000. New South Wales increased by £895,000. There was a downward movement in quantity and value for many minerals. The value of gold decreased by over £8 million, but was offset by an increase of more than £1.5 million in the value of black coal. The decrease of all mineral production was £7,515,000.

5. Total Production to end of 1943.—In the next table will be found the estimated value of the total mineral production in each State up to the end of 1943. The items excluded from the preceding table are also omitted here, and consequently the total for New South Wales is £63,400,000 less than that published by the State Department of Mines. The principal items excluded from the table below are coke, £30,972,000; cement, £30,158,000; lime, £2,310,000; and considerable values for marble, slate, granite, chert, gravels, etc., which the State Department now includes in the returns for quarries.

MINERAL PRODUCTION : VALUES TO END OF 1943.

Mineral.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Terr.	Australia.
	£'000.	£'000.	£'000.	£'000.	£'000.	£'000.	£'000.	£'000.
Gold ..	71,451	316,295	97,857	2,139	266,119	10,736	3,441	768,038
Silver and lead ..	161,853	277	15,330	422	2,531	12,043	67	192,523
Copper ..	16,904	217	30,919	33,341	1,816	27,763	249	111,209
Iron ..	7,763	16	523	34,394	37	97	..	42,830
Tin, ..	18,426	1,217	13,160	..	1,672	20,322	690	55,487
Wolfram ..	393	18	1,314	..	2	734	675	3,136
Zinc ..	28,763	..	3,426	16	6	5,066	..	37,277
Coal ..	268,779	21,462	33,124	2	11,210	2,966	..	337,543
Other ..	11,209	1,090	3,215	8,699	1,505	3,356	252	29,326
Total ..	585,541	340,592	198,868	79,013	284,898	83,083	5,374	1,577,369

The "other" minerals in New South Wales include alunite, £222,000; antimony, £419,000; arsenic, £212,000; bismuth, £246,000; chrome, £141,000; diamonds, £150,000; magnesite, £691,000; molybdenite, £231,000; opal, £1,633,000; scheelite, £229,000; and shale oil, £3,151,000. In the Victorian returns antimony ore was responsible for £635,000. The value for coal in this State includes £5,909,000 for brown coal. Included in "other" in the Queensland production were opal, £188,000; gems, £649,000; bismuth, £146,000; cobalt, £158,000; molybdenite, £626,000; limestone flux, £903,000; and arsenic, £124,000. The chief items in South Australian "other" minerals were salt, £5,462,000; limestone flux, £454,000; gypsum, £1,634,000; phosphate, £180,000; and opal, £214,000. In Western Australia arsenic, £588,610; gypsum, £136,000; and asbestos, £135,000 were the principal items included with "other" minerals. In the Tasmanian returns osmiridium was responsible for £652,000, scheelite for £384,400, and limestone flux for £1,280,000.

6. Quarries.—Statistics giving details of the output of quarries were first published in Official Year Book No. 33, 1940. The details were collected following a resolution of the Conference of Australian Statisticians held in 1935.

The Conference defined a quarry, for the purpose of these statistics, as one in which four hands or more are employed, or in which power other than hand-power is used. The details given in the following table represent the output of quarries conforming to this definition, although in a few relatively unimportant cases details of other establishments have been included.

The authorities responsible for the collection of these statistics are the Government Statistician in New South Wales, Victoria, Queensland and Western Australia, and the Department of Mines in South Australia and Tasmania.

It should be noted that the inclusion of returns from certain small establishments tends to inflate the figures in the following tables, but there is possibly a compensating factor in that some quantities used by shires and municipalities in the repair of roads have not been returned to the collecting authority. Complete details for all States for later years are not available.

OUTPUT OF QUARRIES, 1939.

Description.	N.S.W.	Victoria. (a)	Q'land. (a) (b)	S. Aust.	W. Aust. (a)	Tas.	Australia.
QUANTITY.							
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Building Stone ..	484,356	62,280	1,477	33,314	26,289	246	607,762
Macadam, Ballast, etc. ..	5,377,754	1,395,997	622,373	1,805,181	353,217	..	9,554,522
Limestone (c) ..	863,441	353,726	23,792	7,040	86,540	330,772	1,665,311
Clays ..	1,619,288	(d)	..	216,940	(e)	..	1,836,228
Other ..	116,215	..	..	..	(e)	..	(f) 116,215
Total ..	8,461,054	1,812,003	647,142	2,062,475	(f) 466,046	331,018	13,780,038
VALUE.							
	£	£	£	£	£	£	£
Building Stone ..	177,111	42,182	463	16,577	10,073	885	247,291
Macadam, Ballast, etc. ..	862,539	424,217	166,618	424,420	141,764	..	2,019,558
Limestone (c) ..	174,404	86,489	19,870	1,491	12,830	97,178	392,262
Clays ..	207,291	(d)	..	27,118	36,396	..	(f) 270,808
Other ..	25,579	..	..	..	13,012	..	38,591
Total ..	1,446,927	552,888	186,951	469,606	214,075	98,063	(f) 2,968,510

(a) Year ended June, 1940. (b) Estimated. (c) Limestone used as a flux and for the manufacture of lime and cement. It omits quantities used as building stone and as macadam, ballast, etc., which are already included under those headings. (d) Not collected. (e) Not available. (f) Incomplete.

In the following table corresponding details are given for each State for the years 1935 to 1939 :—

OUTPUT OF QUARRIES.

State.	1935.		1936.		1937.		1938.		1939.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	'000 tons.	£	'000 tons.	£	'000 tons.	£	'000 tons.	£	'000 tons.	£
New South Wales	6,142	1,052,989	7,260	1,261,301	8,616	1,662,135	9,402	1,654,887	8,461	1,446,927
Victoria (a) (b)	1,609	476,293	1,673	514,984	1,573	474,303	1,621	493,576	1,812	552,888
Queensland (a)(c)	902	168,030	934	255,040	776	242,693	729	213,318	647	186,951
South Aust.	1,005	179,273	1,154	196,957	1,244	226,696	1,765	339,064	2,063	469,606
Western Aust.(a)	164	68,201	272	94,975	367	137,672	500	185,237	(d)4,666	214,075
Tasmania	254	68,357	262	71,243	309	86,986	283	89,655	331	98,003
Total	10,076	2,004,143	11,555	2,394,506	12,885	2,830,485	14,305	2,975,737	13,780	2,968,510

(a) Year ended June following.

(b) Omits clays.

(c) Estimated.

(d) Incomplete.

7. Geophysical Methods for Detection of Ore Deposits.—Reference to the application of geophysical survey methods in Australia will be found in Official Year Book No. 24, p. 570.

§ 2. Gold.*

1. Discovery in Various States.—The discovery of gold in payable quantities was an epoch-making event in Australian history, for, as one writer aptly phrases it, this event "precipitated Australia into nationhood". A more or less detailed account of the finding of gold in the various States appears under this Section in Official Year Books Nos. 1 to 4.

2. Production at Various Periods.—In the following table will be found the values of the gold raised in the several States and in Australia as a whole during each of the nine decennial periods from 1851 to 1940, and in single years from 1935 to 1944. Owing to the defective information in the earlier years the figures fall considerably short of the actual totals, for during the first stages of mining development large quantities of gold were taken out of Australia by successful miners who preferred to keep the amount of their wealth secret.

GOLD : VALUE OF PRODUCTION.

Period.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Terr.	Australia.
	£	£	£	£	£	£	£	£
1851-60..	11,530,583	93,337,052	14,565	..	..	788,564	..	105,670,764
1861-70..	13,676,103	65,106,264	2,076,494	..	..	12,174	..	80,871,035
1871-80..	8,576,654	40,625,188	10,733,048	570,068	..	700,048	79,022	61,293,028
1881-90..	4,306,541	28,413,792	13,843,081	246,668	178,473	1,514,921	713,345	49,216,821
1891-1900	10,332,120	29,904,152	23,989,359	219,931	22,308,524	2,338,336	906,988	89,999,410
1901-10..	9,569,492	30,136,686	23,412,395	310,080	75,540,415	2,566,170	473,871	142,009,109
1911-20..	4,988,377	13,354,217	9,876,677	238,808	46,808,351	873,302	100,652	76,240,384
1921-30..	940,946	2,721,309	1,076,715	47,564	20,462,957	193,833	(b) 11,545	26,351,869
1931-40..	5,115,397	9,444,570	9,118,903	459,330	74,391,204	1,164,492	786,790	100,480,686
1935 ..	439,140	768,401	904,755	64,109	5,677,328	73,143	81,457	8,008,333
1936 ..	525,702	1,018,670	1,048,748	66,593	7,326,309	152,291	65,683	10,204,086
1937 ..	595,855	1,266,507	1,104,760	60,372	8,688,921	176,130	100,462	11,993,007
1938 ..	780,958	1,273,351	1,334,788	46,022	10,286,349	195,079	109,168	14,026,615
1939 ..	848,985	1,533,899	1,428,598	33,895	11,796,085	192,596	163,414	16,002,472
1940 ..	1,068,692	1,924,396	1,351,654	34,892	12,697,219	204,248	238,849	17,519,950
1941 ..	941,244	1,600,016	1,164,621	17,908	11,852,452	212,710	201,599	15,990,520
1942 ..	807,436	1,060,910	994,214	13,930	8,865,806	191,835	126,035	12,060,166
1943 ..	666,491	590,541	656,665	5,423	5,710,663	180,209	40,880	7,850,864
1944 ..	657,163	568,305	538,176	5,662	4,899,384	174,888	57,803	6,901,381
Total								
1851-1944	72,108,547	316,863,002	98,394,905	2,144,372	271,018,229	10,911,482	3,498,530	774,939,067

(a) Period July, 1911 to June, 1920.

(b) Period July, 1920 to December, 1930.

* The values quoted in this section are in Australian currency throughout.

Owing to the exhaustion of the more easily worked deposits and the unprofitableness of gold-mining during the era of high prices following the 1914-19 War, the production of gold in Australia declined from 3,838,029 fine oz. in 1903 to 427,159 fine oz. in 1929, the lowest output since the discovery of the precious metal.

Increased activity in prospecting due to prevailing economic conditions resulted in some improvement in 1930, but the marked development since that year received its impetus from the heavy depreciation of Australian currency in terms of gold. Oversea and local capital were attracted to the industry, and the employment of advanced geological methods and technical improvements brought many difficult or abandoned propositions into profit. The output of gold rose annually from 466,593 fine oz. in 1930 to 1,645,697 fine oz. in 1939. Following the outbreak of war in 1939, production fell slightly in 1940, and rapidly thereafter, due to the diversion of man-power, until in 1944 it was only 656,867 fine oz.

Due to the increase in the price of gold, the value in 1940 reached the maximum figure of £17,519,950, exceeding the previous record of £16,294,684 reached in 1903.

Values per fine oz. in Australian currency assigned to the production of gold during recent years in the table above are, £8 15s. 1½d. in 1935, £8 13s. 2d. in 1936, £8 13s. 8d. in 1937, £8 16s. 2½d. in 1938, £9 14s. 5½d. in 1939, £10 13s. 1¾d. in 1940, £10 13s. 8d. in 1941, £10 9s. 0¾d. in 1942, £10 9s. 0d. in 1943 and £10 11s. 3¾d. in 1944. Monthly fluctuations in the price of gold in London and in Australia during 1944-45 are shown in Chapter XVII. "Private Finance".

The amount of gold raised in Australia in any one year attained its maximum in 1903, in which year Western Australia also reached its highest point. For the other States the years in which the greatest yields were obtained were as follows:—New South Wales, 1852; Victoria, 1856; Queensland, 1900; South Australia, 1894; and Tasmania, 1899.

The following table shows the quantities of gold raised in the various States and in Australia during each of the six years ended 1944. A separate line is added showing the total production in thousands of fine ounces from 1851 to 1944:—

GOLD : QUANTITY PRODUCED.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Terr.	Australia.
	Fine oz.	Fine oz.	Fine oz.	Fine oz.	Fine oz.	Fine oz.	Fine oz.	Fine oz.
1939 ..	87,189	156,522	147,248	3,930	1,214,238	19,984	16,586	1,645,697
1940 ..	100,255	180,567	126,831	3,270	1,191,482	19,171	22,423	1,643,999
1941 ..	38,091	149,769	109,064	1,679	1,109,318	19,908	18,869	1,496,698
1942 ..	77,249	101,497	95,117	1,333	848,180	18,353	12,058	1,153,787
1943 ..	63,779	56,511	62,838	519	546,475	17,245	3,912	751,279
1944 ..	62,610	54,086	51,223	539	466,205	16,653	5,491	656,867
Total (a)— 1851-1944	15,862	72,762	21,473	443	49,749	2,312	660	163,261

(a) '000 omitted.

Particulars of the quantity and value of gold produced during 1945 are given in the following table.

GOLD PRODUCTION, 1945.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
Quantity .. fine oz.	43,129	61,790	63,223	277	468,551	13,050	7,193	657,213.
Value .. £ A'000	461	661	677	3	5,012	140	77	7,031

3. Changes in Relative Positions of States as Gold Producers.—The figures in the table showing the value of gold raised explain the enormous increase in the population of Victoria during the period 1851 to 1861, when an average of over 40,000 persons reached the State each year. With the exception of 1889, when its output was exceeded by

that of Queensland, Victoria maintained its position as the chief gold producer for a period of forty-seven years, until its production was surpassed by that of Western Australia in 1898. From that year onward the proportion contributed by Western Australia has increased and in 1944 represented 71 per cent. of the entire yield of Australia, the proportion contributed by this State over the period from 1851 to 1944 being 30 per cent. and by Victoria for the same period 45 per cent.

4. *Place of Australia in the World's Gold Production.*—The table given below shows the world's gold production, and the share of Australia therein in decennial periods since 1851 and during each of the last ten years for which returns are available. The figures given in the table have been compiled from the best authoritative sources of information.

GOLD : WORLD'S PRODUCTION.

Period.	World's Production of Gold.	Gold Produced in Australia.	Percentage of Australia on Total.
	Fine oz.	Fine oz.	%
1851-60	61,352,295	24,877,013	40.55
1861-70	53,675,679	19,038,661	35.47
1871-80	50,473,314	14,429,599	28.59
1881-90	51,998,060	11,586,626	22.28
1891-1900	102,695,748	21,187,661	20.63
1901-10	182,891,525	33,434,069	18.28
1911-20	206,114,773	17,426,466	8.45
1921-30	186,091,278	5,841,902	3.14
1931-40	314,438,828	11,383,009	3.62
1931	22,786,773	595,123	2.61
1932	24,204,275	713,882	2.95
1933	25,568,920	830,332	3.25
1934	27,032,084	887,490	3.28
1935	29,434,127	914,736	3.11
1936	33,167,494	1,178,581	3.55
1937	34,543,360	1,381,135	4.00
1938	37,110,594	1,592,934	4.29
1939	39,524,100	1,645,697	4.16
1940	(a) 41,067,101	1,643,999	4.00

(a) Subject to revision.

It is estimated that the world's production in 1941 approximated 40,300,000 fine oz. of which Australia's share amounted to 1,497,000 fine oz. or 3.7 per cent.

The quantities of gold produced in the principal producing countries in each of the five years 1938 to 1942 are given in the table hereunder. Particulars of the quantities and values of gold produced in all countries for the ten years 1930-39 will be found in *Production Bulletin* No. 34, Part II., issued by this Bureau.

GOLD PRODUCTION IN PRINCIPAL COUNTRIES.

Country.	1938.	1939.	1940.	1941.	1942.
	Fine oz.	Fine oz.	Fine oz.	Fine oz.	Fine oz.
Union of South Africa	12,161,392	12,821,507	14,046,502	14,386,361	14,120,617
Canada	4,725,117	5,094,379	5,311,145	5,345,179	4,841,306
U.S.S.R. (Russia) ..	5,000,000	5,000,000	4,000,000	(a)	(a)
U.S.A.	4,245,368	4,620,567	4,862,979	4,832,087	3,583,080
Australia	1,592,034	1,645,697	1,643,999	1,496,698	1,153,787
Philippine Islands ..	903,265	990,000	1,140,126	1,144,332	158,726
Korea	1,050,000	975,000	1,025,000	(a)	(a)
Mexico	923,798	944,000	1,000,274	923,295	799,107
Japan, including					
Formosa	852,000	910,000	900,000	(a)	(a)
Rhodesia	815,191	800,276	832,087	793,842	763,030

(a) Not available.

The next table shows the average yearly production in the principal gold-producing countries for the decennium 1933 to 1942 :—

**GOLD : AVERAGE ANNUAL PRODUCTION IN PRINCIPAL COUNTRIES,
1933 TO 1942.**

Country.	Quantity.	Country.	Quantity.
	Fine oz.		Fine oz.
Union of South Africa ..	12,287,473	Mexico	817,285
U.S.S.R. (Russia) ..	(a) 4,500,750	Rhodesia	768,067
Canada	4,236,764	Japan, including Formosa (a)	752,868
U.S.A.	3,820,281	Korea	(a) 737,500
Australia	1,272,354	Philippine Islands ..	674,146

(a) Average eight years, 1933 to 1940.

5. **Employment in Gold-mining.**—The number of persons engaged in gold-mining in each State at various intervals since 1901 is shown in the following table. The figures include prospectors, etc, so far as they are ascertainable, and include those who may not have worked during the whole of the year.

GOLD-MINING : PERSONS EMPLOYED.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Terr.	Total.
	No.	No.	No.	No.	No.	No.	No.	No.
1901 ..	12,064	27,387	9,438	(a)1,000	19,771	1,112	(a) 200	70,972
1903 (b) ..	11,247	25,208	9,229	(a)1,000	20,716	973	(a) 200	68,573
1913 ..	3,570	11,931	3,123	800	13,445	481	175	33,525
1923 ..	1,141	2,982	603	32	5,555	119	30	10,462
1933 ..	6,913	6,126	4,161	231	9,900	229	95	27,655
1938 ..	3,764	6,315	3,378	158	15,374	141	267	29,397
1939 ..	3,441	6,169	3,299	178	15,216	116	421	28,840
1940 ..	2,952	4,783	1,995	157	14,593	123	347	24,950
1941 ..	2,330	2,801	1,630	86	13,106	80	236	20,269
1942 ..	1,571	1,661	1,075	34	8,123	33	50	12,547
1943 ..	771	719	1,297	29	5,079	19	40	7,954

(a) Estimated.

(b) Year of maximum production for Australia.

Owing to causes referred to earlier in this section, the number employed in gold-mining had dwindled to the comparatively small figure of 6,108 in 1929. Stimulated by the enhanced price of gold, employment in the industry rose more than five-fold to 33,113 in 1935, but since then the numbers employed have declined each year to 7,954 in 1943.

6. **Tax on Gold.**—(i) *General.* The Commonwealth Government imposed a tax on gold produced in Australia or in any Territory under its jurisdiction and delivered to the Commonwealth Bank on or after 15th September, 1939. The rate of tax was fixed at 50 per cent. of the price payable by the Bank in excess of £A9 per fine oz. Gold imported from places other than Australian Territories is not subject to the tax, nor is gold coin or wrought gold unless and until the Treasurer otherwise directs by notice in the *Commonwealth Gazette*.

The tax on gold yielded £1,214,621 during 1939-40; £1,452,260 during 1940-41; £1,030,425 in 1941-42; £524,694 in 1942-43; £317,720 in 1943-44; and £342,457 in 1944-45.

(ii) *Development of Gold Mining Industry.* Under the Gold Mining Encouragement Act 1940 a rebate of tax is allowed to bona fide prospectors in respect of the first 25 ounces delivered by them each year, and a refund of the whole or part of the tax is made to certain producers on low margins. In such cases gold is not taxed if their profits do not exceed 30s. per fine oz. and they only pay tax, but not exceeding the ordinary tax payable, to the extent to which their profits exceed 30s. per fine oz.

Assistance amounting to £150,000 was given to the gold-mining Industry, through the medium of the States, during 1940-41.

7. **Bounty on Production.**—A reference to the bounty provided by the Commonwealth on gold production in Australia appears in Official Year Book No. 32. p. 579.

§ 3. Silver, Lead and Zinc.

1. **Occurrence in Each State.**—Particulars regarding the occurrence of silver and associated metals in each State were given in Official Year Books, Nos. 1 to 5.

2. **Production.**—(i) *General.* The values of the production of silver, silver-lead ore and lead from the various States during each of the six years ended 1943 are given in the following table:—

SILVER AND LEAD : VALUE OF PRODUCTION.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Terr.	Australia.
	£	£	£	£	£	£	£	£
1938 ..	3,520,465	647	926,614	70	29,477	267,773	..	4,745,046
1939 ..	3,546,440	726	1,010,856	61	32,890	291,980	..	4,882,953
1940 ..	4,454,085	969	1,342,550	391	35,107	500,218	4	6,333,324
1941 ..	4,456,973	2,410	1,324,349	837	37,648	433,643	..	6,255,860
1942 ..	4,168,421	2,227	1,034,550	477	23,916	358,966	..	5,588,557
1943 ..	3,752,672	2,278	230,837	62	16,475	333,058	..	4,335,382

(ii) *New South Wales.* (a) *General.* The figures for New South Wales for 1943 include silver to the value of £29,741 and silver-lead ore and concentrates valued at £3,722,931. Since the Sulphide Corporation Ltd. ceased smelting operations in 1922 the silver (metal) has been obtained chiefly in the refining of gold and copper ores, and there has been no production of lead (pig). It may be noted here that the bulk of the carbonate and siliceous ore from the Broken Hill field is sent for treatment to Port Pirie in South Australia, while the remainder of the ore is concentrated on the field and then dispatched to Port Pirie for refining. The output of silver-lead ores and concentrates for 1943 showed a decrease of 39,714 tons over that of the previous year, and the value declined by more than £415,000.

It must be understood that the totals for New South Wales in the table above represent the net value of the product (excluding zinc) of the silver-lead mines of the State. In explanation of the values thus given, it may be noted that, as previously mentioned, the metallic contents of the larger portion of the output from the silver-lead mines in the State are extracted outside New South Wales, and the Mines Department considers, therefore, that the State should not take full credit for the finished product. The real importance of the State as a producer of silver, lead and zinc is thus to some extent understated.

(b) *Broken Hill*. Broken Hill, in New South Wales, is the chief centre of silver production in Australia. A description of the silver-bearing area in this district is given in earlier issues of the Official Year Book. (See No. 4, p. 500.)

Although the returns are not complete in all cases, the details given in the following table relating to the companies controlling the principal mines at Broken Hill will give some idea of the richness of the field. Later details are not yet available:—

SILVER : BROKEN HILL RETURNS TO END OF 1939.

Mine.	Value of Output to end of 1939.	Dividends and Bonuses Paid to end of 1939.
	£	£A.
Broken Hill Proprietary Co. Ltd.	54,059,804	17,412,937
Broken Hill Proprietary Block 14 Co. Ltd.	4,750,508	670,160
British-Australian Broken Hill Co. Ltd.	5,858,998	821,280
Broken Hill Proprietary Block 10 Co. Ltd.	4,946,989	1,432,500
Sulphide Corporation Ltd. (Central and Junction Mines)	30,495,262	4,760,283
Broken Hill South Ltd.	29,192,159	7,855,000
North Broken Hill Ltd.	26,429,365	8,230,190
Broken Hill Junction Lead Mining Co.	1,185,058	87,500
Junction North Broken Hill Mine	3,511,940	171,431
The Zinc Corporation Ltd.	16,209,301	5,026,962
Barrier South Ltd.	151,517	50,000
Total	176,790,901	46,518,243

(c) *Other Areas*. Silver is found in various other localities in New South Wales. During 1939 production commenced at the Captain's Flat silver-lead-zinc mine, 500 men being employed at the close of the year. The contents of the concentrates produced from this field during 1939 amounted to 144,000 ounces of silver, 11,850 tons of lead and 7,919 tons of zinc compared with 358,000 ounces of silver, 19,657 tons of lead and 11,041 tons of zinc produced in 1944.

(iii) *Victoria*. The silver produced in 1943 amounted to 17,423 oz., valued at £2,278, and was obtained in the refining of gold at the Melbourne Mint.

(iv) *Queensland*. The production of silver in 1943 decreased by 2,280,000 oz. to about 775,000 oz., and lead production by 24,933 tons to 8,579 tons, practically all of which was won from the mine and works at Mount Isa in the Cloncurry mineral field.

(v) *South Australia*. Silver ore has been discovered at Miltalie and Poonana, in the Franklin Harbour district, also at Mount Malvern and Olivaster, near Rapid Bay, and in the vicinity of Blinman and Farina, at Baratta, and elsewhere. There was no production between 1932 and 1935 but subsequently there has been a small output of silver. In 1943 production amounted to 352 oz. valued at £49, and in 1944 to 2,365 oz. valued at £309.

(vi) *Western Australia*. The quantity of silver obtained as a by-product and exported in 1943 was 118,803 fine oz., valued at £15,375.

(vii) *Tasmania*. The silver produced in 1943 amounted to 1,116,576 fine oz., valued at £117,241, and the lead to 8,633 tons, valued at £215,817, being produced in the Western Division of the State. Compared with previous years this represents a considerable decrease as regards both quantity and value. About 1,072,000 oz. of the total silver output were contained in silver-lead, while 44,300 oz. were contained in the blister copper produced by the Mount Lyell Co.

(viii) *Northern Territory.* A rich deposit of silver-lead and copper ore was located in 1930 at the Jervois Range about 200 miles east of Alice Springs. Development is hindered, however, by transport difficulties and lack of permanent water. Rich sulphides have been found at Barrow Creek. Production during the past ten years has been very intermittent and not very great in the years when any output was recorded.

3. **Production, Sales and Stocks of Refined Silver 1939 to 1944.**—The following table sets out as fully as possible the total production and distribution of refined silver in Australia. It is based on the data published by the Australian Mines and Metals Association and shows the stocks of refined silver in Australia, production and sales (locally and overseas) during the six years 1939 to 1944.—

REFINED SILVER : PRODUCTION SALES AND STOCKS, AUSTRALIA.

Particulars.	1939.	1940.	1941.	1942.	1943.	1944.
	'000 fine oz.	'000 fine oz.	'000 fine oz.	'000 fine oz.	'000 fine oz.	'000 fine oz.
Stock from previous year ..	122	362	374	419	402	437
Production for year ..	9,552	8,971	9,758	9,508	8,263	7,176
Total Supply ..	9,674	9,333	10,132	9,927	8,665	7,613
Sold to Australian consumers	1,794	4,210	3,353	9,495	8,228	7,199
Exported or sold for export ..	7,518	4,749	6,360	30	..	..
Stock on hand at end of year	362	374	419	402	437	414
Total Disposals and Stocks	9,674	9,333	10,132	9,927	8,665	7,613
Silver Contents of Ores and Concentrates Produced ..	15,320	15,872	15,413	14,242	10,330	9,366

4. **World's Production.**—The world's production of silver during the last five years for which particulars are available is estimated to have been as follows :—

SILVER : WORLD'S PRODUCTION.

1937.	1938.	1939.	1940.	1941.
'000 fine oz.	'000 fine oz.	'000 fine oz.	'000 fine oz.	'000 fine oz.
274,574	267,765	265,927	272,510	262,854

The world's production of silver in millions of fine oz. during 1918, 1928 and 1938 amounted respectively to 203, 258 and 268, of which Australia contributed 10.4 million, 9.6 million and 13.9 million fine oz., or 5.1 per cent., 3.7 per cent. and 5.2 per cent. respectively. The production for Australia includes an estimate of the silver contents of the ores, bullion and concentrates exported

The estimated yields of the principal silver-producing countries in 1942 (or the latest year available) were as follows:—

SILVER PRODUCTION IN PRINCIPAL COUNTRIES, 1942 (or the latest year available).

Country.	Production.	Country.	Production.
	Fine oz. (^{'000 omitted.})		Fine oz. (^{'000 omitted.})
Mexico	84,864	British India (including Burma)	(a) 6,175
United States of America	55,860	Belgian Congo	(a) 3,537
Canada	20,695	Yugoslavia	(b) 2,570
Peru	16,035	Union of South Africa	(c) 1,461
Australia	14,242	Argentina	1,134
Japan	(a) 11,000	Newfoundland	909
U.S.S.R. (Russia)	(a) 7,000	Chile	905
Germany	(b) 7,000		
Bolivia	8,139		

(a) Year 1940.

(b) Year 1939.

(c) Year 1941.

5. **Production of Lead in Australia.**—For reasons already mentioned, difficulties arise when an attempt is made to show the production of lead by States. This is due to the fact that production is largely recorded in terms other than metal. The Chief sources of production are New South Wales, Queensland, and Tasmania.

In the following table details of production, sales, and stocks are given for the years indicated and have been compiled from data supplied by the Australian Mines and Metals Association.

REFINED LEAD : PRODUCTION, SALES AND STOCKS, AUSTRALIA.

Particulars.	1939.	1940.	1941.	1942.	1943.	1944.
	Ton.	Ton.	Ton.	Ton.	Ton.	Ton.
Stocks from previous year ..	10,290	12,826	31,176	79,487	30,940	73,720
Production for year ..	199,437	189,150	213,476	206,929	180,629	154,547
Total Supply	209,727	201,976	244,652	286,416	210,669	228,267
Sold to Australian consumers ..	32,217	28,797	43,872	48,122	40,583	29,853
Exported or sold for export ..	164,684	142,003	121,293	208,254	96,366	179,455
Stock on hand at end of year ..	12,826	31,176	79,487	30,940	73,720	18,959
Total Disposals and Stocks ..	209,727	201,976	244,652	286,416	210,669	228,267
Lead Contents of Ores and Concentrates Produced ..	280,003	287,729	289,436	263,183	206,376	189,485

6. **Prices of Silver, Lead and Zinc.**—In view of the close association in Australia, particularly in New South Wales, of ores containing these metals, the average prices in sterling of each metal on the London Metal Exchange during the years shown have been incorporated in the table hereunder. During 1942, 1943 and 1944, prices remained unchanged at the 1941 levels.

PRICES OF SILVER, LEAD AND SPELTER.

(In Sterling).

Metal.	1938.		1939.		1940.		1941.		1945.	
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
Silver (Standard) per oz.	0	1 9.06	0	1 10.02	0	1 10.28	0	2 1.37	0	2 6.50
Lead .. per ton	15	6 6	15	13 2	25	0 0	25	0 0	27	15 11
Spelter .. "	14	1 7	14	13 3	25	15 0	25	15 0	28	16 7

(a) Maximum price as fixed by the British Ministry of Supply.

At the outbreak of war in September, 1939, the prices of lead and zinc were fixed in London by the Ministry of Supply at £Stg16 12s. 6d. and £Stg15 respectively. On 18th December, 1939 increases to £Stg25 and £Stg25 15s. respectively, were permitted. During January, 1946 the price was increased to £Stg39 for lead and £Stg31 5s. for zinc and further increased in April, 1946, to £Stg45 and £Stg39 5s. per ton respectively. In Australia prices were fixed on 19th December, 1939, at £A20 17s. 8d. per ton for lead and £A20 2s. 6d. per ton for zinc, and increases to £A22 per ton for each metal were made in February, 1940. No further changes were recorded in Australia up to May, 1946.

7. Employment in Silver, Lead and Zinc-mining.—The average number of persons employed in mining for these metals during each of the years 1938 to 1943 is given below:—

SILVER, LEAD AND ZINC-MINING : PERSONS EMPLOYED).

Year.	N.S.W.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Terr.	Australia.
	No.	No.	No.	No.	No.	No.	No.
1938 ..	5,612	530	..	4	421	3	6,570
1939 ..	5,137	550	5	2	401	..	6,095
1940 ..	4,904	493	6	..	367	..	5,770
1941 ..	4,419	461	2	..	554	..	5,436
1942 ..	4,104	471	..	..	509	..	5,084
1943 ..	3,982	239	..	2	491	..	4,714

§ 4. Copper.

1. Production.—Copper is widely distributed throughout Australia and the quantity produced is dependent largely upon the price situation. South Australia and New South Wales were once large producers but the output of these States is much less than it was in earlier years. The chief sources of production are now centred in Queensland and Tasmania.

The values of the local production as reported and credited to the mineral industry for the years 1938 to 1943 are shown hereunder. Quantities for Australia as a whole, as returned by the several State Mines Departments, are appended on separate lines at the foot of the table:—

COPPER : PRODUCTION.

State.	1938.	1939.	1940.	1941.	1942.	1943.
	£	£	£	£	£	£
New South Wales ..	87,905	105,407	103,701	117,490	277,376	379,800
Queensland ..	203,967	289,927	428,263	620,996	625,375	1,111,049
South Australia ..	15,333	6,612	21,083	41,390	31,715	10,100
Western Australia ..	1,275	1,373	873	154	738	33
Tasmania ..	580,238	668,561	717,464	721,985	730,675	691,199
Northern Territory ..	4,362	2,248	1,072	3,185	..	2,393
Australia ..	893,080	1,074,128	1,272,456	1,505,200	1,665,879	2,194,574
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Ingot, Matte, etc. ..	18,751	21,408	20,354	21,787	21,699	25,894
Ore and Concentrates	935					

In the following table, details of the production, sales and stocks of refined copper, as compiled by the Australian Mines and Metals Association, are given for the years indicated:—

REFINED COPPER : PRODUCTION, SALES AND STOCKS, AUSTRALIA.

Unit : Tons of 2,240 lb.

Particulars.	1939.	1940.	1941.	1942.	1943.	1944.
Stocks from previous year ..	1,342	301	278	988	972	587
Production for year ..	17,867	18,141	21,668	24,609	20,457	19,898
Total ..	19,209	18,442	21,946	25,597	21,429	20,485
Sold to Australian consumers	18,808	18,164	20,958	24,625	20,842	19,685
Exported or sold for export. .	100	..	..	..	..	..
Stocks on hand at end of year	301	278	988	972	587	800
Total ..	19,209	18,442	21,946	25,597	21,429	20,485

2. Sources of Production.—(i) *New South Wales.* The copper contents of ores and concentrates produced in New South Wales in 1943 amounted to 2,279 tons, the greatest quantity produced in that State for many years. Previously production in New South Wales rarely exceeded 1,000 tons although it ranged from 2,500 tons in 1915 to 10,600 tons in 1911.

(ii) *Queensland.* In 1943 the yield of metallic copper in this State amounted to 10,758 tons valued at £1,111,049, and in 1944 15,804 tons valued at £1,644,747 were produced. This is the highest yield since 1920 when 15,897 tons valued at £1,552,000

were produced. The falling-off in the interim years was due primarily to the low prices realized for copper. The returns from the chief producing areas in 1944 were as follows :— Cloncurry, 12,421 tons, £1,304,170; and Mount Morgan, 3,145 tons, £315,680.

(iii) *South Australia.* Deposits of copper are found over a large portion of South Australia and its total production to date easily exceeds that of any other State. Compared with the output of previous years the production of South Australia has decreased during recent times, and is now exceeded by that of Tasmania, Queensland and New South Wales. A short account of the discovery, etc., of some of the principal mining areas, such as Kapunda, Burra Burra, Wallaroo and Moonta, is given in earlier issues of the Official Year Book. The Moonta and Wallaroo copper field, which was opened in 1860, was worked continuously, and up to the close of 1931 £20,500,000 of copper was produced. Between 1933 and 1938 the field was worked on a co-operative basis known as the Moonta Mining Scheme, to which reference is made in previous issues of the Official Year Book. Owing to the exhaustion of the ore reserves the operations of the scheme ceased in August, 1938. However, owing to the exploitation of new boreholes, the output has increased and the production of copper in the State in 1942 amounted to 392 tons, valued at £31,715, but fell to 102 tons, valued at £10,100, in 1943.

(iv) *Western Australia.* During 1943 the quantity of copper reported was 7 cwt. valued at £33 compared with 47 tons for £738 in 1942.

(v) *Tasmania.* The quantity of copper produced in Tasmania during 1943 was 11,148 tons, valued at £691,199, the Mount Lyell Mining and Railway Co. Ltd. accounting for the whole of the production. This company treated 49,877 tons of ore and concentrates and produced blister copper, containing copper 10,684 tons, silver 44,321 oz., and gold 7,220 oz., the whole being valued at £A1,114,628.

(vi) *Northern Territory.* Copper has been found at various places in the Territory. For the eighteen months ended December, 1936, 204 tons of ore were raised. This was the first production recorded since 1932-33. Production in 1939 amounted to 96 tons valued at £2,248; in 1940, 64 tons, £1,072; and in 1941, 300 tons, £3,185. No production was recorded in 1942, but 88 tons, valued at £2,393, were produced in 1943.

3. *World's Production of Copper.*—The world's production of copper during the five years 1935 to 1939 was estimated as follows. The figures have been taken from the statistical summary prepared by the Imperial Institute or from other authoritative sources. Later figures are not available.

COPPER : WORLD'S PRODUCTION.

1935.	1936.	1937.	1938.	1939.
Tons.	Tons.	Tons.	Tons.	Tons.
1,470,000	1,700,000	2,300,000	2,020,000	2,160,000

The yields from the principal copper-producing countries in 1939 were as follows :—

COPPER : PRODUCTION IN PRINCIPAL COUNTRIES, 1939.

Country.	Production.	Country.	Production.
	Tons.		Tons.
United States of America ..	661,000	Mexico	49,000
Chile	339,000	Yugoslavia	42,000
Canada	281,000	Peru	35,000
Rhodesia	216,000	Cyprus	24,000
Belgian Congo	122,000	Germany	30,000
U.S.S.R. (Russia)	107,000	Spain	25,000
Japan	77,000	Australia	21,408

During 1939 the share of the United States of America in the world's copper production amounted to 31 per cent. while the Australian proportion was less than 1 per cent.

4. **Prices.**—At the outbreak of war in 1939, the price of copper in the United Kingdom was fixed at £Stg51 per ton but was increased to £Stg62 in December of the same year at which level it remained until April, 1946, when it was increased to £Stg72 per ton.

In Australia the price was fixed at £A63 17s. 6d. per ton on 19th December, 1939, and further increased to £A76 per ton on 16th February, 1940, and to £A78 10s. per ton on 7th February, 1941. On the latter date supplies of local and imported copper were pooled and sold to consumers at the increased price to offset the loss on copper imported at a higher figure. The price paid to local producers, however, remained at £A76 per ton. Increased mining costs made a further rise necessary and the price was raised on 5th May, 1941, to £A86 10s. from which an amount of £A1 10s. is set aside to provide a bonus of £A5 per ton on production from new sources or on increased supplies from existing sources. On 28th May, 1942, the price was raised to £A105 per ton in an effort to increase Australian production and from this amount a bonus of £A5 per ton is provided for all output which is in excess of the normal. In January, 1946 the price to buyers was reduced to £A95 but the price to producers remained unaltered.

5. **Employment in Copper-mining.**—The number of persons employed in copper-mining during each of the years 1938 to 1943 was as follows :—

COPPER-MINING : PERSONS EMPLOYED.

Year.	N.S.W.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Terr.	Australia.
	No.	No.	No.	No.	No.	No.	No.
1938	13	213	67	4	1,015	5	1,317
1939	5	224	36	4	1,017	5	1,291
1940	9	222	45	2	997	5	1,280
1941	20	271	44	2	924	5	1,266
1942	79	419	52	5	1,595	7	2,157
1943	260	864	36	1	1,577	1	2,739

In 1917 over 9,000 persons were engaged in copper-mining.

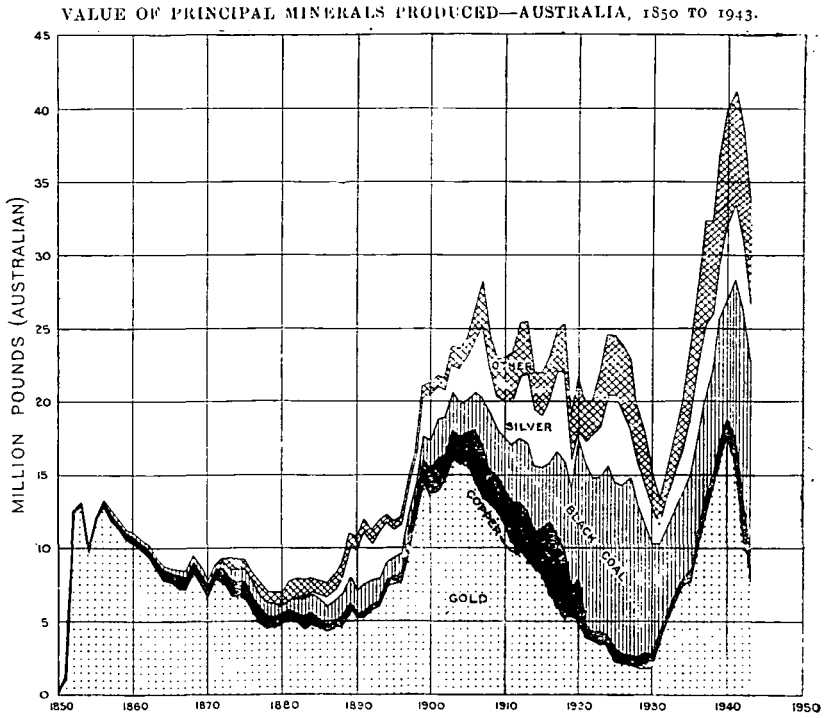
§ 5. Tin.

1. **Production.**—The values of the production of tin as reported to the Mines Departments in each of the States during the six years 1938 to 1943 are given in the following table. A separate line is appended showing the production of refined tin as recorded by the Australian Mines and Metals Association for the years indicated.

TIN : PRODUCTION.

State.	1938.	1939.	1940.	1941.	1942.	1943.
	£	£	£	£	£	£
New South Wales ..	286,768	366,138	373,435	443,123	417,210	403,320
Victoria	28,650	47,233	32,253	19,569	19,173	14,162
Queensland	141,547	200,652	223,626	204,232	150,454	167,176
South Australia ..	..	..	..	..	..	10
Western Australia ..	7,421	3,871	5,174	1,874	4,634	2,315
Tasmania	244,037	282,798	307,127	328,340	297,919	246,218
Northern Territory ..	3,205	4,487	4,533	4,041	6,627	5,594
Total	711,628	905,179	1,006,148	1,001,179	896,017	838,795
Refined Tin ..	Tons. (a)	Tons. 3,294	Tons. 3,544	Tons. 3,656	Tons. 3,024	Tons. 2,565

(a) Not available.



EXPLANATION.—The upper curve represents the total value of mineral production while the vertical distances between the curves represent the value of production of each mineral.

2. Sources of Production.—(i) *New South Wales*. Production of tin in 1943 was stated at 1,074 tons of ingots. A large proportion of the output in this State is obtained in normal years by dredging, principally in the New England district.

(ii) *Victoria*. The production of tin in this State is obtained chiefly by dredging in the Beechworth district and by mining in the Toora district in Gippsland. The production in 1943 amounted to 60 tons of concentrates, valued at £14,162, compared with 84 tons, valued at £19,173, in 1942.

(iii) *Queensland*. The chief producing districts in Queensland during 1943 were Herberton, 1,085 tons, valued at £241,155; Cooktown, 34 tons, £7,681; Stanthorpe, 63 tons, £15,260; Chillagoe, 25 tons, £5,564 and Kangaroo Hills, 23 tons, £5,003. The total production in 1943, 785 tons valued at £167,176, was a decrease of 300 tons and £57,056 on that for 1937, but production of tin concentrates in 1944 amounted to 1,232 tons, valued at £275,185, the highest value since 1913. It is interesting to compare these figures with those recorded in the early years of this century when the production ranged between 2,000 and 5,000 tons per annum.

(iv) *Western Australia*. The quantity of tin reported in this State in 1943 amounted to 11 tons, valued at £2,315, and was obtained mainly in the Pilbara and Greenbushes fields.

(v) *Tasmania*. For 1943 the output amounted to 949 tons of tin, valued at £246,218, a decrease of 199 tons and £51,701 from the return for the previous year, and the lowest production since 1934, when 953 tons were produced.

(vi) *Northern Territory*. The production for 1943 amounted to 26 tons of concentrates valued at £5,594, compared with 32 tons of concentrates valued at £6,627 produced during 1942.

3. World's Production.—The world's production of tin during each of the last five years for which figures are available was as follows:—

TIN : WORLD'S PRODUCTION.

1935.	1936.	1937.	1938.	1939.
Tons.	Tons.	Tons.	Tons.	Tons.
136,000	179,000	206,000	157,000	183,000

The production of tin reached its maximum in 1937 when 206,000 tons were recorded. The chief producing countries of the world in 1939 were:—Malaya, Netherlands East Indies, Bolivia and Thailand. These countries produced about three-quarters of the total production.

The yields from the principal producing countries in 1939 were as follows:—

TIN : PRODUCTION IN PRINCIPAL COUNTRIES, 1939.

Country.	Production.	Country.	Production.
	Tons.		Tons.
Malaya	55,950	Burma	5,750
Netherlands East Indies	31,281	Australia	4,083
Bolivia	27,215	Argentina	2,481
Thailand	16,998	United Kingdom	1,800
China	10,859	Japan	1,700
Nigeria	10,855	Indo-China	1,392
Belgian Congo	9,663	Portugal	1,005

Australia's share of the world's tin production, estimated at 183,000 tons in 1939, would appear to be a little more than 2 per cent.

4. **Prices.**—At the outbreak of war in September, 1939 the price of tin in London was controlled, and fixed at £Stg230 per ton. In December, 1939 the price was unpegged and immediately rose to £Stg271. Following the declaration of war by Japan in December, 1941, the price of tin was officially fixed at £Stg260 per ton and remained at that level until January, 1944, when it was increased to £Stg300 per ton. In April, 1946 the price was further increased to £Stg357 per ton.

In Australia the domestic price, which at the outbreak of war in 1939 was £A294 per ton, was increased to £A299 per ton in October, 1939, to £A306 per ton in February, 1940, and to £A320 per ton in April, 1941. It was increased to £A371 per ton in May, 1942 in order to stimulate production. This price, which has been maintained to May, 1946, includes a margin of £10 per ton which is pooled to stimulate development of less profitable areas.

5. **Employment in Tin-mining.**—The number of persons employed in tin-mining during the years 1938 to 1943 was as follows :—

TIN-MINING : PERSONS EMPLOYED.

Year.	N.S.W.	Victoria. (a)	Q'land.	W. Aust.	Tas.	Nor. Terr.	Australia.
	No.	No.	No.	No.	No.	No.	No.
1938	1,440	5	1,263	73	1,123	15	3,919
1939	1,566	5	1,375	50	1,100	17	4,113
1940	1,686	5	1,037	39	1,094	40	3,901
1941	1,616	3	985	18	904	45	3,571
1942	1,243	3	589	15	801	(b) 49	(c) 2,702
1943	1,175	4	599	7	847	(b) 45	(c) 2,679

(a) The tin produced in Victoria was raised by a dredging company operating primarily for gold.
 (b) Including some engaged in mining for tantalite. (c) Includes two miners in South Australia.

§ 6. Zinc.

1. **Production : States.**—(i) *New South Wales.* The production of zinciferous concentrates is confined chiefly to the Broken Hill district of New South Wales, where zincblende forms one of the chief constituents in the enormous deposits of sulphide ores. The re-opening in 1937 of the mine at Captain's Flat by the Lake George Mines, Ltd. was an important development. Production commenced in 1939. Details of the zinc contents of ores and concentrates produced at this mine are given in the table below.

As the metallic contents of the bulk of the concentrates, etc., produced from these fields are extracted outside New South Wales, the mineral industry of that State is not credited by the Mines Department with the value of the finished product. During 1943 the zinc concentrates produced amounted to 283,964 tons, valued at £781,737. Portion of the zinc concentrates produced is treated at Risdon in Tasmania and the balance is exported, mainly to the United Kingdom and the United States of America. The production from these concentrates treated by the Electrolytic Zinc Company of Australia Ltd. at Risdon amounted to 51,266 tons of zinc, 117.23 tons of cadmium and 13.7 tons of cobalt oxide in 1943. This is referred to in the Tasmanian production below.

(ii) *Queensland.* The production of zinc in the Cloncurry district of Queensland during 1943 was 5,077 tons, valued at £76,158, compared with 21,035 tons valued at £394,412 in 1942 and 4,411 tons valued at £68,863, obtained in 1935. The metal was produced by the Mount Isa Mines Ltd. and is exported overseas as concentrates. There was no production of zinc in 1944.

(iii) *South Australia.* Zinc is known to exist in various localities in South Australia, but there has been no production during recent years.

(iv) *Tasmania.* The production of zinc from Tasmanian ores was suspended from 1931 to 1935. Developmental work on the Mount Read-Rosebery district was continued during that period and production commenced in 1936. In 1937—the first full year's operations since the inception of milling at Rosebery—23,481 tons, valued at £525,824, were obtained. In 1943, 21,079 tons of zinc, valued at £574,398, were obtained from Tasmanian ores, as well as 40 tons of cadmium valued at £18,372 and 13 cwt. of cobalt oxide valued at £304.

In addition to the above, the Electrolytic Zinc Company at Risdon operated on raw materials obtained from Broken Hill in New South Wales. Production from this source during 1943 amounted to 51,266 tons of slab zinc, valued at £1,179,118, 117.23 tons of cadmium, valued at £52,537, and 13.7 tons of cobalt oxide, valued at £6,300.

2. **Production : Australia.**—The details furnished above do not adequately convey the potentialities of Australia as a producer of zinc. A better indication is given in the following table which shows the estimated zinc contents of ores and concentrates produced in Australia according to data compiled by the Australian Mines and Metals Association.

ZINC CONTENTS OF ORES AND CONCENTRATES PRODUCED.

Year.	New South Wales.			Queensland.	Tasmania.	Australia.
	Broken Hill.	Lake George.	Total.	Mt. Isa.	Rosebery.	Total.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1939 ..	157,797	11,850	169,647	29,092	31,107	229,846
1940 ..	165,478	19,358	184,836	29,584	32,338	246,758
1941 ..	172,133	18,930	191,063	27,447	30,595	249,105
1942 ..	150,948	21,309	172,257	21,035	28,362	221,654
1943 ..	128,151	23,242	151,393	5,077	26,430	182,900
1944 ..	128,334	19,657	147,991	..	26,317	174,308

In the next table details are given of the quantity of refined zinc produced in Australia, the quantity sold and stocks held for the years 1939 to 1944, according to data compiled by the Australian Mines and Metals Association.

REFINED ZINC : PRODUCTION, SALES AND STOCKS, AUSTRALIA.

Particulars.	1939.	1940.	1941.	1942.	1943.	1944.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Stocks from previous year ..	3,225	220	900	2,115	4,420	3,314
Production for year ..	71,220	75,957	77,698	74,282	75,756	78,716
Total	74,445	76,177	78,598	76,397	80,176	82,030
Sold to Australian consumers	31,088	40,552	46,082	54,526	32,958	19,828
Exported or sold for export..	43,137	34,725	30,401	17,451	43,904	50,907
Stocks on hand at end of year	220	900	2,115	4,420	3,314	11,295
Total	74,445	76,177	78,598	76,397	80,176	82,030

3. **World's Production.**—The world's production of zinc ore in terms of metal during the five years 1934 to 1938, the latest for which particulars are available, was as follows :—

ZINC : WORLD'S PRODUCTION.

1934.	1935.	1936.	1937.	1938.
Tons. 1,162,000	Tons. 1,540,000	Tons. 1,700,000	Tons. 1,860,000	Tons. 1,840,000

The yields from the principal producing countries in 1938 are given hereunder, the figures referring to slab zinc produced in the various countries, irrespective of the source of the ore :—

ZINC : PRODUCTION IN PRINCIPAL COUNTRIES, 1938.

Country.	Production.	Country.	Production.
	Tons.		Tons.
United States of America ..	398,500	United Kingdom ..	55,000
Belgium	207,000	Japan	50,000
Germany	191,300	Norway	45,000
Canada	153,500	Mexico	33,100
Poland	106,400	Italy	36,900
Australia	72,736	Netherlands	24,900
U.S.S.R. (Russia) ..	70,000	Rhodesia	10,200
France	60,000	Czechoslovakia ..	8,700

The production of Australia quoted above represents the actual quantity of metal extracted in Australia and omits, therefore, the zinc contents of ores and concentrates exported. If this quantity was included, the total production would amount to 162,830 tons, or about 9 per cent. of the world's output.

4. **Prices and Employment.**—Information regarding prices of zinc and employment in zinc-mining will be found on page 979.

§ 7. Iron.

1. **General.**—Although iron ore is widely distributed throughout Australia, the only known ore bodies of large extent, high grade and easy of access are those situated at Yampi Sound, Western Australia, and at Iron Knob, South Australia. Estimates of the reserves at these centres place the quantities available at approximately 100 million tons and 150 million tons respectively. Bearing in mind the expansion of the iron industry in Australia, and the limitations of these reserves, the Commonwealth Government prohibited the export of iron ore from 1st July, 1938. A survey of the iron ore resources of Australia undertaken by the Commonwealth Geologist was completed at the end of 1940.

2. **Production.**—(i) *New South Wales.* The production in 1935 of pig-iron from ores mined in New South Wales amounted to 4,580 tons, valued at £18,320. No iron ores were produced from 1935 until 1941 when 202,180 tons of ore were mined. In 1942, 375,297 tons were mined but only 204,442 tons in 1943. For many years the chief source of supply has been South Australia.

Small quantities of iron oxide produced in New South Wales are used by the various gas-works for purifying gas, and also in the manufacture of paper, and for pigments. These supplies are drawn chiefly from the deposits in the Port Macquarie Division. During 1943 the iron oxide raised amounted to 7,363 tons, valued at £5,822. Ironstone flux amounting to 2,432 tons valued at £950 was raised in the Goulburn Division during 1933. This is the only production recorded since 1922.

(ii) *Queensland.* Extensive deposits of iron ore are known to exist in Queensland. Their location and size, however, preclude their exploitation in comparison with the more favourable deposits of South Australia. In 1943, 3,046 tons of ore were obtained and used as a flux at the Chillagoe State Smelters.

(iii) *South Australia.* The production from the deposits worked by the Broken Hill Pty. Co. Ltd., at Iron Knob and at Middlebank reached its maximum in 1939, when 2,571,759 tons of ore valued at £2,957,523 were raised. The production of 2,182,831 tons, valued at £2,510,256 for 1943, represents a decrease of 388,928 tons and £447,267 on the 1939 figures.

(iv) *Western Australia.* The development of the deposits at Yampi Sound was discontinued in 1938 as a result of the embargo on exports. However, 150 tons of iron ore valued at £225 were reported in 1942 for the first time since 1938. Production in 1943 amounted to 84 tons valued at £128.

At the end of 1944 Australian Iron & Steel Co. Ltd. on behalf of Broken Hill Proprietary Coy. Ltd. started preliminary work connected with the development and mining of the iron ore on Cockatoo Island, and it was estimated that substantial output would not be attained for two years. The ore would be mixed with the iron ore from the Iron Monarch mine in South Australia to reduce the manganese content of the furnace charge to an acceptable figure. The Iron Monarch ore has a high manganese content.

(v) *Tasmania.* There was no production of ironstone in Tasmania during 1942, but in 1943 7 tons valued at £14 were produced. The production of iron pyrites, which in 1943 amounted to 33,203 tons, valued at £41,504, is not included in the mineral returns, but is credited to the manufacturing industry, as it is a by-product from the flotation of copper ore at Mount Lyell. This product is exported to the mainland, where the sulphur contents have displaced imported sulphur in the manufacture of chemical fertilizers. The recovery has grown considerably since 1932, when the output amounted to 274 tons.

(vi) *Other States.* Reference to the iron ore deposits in the various States appears in preceding issues of the Official Year Book (see No. 22, p. 779).

3. **Iron and Steel Bounties.**—During 1943-44 the bounties paid under the Bounties Acts on articles manufactured from locally produced materials were as follows: Wire-netting, £447; traction engines, £5,652. Corresponding amounts paid during 1942-43 were £421 and £850 respectively.

4. **World's Production of Iron and Steel.**—(i) *General.* According to the *The Mineral Industry*, the production in the principal countries during the latest available three years are shown in the next table. The figures for 1939 are in many instances estimates and, particularly for belligerent countries, should be accepted with some reserve.

PIG-IRON AND STEEL : WORLD'S PRODUCTION.

Country.	Pig-iron			Steel Ingots and Castings		
	1937.	1938.	1939.	1937.	1938.	1939.
	Thousands of Tons.			Thousands of Tons.		
U.S.A.	37,127	19,161	31,604	51,792	28,739	47,732
Germany	15,957	18,226	19,828	19,816	22,875	24,139
U.S.S.R. (Russia)	14,520	14,479	15,374	17,824	17,802	17,439
Great Britain	8,497	6,763	8,130	12,963	10,394	13,559
France	7,917	5,956	7,826	7,761	6,080	8,402
Japan	3,561	3,040	3,320	6,423	5,930	6,230
Belgium	3,843	2,426	3,019	3,777	2,249	3,061
Italy	790	850	950	2,087	2,285	2,339
Luxemburg	2,513	1,527	1,812	2,510	1,413	1,650
Canada	898	758	831	1,401	1,156	1,385
Australia	664	1,072	1,250	805	1,154	1,250
Czechoslovakia	1,675	1,215	900	2,315	1,733	1,230
Poland	724	952	810	1,450	1,522	1,201
Sweden	646	647	612	1,104	964	1,080
India	1,453	1,628	1,800	671	950	1,050
Hungary	362	345	350	706	650	739
Austria	389	(x)	(a)	656	(a)	(a)
Union of South Africa	272	271	304	332	341	345
Total—All Countries	102,848	80,452	104,494	135,317	107,157	132,857

(a) Included with Germany.

The figures for the world's production of iron and steel reached exceptionally low levels in 1932, namely, pig-iron, 39,275,000 tons; steel, 50,029,000 tons. From that year onwards all steel-producing nations recorded continuous increases in production, but in 1938 a marked decline was recorded. During 1939, however, the fear of war created greater demands for pig-iron and steel. The output of the former metal reached record proportions in Germany, Union of Soviet Socialist Republics, Italy and Japan, while new records in steel production were attained in Great Britain, Germany, Italy and Japan.

The principal producers in Australia are the Broken Hill Pty. Co. Ltd. and the Australian Iron and Steel Ltd., the former situated at Newcastle and the latter at Port Kembla in New South Wales. In South Australia, the Broken Hill Pty. Co. Ltd. established a blast furnace at Whyalla which was blown in during May, 1941, and continued to operate until May, 1944. Production was resumed during April, 1946.

(ii) *Australia.* The production of steel and pig-iron in Australia, of which New South Wales is the main producing State, is shown for each of the years 1934-35 to 1943-44

PIG-IRON AND STEEL : AUSTRALIAN PRODUCTION.

Year ended 30th June—	Pig-iron.	Steel Ingots.	Steel Rails, Bars and Sections.	Year ended 30th June—	Pig iron.	Steel Ingots.	Steel Rails, Bars and Sections.
	Tons.	Tons.	Tons.		Tons.	Tons.	Tons.
1939 ..	698,493	696,861	585,838	1940 ..	1,212,006	1,292,115	1,034,714
1936 ..	783,233	820,335	671,244	1941 ..	1,475,707	1,647,108	1,319,544
1937 ..	913,406	1,079,854	837,445	1942 ..	1,557,641	1,699,793	1,421,059
1938 ..	929,676	1,167,340	906,426	1943 ..	1,399,306	1,632,825	1,166,858
1939 ..	1,104,605	1,171,787	985,035	1944 ..	1,395,357	1,527,564	1,225,524

§ 8. Other Metallic Minerals.

1. **Wolfram and Scheelite.**—Tungsten ores occur in several of the States in the Northern Territory and on King Island in Bass Strait, the last-named being included with Tasmania. Production during 1938 and the four years 1940 to 1943 is shown in the following table :—

WOLFRAM AND SCHEELITE : PRODUCTION.

Particulars.		1938.	1940.	1941.	1942.	1943.
WOLFRAM.						
New South Wales	cwt.	1,877	880	1,175	760	840
	£	25,740	8,364	13,044	11,655	14,033
Victoria ..	cwt.	..	..	5	42	282
	£	..	..	75	1,059	5,041
Queensland ..	cwt.	3,015	2,271	2,400	3,803	3,027
	£	30,779	20,345	22,627	63,296	56,778
South Australia ..	cwt.	..	..	..	..	3
	£	..	..	..	6	10
Western Australia	cwt.	..	20	..	4	..
	£	..	211	..	115	80
Tasmania ..	cwt.	5,982	4,686	4,720	3,660	4,600
	£	63,348	42,319	42,536	58,397	82,965
Northern Territory	cwt.	8,694	5,800	6,142	3,016	3,769
	£	78,277	47,828	52,326	43,734	58,166
Total ..	cwt.	19,568	13,657	14,442	11,285	12,521
	£	198,144	119,067	130,608	178,262	217,073
SCHEELITE.						
New South Wales	cwt.	184	390	405	260	460
	£	2,472	4,603	4,413	5,807	9,185
Queensland ..	cwt.	13	11	14	28	48
	£	93	94	98	546	889
Western Australia	cwt.	..	145	6	1	5
	£	..	1,559	101	357	2,664
Tasmania ..	cwt.	611	5,510	4,940	4,300	3,984
	£	6,193	49,120	42,700	71,353	68,908
Total ..	cwt.	808	6,056	5,365	4,589	4,497
	£	8,758	55,376	47,312	78,063	81,646

2. **Cadmium.**—Cadmium is extracted at Risdon in Tasmania as a by-product from ores mined at Broken Hill in New South Wales, and on the west coast of Tasmania. The particulars given in the following table refer to the production of metal and do not include the cadmium contents of zinc ores or concentrates exported overseas.

3. Cobalt.—The recovery of this metal as an oxide is obtained in the same way as cadmium. It is recovered from the treatment of silver, lead and zinc ores of Broken Hill and Tasmanian origin. The production together with that of cadmium is given for the years 1938 to 1943 in the following table:—

PRODUCTION OF CADMIUM AND COBALT.

Year.	Cadmium.				Cobalt Oxide.			
	Extracted in Tasmania from Ores mined in—				Extracted in Tasmania from Ores mined in—			
	New South Wales.	Tasmania.	Total.		New South Wales.	Tasmania.	Total.	
	Cwt.	Cwt.	Cwt.	£	Cwt.	Cwt.	£	
1938	2,943	980	3,923	79,406	377	12	389	8,084
1939	2,488	960	3,448	56,343	390	16	406	9,319
1940	2,449	1,000	3,449	59,390	356	7	363	8,430
1941	2,897	941	3,838	69,749	397	8	405	9,417
1942	2,436	828	3,264	72,218	325	45	370	8,981
1943	2,344	807	3,151	70,609	274	13	287	6,604

The figures given above do not include the metallic contents of cadmium and cobalt contained in the ores and concentrates exported overseas.

4. **Platinum and Platinoid Metals.**—(i) *Platinum.*—(a) *New South Wales.* The deposits at present worked in the State are situated in the Fifield division, near Parkes and in the Ballina division. The production in 1943 from all divisions amounted to 3 oz. valued at £37, as compared with 2 oz. valued at £30 in the preceding year. The total production recorded to the end of 1943 amounted to 20,239 oz., valued at £128,954.

(b) *Victoria.* In Gippsland the metal has been found in association with copper and 127 oz. were produced in 1913, but there has been no production in recent years.

(c) *Queensland.* Platinum, associated with osmiridium, has been found in the beach sands between Southport and Currumbin, in creeks on the Russell gold-field near Innisfail, and in alluvial deposits on the Gympie gold-field, but no production has been recorded.

(ii) *Osmium, Iridium, etc.*—(a) *New South Wales.* Small quantities of osmium, iridium and rhodium are found in various localities. Platinum, associated with iridium and osmium, has been found in the washings from the Aberfoil River, about 15 miles from Oban; on the beach sands of the northern coast: in the gem sands at Bingara, Mudgee, Bathurst and other places. In some cases, as for example in the beach sands of Ballina, the osmiridium and other platinoid metals amount to as much as 40 per cent. of the platinum, or about 28 per cent. of the whole metallic content. There was no production of these metals during 1943.

(b) *Victoria.* In Victoria, iridosmine has been found near Foster, and at Waratab Range, South Gippsland.

(c) *Tasmania.* The yield of osmiridium was returned as 90 oz. in 1943, valued at £2,087, compared with the record production in 1925 of 3,365 oz., valued at £103,570. The decrease in later years was largely due to the decline in price from £31 in 1925 to £15 os. 4d. per oz. in 1938 (although the price rose to £24 19s. 1d. per oz. in 1940 and reached £23 3s. 9d. in 1943), but the depletion of the known alluvial deposits was also a factor.

5. **Other.**—Detailed information in regard to occurrence and production of other metallic minerals in each of the States appears in Official Year Book No. 22, pp. 780-3 and in preceding issues.

§ 9. Coal.

1. Production in each State.—An account of the discovery of coal in each State appears in preceding issues of the Official Year Book (see No. 3, pp. 515-6). The quantity and value of the production in each State and in Australia during 1914, 1924, 1934 and each of the years 1938 to 1944 are given in the following table:—

BLACK COAL : PRODUCTION.

Year.	N.S.W.	Victoria. (a)	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
QUANTITY.							
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1914 ..	10,390,622	620,251	1,053,990	..	319,210	60,794	12,444,867
1924 ..	11,618,216	518,315	1,123,117	..	421,864	75,988	13,757,500
1934 ..	7,873,180	356,958	956,558	..	500,343	113,633	9,800,672
1938 ..	9,570,930	307,258	1,113,426	..	604,792	83,753	11,680,159
1939 ..	11,195,832	364,895	1,317,488	..	557,535	99,392	13,535,142
1940 ..	9,550,098	267,694	1,285,328	..	539,427	83,136	11,725,683
1941 ..	11,765,698	326,441	1,454,024	..	556,574	109,714	14,212,451
1942 ..	12,236,219	312,854	1,637,148	1,650	581,176	134,442	14,903,489
1943 ..	11,528,893	287,100	1,699,521	..	531,546	145,882	14,192,942
1944 ..	11,102,138	257,692	1,659,675	34,620	558,323	143,641	13,756,089

VALUE. (b)							
	£	£	£	£	£	£	£
1914 ..	3,737,761	289,099	416,292	..	148,684	27,853	4,619,689
1924 ..	9,589,547	569,555	985,542	..	303,255	66,555	11,574,454
1934 ..	4,541,923	215,413	752,303	..	278,704	81,262	5,869,605
1938 ..	5,003,842	188,101	958,884	..	375,083	61,991	7,187,901
1939 ..	6,768,659	259,814	1,167,844	..	362,811	74,450	8,633,588
1940 ..	6,125,585	230,452	1,151,567	..	364,500	63,688	7,935,792
1941 ..	8,265,881	303,761	1,404,646	..	389,278	85,311	10,448,877
1942 ..	9,472,363	411,107	1,668,231	1,650	461,495	108,241	12,153,087
1943 ..	9,290,095	429,358	1,824,591	..	489,721	117,361	12,151,126
1944 ..	9,206,063	407,793	1,785,621	12,117	583,076	122,673	12,117,343

(a) Excludes brown coal, shown in next table.

(b) At the pit's mouth.

The figures for Victoria already quoted exclude brown coal, the quantities and values of which were as follows:—

BROWN COAL : PRODUCTION IN VICTORIA.

Year.	Quantity.	Value. (a)	Year.	Quantity.	Value. (a)
	Tons.	£		Tons.	£
1914 ..	2,715	564	1940 ..	4,278,475	391,549
1924 ..	127,490	41,116	1941 ..	4,565,638	422,993
1934 ..	2,617,534	264,192	1942 ..	4,933,861	469,699
1938 ..	3,675,450	351,721	1943 ..	5,091,729	528,666
1939 ..	3,651,014	385,952	1944 ..	5,016,437	566,444

(a) Cost of Production.

2. Distribution and Production of Coal in each State.—(i) *New South Wales.*—The coal deposits of New South Wales are the most important and extensively worked in Australia. The principal fields are known as the Northern, Southern and Western, and are situated at Newcastle, Bulli and Lithgow respectively.

The coal from the various districts differs considerably in quality—that from the Northern district being especially suitable for gas-making, household purposes and steam, while the product of the Southern and Western is essentially a steaming coal.

The Greta coal seams in the Northern division are being worked extensively between West Maitland and Cessnock, and this stretch of country, covering a distance of 15 miles, is the most important coal-mining district in Australia.

The following table gives the yields in each of the three districts during the four years 1941 to 1944 compared with 1938 :—

COAL : PRODUCTION IN DISTRICTS OF NEW SOUTH WALES.

District.	1938.	1941.	1942.	1943.	1944.
	Tons.	Tons.	Tons.	Tons.	Tons.
Northern	6,294,213	7,891,123	8,300,356	7,854,173	7,363,484
Southern	1,831,408	2,242,490	2,303,071	2,175,935	2,040,453
Western	1,445,309	1,632,085	1,632,792	1,498,785	1,698,201
Total	9,570,930	11,765,698	12,236,219	11,528,893	11,102,138
Total Value (a) £ ..	5,603,842	8,265,881	9,472,363	9,290,095	9,206,063
Average value per ton (a) ..	11s. 8½d.	14s. 1d.	15s. 6d.	16s. 1d.	16s. 7d.

(a) At the pit's mouth.

The production of coal in New South Wales exceeded 10 million tons in each year from 1920 to 1927, the maximum annual production in this period being in 1924, when 11,618,000 tons were produced. Consequent upon the economic depression, production fell to 6,400,000 tons in 1931, but steadily increased each year to 11,195,832 tons in 1939. Movement in production since the outbreak of war in 1939 is shown in the table above. Of the total quantity of coal won in New South Wales since the commencement of operations to the end of 1943, namely, 512 million tons, about 346 million tons or 68 per cent. was obtained in the Northern District, 103 million tons or 20 per cent. in the Southern District, and 63 million tons or 12 per cent. in the Western District.

(ii) *Victoria.* (a) *Black Coal.* The deposits of black coal in Victoria occur in three main areas in the southern portion of the State, namely, the Warrumbungle, the Otway and South Gippsland, which total approximately 3,500 square miles. The workable seams are restricted to the South Gippsland area, where the thickness ranges from 2 feet 3 inches to 6 feet. The total quantity of black coal mined in Victoria to the end of 1944 amounted to 19,768,938 tons valued at £15,861,792.

The output of black coal in Victoria during each of the four years ended 1944 compared with 1938 was as follows :—

BLACK COAL : PRODUCTION IN VICTORIA.

Year.	State Coal-mine.	Other Coal-mines.	Total Production.	Total Value. (a)	Average Value per ton. (a)
	Tons.	Tons.	Tons.	£	s. d.
1938	253,065	54,193	307,258	188,101	12 3
1941	276,119	50,322	326,441	303,761	17 2
1942	270,754	42,100	312,854	411,107	24 7
1943	253,359	33,741	287,100	429,358	27 5
1944	224,313	33,379	257,692	407,793	29 3

(a) At the pit's mouth.

(b) *Brown Coal.—General.* Victoria is richly endowed, both in quantity and quality, with brown coal deposits. Some account of these deposits and of the operations of the State Electricity Commission in connexion therewith will be found in preceding

Official Year Books (see No. 22, p. 785). The brown coal produced in Victoria in 1943 amounted to 5,091,729 tons, all but 10,290 tons being procured at the State open cut at Yallourn. During 1943-44, 4,829,481 tons of brown coal were produced by the State Electricity Commission, of which 3,215,266 tons went to the power station and 1,614,215 tons to the briquette factory.

Production of Briquettes. The briquetting plant started operations in November, 1924, and the output, which in 1926 was 95,477 tons, had increased to 180,905 tons in 1930 and to 416,715 in 1943-44. Two and a half tons of brown coal are required to make one ton of briquettes.

(iii) *Queensland.* The distribution of production during 1938 and the four years 1941 to 1944 was as follows:—

COAL : PRODUCTION IN QUEENSLAND.

District.	1938.	1941.	1942.	1943.	1944.
	Tons.	Tons.	Tons.	Tons.	Tons.
Ipswich	547,901	689,680	751,177	755,660	802,269
Bowen	224,778	297,554	347,381	400,931	316,016
Clermont	88,407	110,409	142,607	147,179	145,237
Maryborough	77,162	114,190	127,975	136,541	128,606
Darling Downs	76,571	97,214	112,230	115,004	126,950
Rockhampton	64,174	105,308	119,673	107,332	108,043
Chillagoe (Mount Mulligan)	19,192	20,418	17,544	17,533	18,961
Mount Morgan	13,698	19,161	18,561	19,341	13,593
Mackay	1,543	..	..	..	..
Total	1,113,426	1,454,024	1,637,148	1,699,521	1,659,675

The production of 1,699,521 tons in 1943 represents the highest annual production to date, exceeding the previous peak output of 1,369,000 tons recorded in 1929.

(iv) *South Australia.* A new field of sub-bituminous coal has been opened up at Leigh Creek, South Australia. A small amount of 1,650 tons valued at £1,650 was recorded in 1942 as a result of preliminary boring activities. There was no production in 1943, but in 1944 34,620 tons were produced, valued at £12,117 which represents the cost of production.

(v) *Western Australia.* Details of the quantity of coal raised on the Collie coal-fields in Western Australia and the men employed are given in the table below for the years 1939 to 1944.

COAL : PRODUCTION AND EMPLOYMENT IN WESTERN AUSTRALIA.

Year.	Production.	Value.	Men employed.		
			Above ground.	Below ground.	Total.
	Tons.	£	No.	No.	No.
1939	557,535	362,811	155	597	752
1940	539,427	364,500	139	574	713
1941	556,574	389,278	143	638	781
1942	581,176	401,495	175	647	822
1943	531,546	489,721	188	650	838
1944	558,323	583,076	207	673	880

(vi) *Tasmania.* Details of the production of coal in Tasmania and the numbers employed are given in the following table for the years 1939 to 1944. The chief source of coal supplies in this State is the Cornwall Coal Mine situated on the east coast which produced 83,811 tons in 1944 or 57 per cent. of the State's output.

COAL : PRODUCTION AND EMPLOYMENT IN TASMANIA.

Year.	Production.	Value.	Men employed.
	Tons.	£	No.
1939	99,392	74,460	238
1940	83,136	63,688	239
1941	109,714	85,311	233
1942	134,442	108,241	243
1943	145,882	117,361	278
1944	143,641	122,673	277

(vii) *Australia's Coal Reserves.* The latest available estimate of the actual and probable coal reserves of Australia is based upon that prepared by the Coal and Lignite Panel of the Power Survey Sectional Committee of the Standards Association of Australia and issued in a report prepared in 1946. The following table shows the actual and probable coal reserves as determined by that Committee:—

ACTUAL AND PROBABLE COAL RESERVES OF AUSTRALIA.

(Millions of Tons.)

State.	Anthracitic and Bituminous Coals.	Sub-bituminous and Lignite Coals.
New South Wales	11,718	..
Victoria	33	37,000
Queensland	1,704	67
South Australia .. ..	..	600
Western Australia .. ..	..	800
Tasmania	244	..
Total	13,699	38,467

3. *Production in Various Countries.*—The total known coal production of the world in 1938 amounted to about 1,420 million tons, towards which Australia contributed about 15.4 million tons, or 1 per cent. The following tables show the production of the chief British and foreign countries during each of the four years ended 1938. Similar details for later years are not available:—

COAL : PRODUCTION IN BRITISH EMPIRE.

(Thousands of Tons.)

Year.	Great Britain.	British India.	Canada.	Australia.	New Zealand.	Union of S. Africa.
BLACK COAL.						
1935 ..	222,249	23,017	9,193	10,888	825	13,360
1936 ..	228,448	22,611	10,146	11,370	859	14,607
1937 ..	240,409	25,036	10,840	12,074	970	15,246
1938 ..	227,015	28,343	9,623	11,680	978	16,027
BROWN COAL, LIGNITE.						
1935 ..	..	..	3,186	2,222	1,290	..
1936 ..	..	..	3,452	3,045	1,281	..
1937 ..	..	..	3,299	3,394	1,308	..
1938 ..	..	..	3,098	3,075	1,244	..

COAL : PRODUCTION IN FOREIGN COUNTRIES.
(Thousands of Tons.)

BLACK COAL.

Year.	Germany.	Austria.	Hungary.	Belgium.	France. (a)	Czecho- slovakia.	Yugoslavia.
1935 ..	140,744	247	810	26,087	46,363	10,791	394
1936 ..	155,783	241	814	27,427	44,512	12,040	434
1937 ..	181,599	227	903	29,213	43,618	16,513	432
1938 ..	183,238	222	(b)	29,106	45,763	13,300	(b)

Year.	Spain.	Poland.	Nether- lands.	U.S.S.R.	Japan.	China. (c)	U.S.A.
1935 ..	6,905	28,092	11,690	93 736	34,354	12,000	379,046
1936 ..	(d)	29,278	12,600	106,677	37,466	12,000	440,774
1937 ..	(d)	35,646	14,095	120,643	(d)	(d)	444,096
1938 ..	(d)	37,502	13,275	130,300	(d)	(d)	348,865

BROWN COAL, LIGNITE.

Year.	Germany.	Austria.	Hungary.	Belgium.	France.	Czecho- slovakia.	Yugoslavia.
1935 ..	145,028	2,924	6,612	..	885	14,977	3,971
1936 ..	153,848	2,851	6,993	..	905	15,697	3,971
1937 ..	182,106	3,191	7,928	..	1,000	17,613	4,523
1938 ..	191,899	3,477	9,212	..	1,040	12,900	5,651

Year.	Spain.	Poland.	Nether- lands.	U.S.S.R.	Japan.	China.	U.S.A.
1935 ..	299	18	85	13,602	(d)	..	(e)
1936 ..	(d)	13	87	17,333	(d)	..	(e)
1937 ..	*(d)	19	141	(e)	(d)	..	(e)
1938 ..	(d)	9	168	(e)	(d)	..	(e)

(a) Excludes Saar District, which produced 11,139,000 tons in 1934, and 1,673,000 tons from 1st January to 17th February, 1935. From this date production has been included with that of Germany.
 (b) Included with brown coal. (c) Includes about 300,000 tons of lignite yearly. (d) Not available. (e) Included with black coal.

World production dropped from 1,510 million tons in 1937 to 1,420 million tons in 1938, largely as the result of the decline of nearly 100 million tons in the United States of America. The production of the British Empire amounted to 304 million tons in 1938, a decrease of 11 million tons or 3.5 per cent. on that of 1937. The production of foreign countries also decreased by 80 million tons to 1,120 million tons, or by 6.6 per cent. in the same period.

4. Exports.—(i) *General*. The quantity of coal of Australian production (excluding bunker coal) exported to other countries in 1943-44 was 157,741 tons, valued at £182,354, being from New South Wales. The quantities and values of the oversea exports of Australian coal for the years specified are shown in the following table :—

COAL : OVERSEA EXPORTS, AUSTRALIA.

Year.	Quantity.		Value.		Year.	Quantity.		Value.	
	Tons.	£	Tons.	£		Tons.	£		
1913 ..	2,098,505	1,121,505	1940-41 ..	330,103	331,532				
1921-22 ..	1,028,767	1,099,899	1941-42 ..	241,004	259,093				
1931-32 ..	344,015	341,800	1942-43 ..	254,043	296,533				
1938-39 ..	382,085	347,054	1943-44 ..	157,741	182,354				

Australian coal taken for bunker purposes during the same years was as follows :—

COAL : BUNKER, AUSTRALIA.

Year.	Quantity.		Value.		Year.	Quantity.		Value.	
	Tons.	£	Tons.	£		Tons.	£		
1913 ..	1,647,870	1,018,375	1940-41 ..	330,032	391,866				
1921-22 ..	1,498,035	2,178,101	1941-42 ..	347,291	509,069				
1931-32 ..	506,140	534,897	1942-43 ..	293,764	461,203				
1938-39 ..	549,453	561,063	1943-44 ..	211,188	371,584				

(ii) *New South Wales*. The distribution of the total output from New South Wales collieries during the years 1938-39 to 1944-45, according to data compiled by the Government Statistician for that State, was as follows.

COAL : DISTRIBUTION OF OUTPUT, NEW SOUTH WALES.

('000 tons.)

Year.	Exports.						Total.
	Interstate as—		Overseas as—		Local Consumption.		
	Cargo.	Bunker.	Cargo.	Bunker.			
1938-39 ..	1,866	411	382	517	5,744	8,914	
1939-40 ..	1,744	406	264	401	5,837	8,652	
1940-41 ..	2,571	441	330	290	6,776	10,408	
1941-42 ..	2,658	445	241	279	7,439	11,062	
1942-43 ..	2,793	358	254	256	8,276	11,937	
1943-44 ..	2,722	378	158	162	8,139	11,559	
1944-45 ..	2,866	340	189	159	7,601	11,155	

5. *Consumption in Australia*.—Details of the average annual production of coal and its distribution in Australia are given in the following table for the five years ended 1938-39 and 1943-44.

Under normal circumstances the production and consumption of coal move in the same direction, but in times of short supplies or abnormal consumption consumers may be compelled to rely upon accumulated stocks, and, consequently, annual figures may move out of alignment. For this reason the following table has been prepared on a five-yearly basis in order to smooth out any variations from the normal.

COAL : PRODUCTION AND UTILIZATION IN AUSTRALIA.

Particulars.	Average for Five Years ended—	
	1938-39.	1943-44.

BLACK COAL.

Source—	Tons.	%	Tons.	%
Production of Saleable Coal (a) ..	11,168,996	99.72	13,484,578	99.95
Imports	30,860	0.28	6,137	0.05
Total Supplies	11,199,856	..	13,490,715	..
Disposal—				
Exported overseas—Bunker	592,469	5.29	324,016	2.40
" " other	345,606	3.09	249,508	1.85
Total	938,075	8.38	573,524	4.25
Consumed as fuel in—				
Electric Light and Power Works ..	1,795,568	16.03	2,288,572	16.96
Factories (b)	2,067,462	18.46	2,501,942	18.55
Railway Locomotives (c)	2,327,791	20.78	2,935,252	21.76
Total	6,190,821	55.27	7,725,766	57.27
Consumed as raw material in—				
Gas Works	1,110,801	9.92	1,319,282	9.78
Coke Works	1,467,459	13.10	2,251,892	16.69
Total	2,578,260	23.02	3,571,174	26.47
Balance available for consumption including accumulation of stocks (d)	1,492,700	13.33	1,620,251	12.01
Grand Total	11,199,856	100.00	13,490,715	100.00

BROWN COAL.

Production of Brown Coal	Tons.		Tons.	
	3,063,879		4,588,075	
Utilization—				
As fuel in Electric Light and Power Works	1,673,018	54.60	2,958,204	64.48
Used in Briquette Works (e)	1,390,861	45.40	1,629,871	35.52
Total	3,063,879	100.00	4,588,075	100.00

(a) Estimated. (b) Estimated where details were not available. Excludes brown coal, see note (e). (c) Government Railways only. (d) Includes bunker coal for interstate and intra-state shipping. (e) A portion of the briquette output is consumed in factories.

The production of coal is ascertained only in calendar years and to relate it to the other data in the table above it has been necessary to estimate the output of black coal in annual periods ended June. Checks applied from other official sources confirm the reliability of these estimates.

6. Prices.—(i) *New South Wales*. The price of New South Wales coal depends on the district from which it is mined. Previously the Northern district coal generally realized a somewhat higher price than the Southern, but the average price in the Southern district is now in excess of that prevailing in the Northern. According to the figures compiled by the State Statistician the average prices of saleable coal for the various districts and for the State as a whole during the six years 1938 to 1943 are given in the following table :—

COAL PRICES : NEW SOUTH WALES.

Year.	Northern District.	Southern District.	Western District.	Average for State.
	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>
1938	11 11	14 0	9 6	12 0
1939	12 8	14 5	10 8	12 9
1940	13 6	15 0	11 6	13 6
1941	14 7	15 6	12 0	14 4
1942	15 11	17 9	14 3	16 0
1943	15 11	17 11	14 5	16 1

(ii) *Victoria*. In Victoria the average price of black coal per ton at the pit's mouth, which is largely determined on the landed cost of New South Wales coal seaborne to Melbourne, was in 1938, 12s. 3d. ; in 1939, 12s. 10d. ; in 1940, 15s. 3d. ; in 1941, 17s. 2d. ; in 1942, 24s. 7d. ; in 1943, 27s. 5d and 29s. 3d in 1944. These averages exclude brown coal, which in 1943 cost 2s. 1d. per ton to produce.

(iii) *Queensland*. Prices in the principal coal-producing districts during 1938 and the four years ended 1943 were as follows :—

COAL PRICES : QUEENSLAND.

District.	Value at Pit's Mouth.				
	1938.	1940.	1941.	1942.	1943.
	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>	Per ton. <i>s. d.</i>
Ipswich	17 0	17 5	18 11	20 5	21 0
Darling Downs	19 11	20 6	21 9	23 2	24 7
Wide Bay and Maryborough	24 0	25 0	26 0	27 11	28 8
Rockhampton	17 0	18 0	19 8	20 4	20 2
Clermont	13 8	13 7	14 7	16 4	16 8
Bowen	14 10	16 7	17 11	19 8	20 7
Chillagoe (Mount Mulligan)	31 6	29 10	33 3	33 10	34 1
Average for State ..	17 2	17 11	19 4	20 9	21 6

(iv) *South Australia*. The value of the 1944 production was 7s. per ton, which represents the cost of production.

(v) *Western Australia*. The average prices per ton of the Collie (Western Australia) coal during the six years ended 1943 were : 1938, 12s. 5d. ; 1939, 13s. 0d. ; 1940, 13s. 6d. ; 1941, 14s. 0d. ; 1942, 15s. 10½d. ; and 1943, 18s. 5d.

(vi) *Tasmania*. The average prices per ton of coal at the pit's mouth in Tasmania for the six years ended 1943 were : 1938, 14s. 10d. ; 1939, 15s. 0d. ; 1940, 15s. 4d. ; 1941, 15s. 7d. ; 1942, 16s. 1d. ; and 1943, 16s. 1d.

7. Prices in Great Britain.—The average selling prices of coal per ton at the pit's mouth in Great Britain since 1938 were as follows:—1939, 17s. 1d.; 1940, 19s. 6d.; 1941, 22s. 11d.; 1942, 24s. 1d.; 1943, 27s. 2½d.; 1944, 31s. 2½d.; and 1945, 35s. 0d.

8. Employment in Coal-mines.—The number of persons employed in coal-mines, both above and below ground, in each of the producing States is given for selected years from 1913 and for each of the six years ended 1944:—

COAL-MINES : PERSONS EMPLOYED.

Year.	New South Wales.	Victoria.		Queensland.	South Australia.	Western Australia.	Tasmania.	Total.
		Black.	Brown.					
	No.	No.	No.	No.	No.	No.	No.	No.
1914	19,758	1,405	(a)	2,227	..	525	152	24,067
1924	23,024	1,916	373	2,828	..	673	291	29,105
1934	13,465	1,502	319	2,385	..	624	358	18,653
1938	15,815	1,322	444	2,493	..	765	269	21,110
1939	16,531	1,376	449	2,613	..	752	238	22,011
1940	17,337	1,374	378	2,660	..	713	239	22,701
1941	17,351	1,295	620	2,886	..	731	233	23,166
1942	17,101	1,234	620	2,838	12	822	243	22,870
1943	17,497	1,203	630	2,898	..	838	278	23,344
1944	17,468	1,196	613	2,978	91	880	277	23,503

(a) Production prior to 1924 was of little importance.

The maximum number employed was in 1926 when 31,774 persons were engaged in the coal-mines of Australia. Shortly after that year the industrial depression and a prolonged stoppage of work on one of the principal fields of New South Wales during 1929 and 1930 seriously affected the figures of employment. Since 1933 there has been a gradual increase, but the numbers employed in 1944 were only about three-quarters of the maximum figure already quoted. In New South Wales 3,594,000 tons of coal, or 32.1 per cent. of the total output in 1939, was cut by machinery compared with 5,005,011 tons or 40.9 per cent. in 1942, 4,417,912 tons or 38.3 per cent. in 1943, and 4,099,230 tons or 36.9 per cent. in 1944. Similar details for other States are not available.

9. Accidents in Coal-mining.—(i) *Australia.* The following table gives the number of persons killed or injured in 1943, with the proportion per 1,000 employed, and in relation of the quantity of coal raised, a factor which must be reckoned with in any consideration of the degree of risk attending mining operations. Although no precise definition of an accident is available, any disablement from misadventure which rendered the injured unfit for work for fourteen days or more appears to have been uniformly adopted by the State Departments of Mines.

COAL-MINING : EMPLOYMENT AND ACCIDENTS, 1943.

State.	Persons Employed in Coal-mining.	No. of Persons.		Proportion per 1,000 Employed.		Tons of Coal raised for each Person.	
		Killed.	Injured.	Killed.	Injured.	Killed.	Injured.
New South Wales ..	17,497	19	90	1.09	5.14	606,784	128,099
Victoria (a) ..	1,833	1	12	0.55	6.55	5,378,829	448,236
Queensland ..	2,898	2	193	0.69	66.60	849,760	8,806
Western Australia ..	838	1	291	1.19	347.25	531,546	1,826
Tasmania ..	278	2	4	7.19	14.37	72,941	36,471
Total ..	23,344	25	590	1.07	2.53	771,387	32,686

(a) Includes brown coal.

The next table shows the average number employed in mining, number of fatalities, and rate per 1,000 employed during the five-yearly period 1939-1943 :—

COAL-MINING : FATALITIES, 1939 TO 1943.

State.	Average No. of Coal-miners Employed.	Average No. of Fatal Accidents.	Rate per 1,000 Employed.
New South Wales	17,173	20.60	1.20
Victoria	1,836	1.20	0.65
Queensland	2,779	3.00	1.08
Western Australia	781	1.80	2.30
Tasmania	246	0.40	1.63
Total	22,815	27.00	1.18

(ii) *Other Countries.* According to the report of the Chief Inspector of Mines, the average death rate per 1,000 miners from accidents in coal-mines in Great Britain during the five-yearly period 1933-37 was 1.11, the rates varying between 1.35 in 1934 and 1.02 in 1936, while the rate for Australia for the same period was 1.14. Details are not available for a later comparison.

10. *Commonwealth Board of Inquiry into the Coal-mining Industry.*—In January, 1945 a Commonwealth Board of Inquiry consisting of three members was constituted under National Security (Inquiries) Regulations to inquire into and report upon the coal mining industry of Australia. The terms of reference included, amongst other things, such matters as production of coal, absenteeism, causes of stoppages, health and safety of employees, housing, pension schemes, etc. The Chairman of the Board was the Hon. Mr. Justice Davidson, of the Supreme Court of New South Wales.

On the 4th March, 1946, the instrument appointing the Board of Inquiry was revoked and the former Chairman was appointed a sole Commissioner to present a report upon the information, evidence and material already before the former Board. A report in two volumes was presented in March, 1946.

11. *Joint Coal Board.*—In August and September, 1946, a joint Commonwealth and State authority to re-organize and rehabilitate the coal industry of New South Wales was established by law.

§ 10. Coke.

1. *General.*—Notwithstanding the large deposits of excellent coal in Australia, the production of coke was limited to about 250,000 ton prior to the 1914-19 War. This was below local requirements and necessitated a fairly considerable import from abroad. During recent years, however, a high standard has been attained in the local product, imports have almost ceased, and Australian coke is being shipped to New Zealand and other islands in the Pacific. In 1943-44 the quantity exported was 31,078 tons, valued at £75,498, of which £27,774 tons, valued at £61,473, were sent to New Caledonia.

2. *New South Wales.*—The following table gives the production in New South Wales during 1938 and each of the four years 1940 to 1943 as recorded by the Department of Mines :—

COKE : PRODUCTION IN NEW SOUTH WALES.

Items.	1938.	1940.	1941.	1942.	1943.
Quantity tons	1,135,446	1,272,067	1,711,396	1,618,913	1,567,172
Value, total £	1,100,266	1,078,411	2,134,022	2,181,623	2,400,993
Value, per ton	19s. 5d.	16s. 11d.	£1 4s. 11d.	£1 6s. 11d.	£1 10s. 8d.

The figures quoted refer to the product of coke ovens, and exclude coke produced in the ordinary way at gas-works.

3. Queensland.—A small quantity of coke is made in Queensland, the quantity returned in 1938 being 30,984 tons, of which 27,328 tons were produced at the Bowen State Coke Works. The greater proportion of the output of these works was consigned to the Mount Isa Mines Ltd. and to the Chillagoe State smelters. Hitherto the coke used at these ore-treatment works was imported from New South Wales, but now the local output is sufficient to meet the requirements of the State and leave a small surplus available for export. The following table shows the amount manufactured at the State Coke Works during the six years ended 1943-44.

COKE : PRODUCTION IN STATE COKE WORKS—QUEENSLAND.

Year.	1938-39.	1939-40.	1940-41.	1941-42.	1942-43.	1943-44.
Quantity .. tons	26,032	19,897	25,213	19,448	18,701	9,347

In order to avoid duplication with coal values, the returns for coke have not been included in the general tables of mineral production in the early part of this chapter.

§ 11. Shale-oil and Mineral Oil.

1. Shale-oil.—(i) *General.* Reference to the deposits of shale and the search for mineral oil in Australia will be found in Official Year Book No. 22, pp. 791-3.

(ii) *New South Wales.* Reference to the establishment of the shale-oil industry in Australia will be found in previous issues of the Official Year Book. In 1937 negotiations were completed between the Commonwealth and New South Wales Governments and the National Oil Proprietary Ltd., by which the latter company undertook to develop the shale-oil industry in the Newnes-Capertee district. The Commonwealth Government agreed to protect the industry by exempting from excise, up to 10 million gallons annually, the Company's output of petrol for a period of 25 years. The successful establishment of this plant will probably lead to an expansion of the industry in Australia and should provide a valuable training ground for technicians. Production commenced in 1940, and the following table shows the production of shale oil during 1940 to 1944 :—

SHALE OIL : PRODUCTION IN NEW SOUTH WALES.

Year.	Northern District.		Southern District.		Western District.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£	Tons.	£
1940 ..	..	..	..	..	43,805	43,805	43,805	43,805
1941 ..	..	..	820	540	122,758	96,131	123,578	96,671
1942 ..	828	1,881	1,559	1,898	114,937	138,564	117,324	142,343
1943 ..	4,033	6,377	..	..	112,842	153,838	116,875	160,215
1944 ..	3,047	8,827	..	..	134,411	156,458	137,458	165,285

(iii) *Tasmania.* About 38,000 gallons of crude oil were produced in 1934 from shale treated in Tasmania, while the total quantity of oil distilled from shale up to the end of 1934 was set down at 357,000 gallons. The plant owned by the Tasmanite Shale Oil Company has not operated since the end of January, 1935.

Interest in the commercial utilization of oil shales of the Mersey Valley for the extraction of fuel oils has been retarded due to structural and physical conditions for underground mining and the low-grade nature of the shale.

2. Coal Oil.—Attention has been directed to the production of oil from coal by a number of processes. A committee appointed by the Commonwealth Government which consisted of nominees of the Commonwealth and State Governments, exception

Western Australia, and of Imperial Chemical Industries Ltd., was appointed to advise on specific questions submitted to it. In a report submitted in June, 1937, it was stated that the stage had not been reached when Australia could establish plants for the production of oil from coal. The committee recommended, however, that close touch be kept with developments abroad. A report, dated 25th July, 1939, on the production of oil from coal was submitted to the Commonwealth Minister for Supply and Development by the Standing Committee on Liquid Fuels. The recommendations of this Committee followed the lines of those of its predecessors.

3. **Natural Oil.**—(i) *Australia.* Natural oil has been proved to exist in Queensland, Victoria and Western Australia, the best indications being found in Victoria and Queensland. Many of the conditions favourable to the accumulation of oil in commercial quantities have been shown to be present in Queensland, Western Australia and New South Wales. In the latter State, however, no strong positive evidence of its existence has been recorded. Oil has been proved to occur in noteworthy quantities at Lakes Entrance, Victoria, but it still remains to be demonstrated whether the area can be developed on a commercial basis.

Reference is made in § 15 below to the assistance afforded by the Commonwealth Government in the search for petroleum oil.

(ii) *Victoria.* There was no production of crude petroleum oil in 1943. The total production to the end of 1942 amounted to 115,283 gallons, valued at £2,769. In conjunction with the State Government, the Commonwealth Government carried out a scout-drilling campaign in the Gippsland area, but this was subsequently abandoned.

(iii) *Queensland.* Great hopes are still entertained in regard to the petroliferous area in Queensland. Gas and light to medium gravity oils have been found at Roma, and gas and oily wax at Longreach. Structural conditions favourable to accumulation on a commercial scale have been located at several places between Injune and Springsure. The search for oil was continued during 1939 by several companies in localities situated at Mount Bassett, near Roma, at Hutton Creek and at Arcadia. Test bores have been drilled to bed rock in all the localities mentioned, the deepest being that at Arcadia which exceeded 6,000 feet. Showings of petroliferous gas, amounting at Arcadia to 3,000,000 cubic feet a day, and of petroleum have been encountered in all these bore-holes.

(iv) *South Australia.* Under prescribed conditions, the South Australian Government offers a bonus of £5,000 to the person or body corporate which first obtains from a local bore or well 100,000 gallons of crude petroleum containing not less than 90 per cent. of products obtainable by distillation.

(v) *Western Australia.* Only one company was active in Western Australia during 1939. The company, financially assisted by the Commonwealth and State Governments, commenced deep-drilling operations in the Kimberley district in 1939. No production has been recorded up to the end of 1943.

(vi) *General.* During 1939 efforts were made to secure greater uniformity in State legislation governing the search for oil. A draft Bill based on modern legislation in other countries was prepared by the Commonwealth and submitted to the State Governments. As a result amending legislation was passed in Victoria, Queensland, South Australia and Western Australia. There was immediate response to this in Queensland, where an agreement has been reached between the State Government and one of the major oil companies, whereby the company has undertaken to spend up to £400,000 in the search for oil in that State.

§ 12. Other Non-metallic Minerals.

A more or less detailed statement regarding the occurrence and production of other non-metallic minerals is given in preceding issues of the Official Year Book (see No. 22, pp. 793-6). The tables of quantities and values in § 1 of this Chapter will show the production of the principal items in this class for each State during 1943.

§ 13. Gems and Gemstones.

1. **Diamonds.**—It is difficult to secure accurate returns in connexion with the production of precious stones, but the yield of diamonds in 1943 in New South Wales was estimated at 429 carats, valued at £900. These were won by fossickers in the Inverell district. The total production to the end of 1943 is given at 206,558 carats, valued at £149,900.

2. **Sapphires.**—The production of sapphires in New South Wales during 1929 was returned as 65 oz., valued at £450, obtained wholly at Sapphire in the Inverell district, and the only output recorded since that year was 1,200 oz., valued at £600, in 1941, and 248 oz., valued at £124, in 1943. Production during recent years has been restricted owing to the unfavourable market.

In Queensland, gems to the value of £2,350 were purchased on the Anakie sapphire fields in 1943. It is probable that many were sold privately or held for better prices. For these reasons the returns are considered to be very incomplete. There were about 120 miners operating on the fields during 1934 but their number decreased to 7 in 1943. Production has declined very considerably since 1920, when the yield was valued at £66,000.

3. **Precious Opal.**—The estimated value of the opal won in New South Wales during 1943 was £2,288. This is not regarded as the total output of the State, however, because in many instances miners, buyers and collectors leave the fields before a record of their production or purchases can be secured. Some very fine stones are at times obtained, one weighing 5 ozs. and valued at £300 being found in 1911. Three finds of large stone were made in 1928, the gems weighing 790, 590 and 232 carats respectively and showing fine fire and lustre. Occasionally black opals of very fine quality are found, one specimen from the Wallangulla field, weighing 6½ carats, being sold in 1910 for £102, while in the early part of 1920 a specimen realized £600. It is stated that this locality is the only place in the world where the "black" variety of the gem has been found. The total value of opal won in New South Wales since 1890 is estimated at £1,632,956, but, as pointed out above, the figures are to some extent understated.

In Victoria small quantities of precious opal are found in the Beechworth district.

The opaliferous district in Queensland stretches over a considerable area of the western interior of the State, from Kynuna and Opalton as far south as Cunnamulla. The yield in 1939 was estimated at £50, and up to the end of that year at about £188,000. No production has been recorded since 1939. These figures are, however, merely approximations, as large quantities of opal, of which no record is obtained, are disposed of privately. Production during recent years has been limited by the paucity of demand. Only seven men operated during 1939. The greatest recorded output was for the year 1895 when the yield was valued at £32,750.

Owing to the poor market for gems, production from the Coober Pedy opal field, situated in the Stuart Range in South Australia, fell from £11,056 in 1929 to £1,517 in 1934. The production rose in 1937 to £11,887, but declined to £6,020 in 1939, and rose again to £11,568 in 1941. After a further drop in 1942, production in 1943 was valued at £13,881. The field is extremely prolific, a large quantity of precious white opal having been raised therefrom, and only a small portion of the known opal-bearing area has been thoroughly tested. The greatest yield for the State in any one year was obtained in 1920 when the value of production was returned at £24,000.

4. **Other Gems.**—Various other gems and precious stones have from time to time been discovered in the different States, the list including agates, amethysts, beryls, chiastolite, emeralds, garnets, moonstones, olivines, rubies, topazes, tourmalines, turquoises and zircons. In Western Australia, 600 carats (rough) of emeralds, valued at £278, were produced during 1929 in the Cue district on the Murchison gold-field. The value of the 3,750 carats reported from the same area in 1930 was not ascertainable as there were no sales during the year. There has been no recorded production since 1930.

During the three years 1939, 1940 and 1941, 10 tons of beryl, valued at £83, were produced in Western Australia. There was no production in 1942, but during 1943 548 tons, valued at £16,009, were produced. Beryl is required chiefly for special alloys with copper which are used in the manufacture of castings, non-sparking tools and special diamond-drill bits.

4. Number Engaged, Wages Paid and Accidents in Mining.

1. Total Employment in Mining.—The number of persons engaged in the mining industry in Australia fluctuates according to the season, the price of industrial metals, the state of the labour markets, and according to the permanence of new finds and the development of the established mines. During 1943 the number so engaged was as follows:—

NUMBER OF PERSONS ENGAGED IN MINING, 1943.

State.	Number of Persons engaged in Mining for—						Total.
	Gold.	Silver, Lead and Zinc.	Copper.	Tin.	Coal.	Other.	
New South Wales ..	771	3,982	260	1,175	17,497	1,873	25,558
Victoria	719	..	..	4	1,833	245	2,801
Queensland	1,297	239	864	599	2,898	339	6,236
South Australia ..	29	..	36	2	..	817	884
Western Australia ..	5,079	2	1	7	838	300	6,227
Tasmania	19	491	1,577	847	278	249	3,461
Northern Territory ..	40	..	1	45	..	773	859
Australia	7,954	4,714	2,739	2,679	23,344	4,596	45,026

Included in the figures for "other" in South Australia were 206 engaged in mining iron ore, 33 gypsum miners, 291 salt gatherers, and 32 opal miners. The Tasmanian figures include 105 scheelite miners and 23 osmiridium miners. Northern Territory figures include 590 wolfram and 180 mica miners.

The following table shows, at intervals since 1911, the number of persons engaged in mining in each State and the proportion so engaged of the total population:—

NUMBER ENGAGED IN MINING PER 100,000 OF POPULATION

State.	1911.		1921.		1931.	
	Miners engaged.	No. per 100,000 of Population.	Miners engaged.	No. per 100,000 of Population.	Miners engaged.	No. per 100,000 of Population.
New South Wales ..	37,017	2,225	29,701	1,410	30,682	1,200
Victoria	15,986	1,210	5,211	339	6,463	359
Queensland	13,201	2,147	5,847	766	6,753	730
South Australia ..	6,000	1,457	2,020	406	518	93
Western Australia ..	16,596	5,787	7,084	2,122	7,147	1,653
Tasmania	5,247	2,760	3,170	1,486	3,397	1,512
Northern Territory ..	715	21,595	131	3,356	145	2,918
Australia	94,762	2,109	53,164	974	55,105	844

NUMBER ENGAGED, WAGES PAID AND ACCIDENTS IN MINING. 1007

NUMBER ENGAGED IN MINING PER 100,000 OF POPULATION—*continued.*

State.	1941.		1942.		1943.	
	Miners engaged.	No. per 100,000 of Population.	Miners engaged.	No. per 100,000 of Population.	Miners engaged.	No. per 100,000 of Population.
New South Wales	27,554	987	26,076	925	25,558	894
Victoria	4,839	250	3,655	186	2,801	141
Queensland	6,541	631	5,780	557	6,236	597
South Australia	928	154	932	153	884	144
Western Australia	14,021	2,959	9,100	1,901	6,227	1,330
Tasmania	2,974	1,248	3,397	1,411	3,461	1,439
Northern Territory	424	6,756	961	19,652	859	8,752
Australia	57,281	807	49,901	697	46,026	636

The general falling-off since 1911 is largely due to the causes mentioned in each section above. The proportion to population increased between 1931 and 1939 in all States, excepting New South Wales and Tasmania, owing mainly to the larger number engaged in the search for gold. Between those years the increase in the number so engaged was approximately 5,000 persons. The number engaged in mining for tin increased by 1,900, while increases of 2,600 were also recorded in the mining for silver, lead and zinc. The number of copper-miners decreased by 500 over the same period. Since 1939 the number engaged in mining, and the proportion to population have decreased in all States except Tasmania and in the Northern Territory due mainly to heavy war-time demands upon man-power.

2. *Wages Paid in Mining.*—Information regarding rates of wages paid in the mining industry, which in earlier issues of the Official Year Book was given in this chapter, is now shown in the *Labour Report* issued by this Bureau.

3. *Accidents in Mining, 1943.*—The following table gives particulars of the number of men killed or injured in mining accidents during 1943:—

MINING ACCIDENTS, 1943.

Mining for—	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
KILLED.								
Coal	19	1	2	..	1	2	..	25
Copper .. .. .	..	..	..	..	..	1	..	1
Gold	1	4	..	..	12	..	..	17
Iron .. .. .	..	..	..	..	..	..	..	..
Silver, lead and zinc	3	..	1	..	1	..	..	5
Tin .. .. .	..	..	..	..	..	..	..	..
Other minerals (a)	11	(a) 2	4	..	1	..	..	18
Total	34	7	7	..	15	3	..	66

(a) Includes quarries.

MINING ACCIDENTS, 1943—continued.

Mining for—	N.S.W.	Victoria	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
INJURED.								
Coal ..	90	12	193	..	291	4	..	590
Copper ..	..	..	18	..	..	12	..	30
Gold ..	2	4	6	..	635	..	..	647
Iron ..	..	..	..	34	..	..	..	34
Silver, lead and zinc ..	108	..	5	..	..	12	..	125
Tin ..	..	..	..	..	..	6	..	6
Other minerals	(a) 17	(a) 1	49	11	..	3	2	83
Total ..	217	17	271	45	926	37	2	1,515

(a) Includes quarries.

§ 15. Government Aid to Mining.

1. **Commonwealth.**—(i) *General.* Assistance to mining has been given by the Commonwealth under the provisions of the Precious Metals Prospecting Act 1926, the Gold Bounty Act 1930, the Petroleum Oil Search Acts 1936, which superseded the Petroleum Prospecting Acts 1926, 1927 and 1928, the Loan Appropriation (Unemployment Relief) Act 1934, the Northern Australia Survey Act 1934 and the Gold Mining Encouragement Act 1940.

The last-mentioned Act provided financial assistance to the States for the development of the gold-mining industry. The amount granted was £150,000, distributed as follows:—New South Wales, £8,000; Victoria and Queensland, £14,000 each; South Australia, £1,000; Western Australia, £111,000; and Tasmania, £2,000. The Act provided further for assistance to bona fide prospectors, marginal producers and low grade mines by refunds, under certain conditions, of the tax on gold.

Expenditure under the other Acts mentioned has been reviewed in previous issues of the Official Year Book. Further expenditure under the Gold Mining Encouragement and the Petroleum Oil Search Acts, with the exception of the assistance to prospectors, etc., is not contemplated, as an entirely new scheme of financial assistance to the mining industry generally has recently been instituted.

The Commonwealth Government has recently decided to provide substantial funds, both for the immediate rehabilitation of the mining industry and for development of mining projects generally, which offer promise of contributing materially to the national development, employment and the economic welfare of the Commonwealth. Applications for financial assistance under the new arrangements are presented to the Mines Department of the State concerned and projects recommended for assistance by the States are considered by the newly created Bureau of Mineral Resources, Geology and Geophysics. The report and recommendation of the Bureau are considered by the Commonwealth Mining Industry Committee which consists of representatives of the Departments of Supply and Shipping, the Treasury and Post-war Reconstruction, under the Chairmanship of the permanent head of the Department of Supply and Shipping. This Committee's recommendations are presented for the consideration of the Minister for Supply and Shipping and the Treasurer.

Recently also an Australian Mining Council has been created, consisting of the Commonwealth and State Ministers whose Departments are concerned with the mining industry. This body deals with problems of national importance and functions in relation to mining in the same way as the Agricultural Council functions in regard to agriculture.

(ii) *Survey of North Australia.* Reference to this aerial geological and geophysical survey in which the Commonwealth, Queensland and Western Australian Governments co-operated, and which was completed at the end of 1940, appears in Official Year Book No. 35, page 744.

(iii) *Search for Oil.* The Commonwealth Government has encouraged the search for oil in Australia, Papua and New Guinea, and considerable sums have been spent during recent years in geological surveys and in drilling operations. Details of efforts made during that period are shown in previous issues of the Official Year Book.

In 1936 the Petroleum Oil Search Act, was passed and replaced all previous enactments. A considerable amount of geological work and test drilling was conducted under this scheme, and at the outbreak of the 1939-45 War two tests were partially completed, one at Oiapu in the Gulf district of Papua and one at Nerrima in the Kimberley district of Western Australia. It is proposed to complete these tests.

During the war, in co-operation with the Government of Victoria, an attempt was made to develop the oil sands of the Lakes Entrance district by sinking a vertical shaft and drilling horizontal holes therefrom. This project had not been completed when the war ended, and it was abandoned by the Governments, but a private company proposes to continue it.

A radical change in policy with regard to the search for petroleum throughout Australia and its Territories has also been made. It has been decided that the policy of granting financial assistance to relatively small companies has proved ineffective and that the Commonwealth contribution to the search for oil should take the form of a considerably intensified effort in carrying out geological and geophysical surveys. This work also will be a function of the Bureau of Mineral Resources, Geology and Geophysics working in close co-operation with the Mines Departments of the States. In this connexion co-operative agreements have already been concluded for extensive surveys to be made in the Kimberley and North-West Divisions of Western Australia.

The Bureau has also assumed full responsibility for geological and geophysical surveys in Commonwealth Territories, but suitable arrangements have been made to ensure that the local Administrations have the necessary technical advice directly available to them.

(iv) *Mineragraphic Investigations, etc.* In addition to the assistance mentioned above the Commonwealth Government made a grant of £25,000 in 1934 to the Council for Scientific and Industrial Research to stimulate gold production by conducting mineragraphic and ore-dressing investigations as required by the industry. This amount was expended during the succeeding five years in conducting these investigations, which were carried out conjointly with appropriate State institutions, the three laboratory centres being the School of Mines, Kalgoorlie, the School of Mines and Industries, Adelaide, and the University of Melbourne.

The success of the scheme induced a further grant of £22,000. After providing £2,000 for 1940-41, the balance is to be expended at the rate of £4,000 during each of the succeeding five years. The scheme is administered by a Mining Advisory Committee.

(v) *Standing Committee on Liquid Fuels.* The Commonwealth Government has appointed a Standing Committee on Liquid Fuels to co-ordinate knowledge concerning the production of liquid fuels and the use of substitutes therefor, and to furnish information which will enable Australia to obtain greater independence in regard to fuel supplies. This Committee has undertaken the investigation of such matters as the production of oil from coal, benzol, power alcohol, shale-oil, the use of producer and compressed gas in road vehicles, and tar and other substitutes for fuel oil. Seven reports have been issued by this Committee to date.

(vi) *Minerals Committee and Controller of Minerals Production.* During 1941 a Minerals Committee was formed, comprising representatives of the Commonwealth and State Governments and of the mining industry, to advise the Commonwealth on plans necessary to obtain minerals and metals required for war purposes. As a result of recommendations made by the Committee, the National Security (Minerals) Regulations were brought down providing for the appointment of a Controller of Minerals Production

whose powers were, broadly, to operate, control and direct the production and supply of minerals. Legislation is now being enacted to provide for the continuation of powers prescribed by the National Security (Minerals) Regulations to enable various projects which were initiated by the Controller of Minerals Production to be continued.

(vii) *Mining Industry Advisory Panel.* The Mining Industry Advisory Panel was set up under the Secondary Industries Commission in 1944 to assist the Commonwealth Government in determining its post-war mining policy. The Panel consists of representatives of the Commonwealth and the States and of the mining industry. The new policy adopted by the Commonwealth with regard to financial assistance to mining has been adopted following recommendations submitted by the Panel through the Secondary Industries Commission. The taxation concessions which have been made to the industry have also resulted from the Panel's recommendations.

2. *States.*—(i) *General.* In addition to free assays and determinations of rocks and minerals carried out for prospectors by the Mines Departments of the States and Territories, technical officers of these departments provide advice to the mining industry where required, carry out field examinations of mining prospects, advise on exploration and development, select sites for water supply, and in general give a free technical service to the mining industry.

(ii) *New South Wales.* State aid to metalliferous mining during 1943 amounted to £4,480, which was expended mainly in tin and wolfram mining. During 1944 aid totalled £4,811, assistance to prospectors amounted to £2,111 and advances to mines for purchase of machinery, plant, etc., to £2,700.

(iii) *Victoria.* In 1943 £4,000 was granted to aid the mining industry by the State of Victoria. Of this amount £3,000 was for gold and the balance for other minerals.

In addition to funds provided by the Commonwealth, the Victorian Government contributed £55,085 of the total sums expended on joint projects conducted by the Commonwealth and Victorian Governments for the search for oil at Lakes Entrance and Nelson, £37,000 being advanced towards the sinking of a circular concrete shaft at Lakes Entrance and £17,585 for boring at Nelson.

Advances totalling £2,100 were made during 1944 to private coal-mining companies.

(iv) *Queensland.* Mining operations conducted by the State include three coal-mines situated at Bowen, Styx and Mount Mulligan, batteries at Kidston and Bamford, an assay office at Cloncurry, coke-works at Bowen and the State treatment works at Irvinebank. The Chillagoe State Smelters closed down in July, 1943, and arrangements were made for copper ores to be treated at Mount Isa by Mount Isa Mines Limited.

(v) *South Australia.* During 1940 the Premier announced that assistance would be given to copper mining in the form of financial help towards such development work as was absolutely necessary for the mine to enter upon reasonably continuous production.

The Commonwealth Government in 1940 made available £1,000 for distribution among gold producers in South Australia. Under the Gold Mining Encouragement Act 1940 provision was made for the refund of the gold tax to bona fide prospectors.

On 5th November, 1942, the Leigh Creek Coal Act was passed to develop the Leigh Creek Coalfield. As a result of extensive drilling operations, development of open-cut mining was commenced in January, 1943. To 14th November, 1944 £260,000 had been expended on the project. Production from the open cut to December, 1944 amounted to 34,620 tons.

The State maintains batteries and cyanide works at Mount Torrens, Peterborough, Mongolata, Tarcoola and Glenloth, and assays for public purposes are made at the School of Mines.

(vi) *Western Australia.* Under the Mining Development Act of 1902, the following sums were advanced during 1943 (figures in parentheses) and 1944 :—

In aid of mining work and equipment of mines with machinery, £7,135 (£3,432); subsidies on stone crushed for the public, £1,571 (£105); assistance to prospectors, £1,511 (£2,266); other assistance, £336 (£437); total, £9,553 (£6,240).

(vii) *Tasmania*. Assistance to mining under the Aid to Mining Act of 1927 for the development of mines and for prospecting amounted to £635 in 1943, and £813 in 1944. Government drilling operations involved an expenditure in 1943 of £3,193, of which £658 was repaid, and in 1944 of £3,131, of which £644 was repaid.

(viii) *Northern Territory*. The Commonwealth Government was responsible for the advancing of considerable sums of money for the development of wolfram and mica fields in Central Australia during the war. Commonwealth activities, with the provision of roads and water supply and the introduction of mechanical mining equipment, have resulted in a great improvement in conditions on the mica fields.

§ 16. Metallic Contents of Ores and Concentrates Produced.

According to returns compiled by the Australian Mines and Metals Association from records supplied by companies associated with mineral production and by State Departments of Mines, the metallic contents (excluding gold) of ores and concentrates produced in Australia during the years 1939 to 1944 were as follows :—

METALLIC CONTENTS OF ORES AND CONCENTRATES PRODUCED IN AUSTRALIA.

Metal.	1939.	1940.	1941.	1942.	1943.	1944.
Silver oz.	15,320,116	15,871,976	15,412,581	14,241,811	10,329,830	9,365,726
Lead Pig tons	280,003	287,729	289,436	263,183	206,376	189,485
Zinc „	229,846	245,758	249,105	221,654	182,900	174,308
Copper „	20,560	13,720	20,859	20,402	24,326	(a) 28,025
Tin „	3,067	3,501	3,494	2,931	2,635	(a) 2,540

(a) Excludes Northern Territory.

The production of pig iron in New South Wales amounted in 1938-39 to 1,104,605 tons; in 1941-42 to 1,557,641 tons; in 1942-43 to 1,399,306 tons, and in 1943-44 to 1,305,357 tons.