CHAPTER XVIII.
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 or the pastoral industry, nevertheless it was the discovery of gold in payable quantities that first attracted population to Australia, and thus laid the foundation of its nationhood.

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 allusion to this matter will be found in preceding Official Year Books. (See No. 22, p. 755.)

3. **Quantity and Value of Production during 1930.**—(NOTE.—A table showing particulars of mineral production for the year 1931 will be found in the Appendix. This information was not available at the time of compilation of the present Chapter.) The quantities (where available) and the values of the principal minerals produced in each State, and in Australia as a whole, during the year 1930, 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 States 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 § 17 hereinafter. It may be explained, therefore, that the item pig-iron in New South Wales refers only to metal produced from the locally-raised ore and so reported to the Mines Department. 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, but the iron and steel produced therefrom cannot be assigned to the mineral industry of New South Wales. Similarly lead, silver-lead, 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 to a large extent elsewhere.

MINERAL PRODUCTION.—QUANTITIES, 1930.

Minerals.	Unit.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T. (c)	Australia.
Antimony ..	ton	65	..	..	..	..	..	..	65
Arsenic	,,	796	..	..	..	..	..	..	796
Asbestos ..	,,	..	..	..	..	82	..	..	82
Barytes ..	,,	173	..	..	1,535	..	..	..	1,708
Bismuth ..	cwt.	30	..	33	..	..	19	..	82
Brown Coal ..	ton	..	1,831,507	..	..	..	..	..	1,831,507
Coal	,,	7,093,055	703,487	1,094,676	..	501,425	138,716	..	9,531,359
Copper (ingot, matte, etc.) ..	,,	93	..	2,930	99	..	9,941	..	13,063
Copper ore ..	,,	149	..	..	..	10	..	92	251
Diatomaceous earth	,,	1,240	..	..	..	..	..	..	1,240
Gold	fine oz.	12,493	24,119	7,821	1,311	416,369	4,467	13	466,593
Gypsum ..	ton	2,868	5,809	..	40,827	1,581	..	..	51,085
Iron (pig) (b) ..	,,	..	..	..	..	..	..	..	..
Iron oxide ..	,,	3,800	..	..	..	..	..	..	3,800
Ironstone ..	,,	..	..	2,417	928,392	..	..	..	930,809
Kaolin	,,	2,299	1,951	..	521	..	..	..	4,771
Lead (b) ..	,,	..	..	231	..	..	4,238	..	4,469
Lead and silver-lead ore, concentrates, etc. ..	,,	279,513	..	..	..	391	..	136	280,040
Limestone flux ..	,,	28,556	..	8,873	12,434	..	87,205	..	137,068
Magnesite ..	,,	8,655	63	..	36	..	..	..	8,754
Manganese ore ..	,,	125	..	..	..	..	..	..	125
Molybdenite ..	cwt.	65	..	40	..	..	..	..	105
Osmiridium ..	oz.	..	..	..	..	..	953	..	953
Phosphate ..	ton	26	..	..	..	..	..	..	26
Pigments ..	,,	585	..	..	17	..	..	..	602
Platinum ..	oz.	155	..	..	..	..	..	..	155
Salt	ton	..	(a)	..	58,766	..	..	..	58,766
Sapphires ..	oz.	..	..	(d)	..	..	..	..	(d)
Shale (oil) ..	ton	346	..	..	..	..	5,428	..	5,774
Silver	fine oz.	5,290	813	69,808	1,058	46,348	711,619	..	834,936
Tin and tin ore ..	ton	590	..	603	..	62	512	31	1,798
Wolfram ..	,,	10	..	21	..	..	113	63	207
Zinc and concentrates ..	,,	297,762	..	..	..	..	943	..	298,705

(a) Not available for publication. (b) See letterpress preceding this table. No production of pig-iron recorded in 1930. (c) Year ended 30th June. (d) Quantity not stated.

The values of the minerals raised in each State during 1930 are given in the following table :—

MINERAL PRODUCTION.—VALUE, 1930.

Minerals.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T. (d)	Australia.
	£	£	£	£	£	£	£	£
Antimony ..	3,178	..	..	..	..	..	..	3,178
Arsenic	16,574	..	..	..	..	..	..	16,574
Asbestos ..	..	..	..	..	4,728	..	..	4,728
Barytes ..	432	..	..	4,605	..	..	..	5,037
Bismuth ..	508	..	135	..	..	475	2	1,120
Brown Coal ..	..	173,713	..	..	..	..	..	173,713
Coal	5,193,032	807,699	952,856	..	394,758	110,253	..	7,458,598
Copper (ingot and matte) ..	6,610	..	174,075	6,966	..	620,578	..	808,229
Copper ore ..	1,737	..	..	..	102	..	589	2,428
Diamonds ..	714	..	..	..	..	..	..	714
Diatomaceous earth	3,720	..	..	..	..	..	..	3,720
Gold	53,066	102,456	33,224	5,569	1,768,623	18,976	57	1,981,971
Gypsum ..	2,868	1,610	..	35,724	1,990	..	..	42,192
Iron (pig) (b) ..	..	..	..	..	..	..	..	..
Iron Oxide ..	2,600	..	..	..	..	..	..	2,600
Ironstone ..	..	..	2,233	1,067,651	..	..	..	1,069,884
Kaolin	3,165	1,792	..	1,278	..	..	..	6,235
Lead (b) ..	..	..	4,169	6	..	77,590	..	81,765
Lead and silver-lead ore, concentrates, etc. ..	2,088,523	..	..	..	5,582	..	1,684	2,095,789
Limestone flux ..	10,708	..	9,069	4,663	..	42,743	..	67,183
Magnesite ..	17,310	239	..	72	..	..	..	17,621
Manganese ore ..	375	..	..	..	..	..	..	375
Molybdenite ..	435	..	398	..	..	..	..	833
Opal	5,500	..	800	1,142	..	..	..	7,442
Osmiridium ..	..	..	..	..	..	16,235	..	16,235
Phosphate ..	22	..	..	..	..	..	..	22
Pigments ..	1,104	..	..	93	..	..	..	1,197
Platinum ..	1,073	..	..	..	..	..	..	1,073
Salt	..	(a)	..	132,224	..	..	..	132,224
Sapphires ..	..	..	4,948	..	..	..	..	4,948
Shale (oil) ..	125	..	..	..	..	3,490	..	3,615
Silver (b) ..	267	65	5,527	84	3,748	56,068	..	65,759
Tin and tin ore ..	84,800	..	49,708	..	10,608	69,592	3,345	218,053
Wolfram ..	637	..	1,491	..	..	12,216	3,867	18,211
Zinc & concentrates	986,087	..	..	..	..	19,322	..	1,005,409
Unenumerated ..	(c) 18,864	769	2,492	3,321	1,254	3,385	(e) 7,112	37,197
Total ..	8,504,034	1,088,343	1,241,125	1,263,398	2,191,393	1,050,923	16,656	15,355,872

(a) Not available for publication. (b) See letterpress above preceding table. (c) Includes dolomite £5,323, silica £6,204, and fireclay £4,400. (d) Year ended 30th June. (e) Mica, £6,099; Central Australia; tantalite, £1,013, North Australia.

It may be pointed out in connexion with the figures given in the above table that the totals are exclusive of returns relating to 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." Valuations of the production of some of these may be obtained from the reports of the various Mines Departments, but in regard to others it is impossible to obtain adequate information. In certain instances, moreover, the published information is of little value. Some of the 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 1930 consist of—lime, £52,635; building stone, £207,921; Portland cement, £926,792; coke, £589,343; road materials, £892,783; shell grit, £4,024; mineral water, £88; sulphur and sulphuric acid, £26,616; and brick and pottery clays, £146,140. Carbide, £51,437, and cement, £115,520, have been excluded from the Tasmanian figures.

4. **Value of Production, 1926 to 1930.**—The value of the mineral production in each State during the five years 1926 to 1930 is given in the table hereunder :—

MINERAL PRODUCTION.—VALUE, 1926 TO 1930.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
	£	£	£	£	£	£	£	£
1926 ..	16,319,265	1,082,006	1,583,614	996,910	2,371,864	1,566,587	19,085	23,939,331
1927 ..	15,449,702	1,176,378	1,614,535	1,150,847	2,202,437	1,400,994	19,609	23,014,502
1928 ..	12,600,668	1,098,691	1,359,616	1,008,514	2,128,109	1,329,057	14,627	19,539,282
1929 ..	10,155,164	1,116,083	1,683,050	1,295,053	2,087,852	1,556,276	18,345	17,911,823
1930 ..	8,504,034	1,088,343	1,241,125	1,263,398	2,191,393	1,050,923	16,656	15,355,872

For New South Wales the value of production in 1930 was over £8,000,000 lower than that for 1925, viz., £16,658,000, which was the highest ever recorded. The falling-off in 1930 was again largely due to the decreased returns from the principal metals and from coal.

The decrease in the Victorian returns for 1930 was chiefly due to a fall in the production of gold, coal and gypsum.

In Queensland the fall in production in 1930 was due to decreases in the yields from gold, from the industrial metals and from coal. The returns for South Australia in 1930 showed a decline of over £31,000 on the figures for 1929. While there was a record production from ironstone amounting to over £1,000,000, the gain in this item was more than counterbalanced by losses in other directions, the principal decreases being in gypsum, salt, and copper, which showed losses of £48,000, £40,000 and £16,000 respectively. In Western Australia the total for 1930 shows an increase of about £103,500 on that for the preceding year. All minerals, however, with the exception of gold, showed decreases. The yield from gold accounted for over 80 per cent. of the total value of the State's output in 1930. The decline in Tasmania during 1930 was mainly due to the fall in price of the chief industrial metals. This was reflected in the returns from copper and tin, which showed decreases of £120,000 and £60,000 respectively. It is stated that the decline in the Northern Territory returns for recent years is due in some measure to the fact that some of those engaged in mining forsook it to take up more profitable work in other pursuits. The number of Chinese miners in the Territory has steadily decreased and those remaining are all old men. Mica to the value of £6,099 was the chief item of production in 1930, the mineral being obtained principally in the Harts Range, but new deposits have recently been located near the Plenty River.

5. **Total Production to end of 1930.**—In the next table will be found the estimated value of the total mineral production in each State up to the end of 1930. The figures given in the table are also exclusive of the same items referred to in connexion with the preceding table. Thus the total for New South Wales falls short by over £44,000,000 of that published by the State Department of Mines, the principal items excluded being coke, £14,345,000 ; cement, £18,274,000 ; lime, £1,648,000 ; and considerable values for marble, slate, granite, chert, gravels, etc., which the Department now includes in the returns for quarries.

MINERAL PRODUCTION.—VALUE TO END OF 1930.

Minerals.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter. (a)	Australia.
	£	£	£	£	£	£	£	Million. £
Gold ..	63,920,816	303,598,660	85,922,334	1,642,119	165,293,843	8,987,348	2,283,772	632
Silver and lead ..	120,003,968	265,070	4,189,588	381,742	2,278,797	9,031,065	65,743	136
Copper	15,578,981	216,686	26,631,263	33,147,602	1,808,828	20,393,720	233,441	98
Iron ..	7,737,083	15,641	475,992	8,989,335	36,722	52,110	..	17
Tin ..	14,473,519	976,662	11,119,476	..	1,600,274	17,239,288	624,525	46
Wolfram	274,226	11,885	1,065,563	301	1,441	236,371	220,726	2
Zinc ..	23,878,939	..	13,460	15,993	5,437	996,077	..	25
Coal ..	189,581,911	13,169,434	19,452,724	..	6,602,312	1,857,402	..	231
Other ..	8,032,224	869,945	2,756,547	4,396,347	226,129	2,050,097	61,849	18
Total	443,481,667	319,123,983	151,626,947	48,573,439	177,853,783	60,843,478	3,490,056	1,205

(a) To 30th June, 1930.

The " other " minerals in New South Wales include alunite, £209,000; antimony, £360,000; arsenic, £122,000; bismuth, £236,000; chrome, £122,000; diamonds, £146,000; magnesite, £166,000; molybdenite, £213,000; opal, £1,597,000; scheelite, £193,000; and oil shale, £2,691,000. In the Victorian returns antimony ore was responsible for £612,000. The value for coal in this State includes £1,427,000 for brown coal. Included in " other " in the Queensland production were opal, £185,000; gems, £627,000; bismuth, £118,000; cobalt, £155,000; molybdenite, £599,000; and limestone flux, £722,000. The chief items in South Australian " other " minerals were salt, £2,774,000; limestone flux, £279,000; gypsum, £743,000; phosphate, £131,000; and opal, £125,000. In the Tasmanian returns osmiridium was responsible for £571,000, scheelite for £112,000, and iron pyrites for £94,000.

6. **Decline in the Metalliferous Industry.**—On the 1st December, 1921, a Select Committee was appointed by the Legislative Assembly of New South Wales to inquire into and report upon the serious decline in the metalliferous industry. The result of the Committee's investigations was published in a Report issued in 1922, wherein the chief contributing causes of the decline in New South Wales and in Australia generally were summarized as follows:—(1) High cost of production; (2) Deterioration in ore values in existing mines: (3) Inadequate machinery: (4) High freights: (5) High treatment charges: (6) Imperfect labour conditions in mines: (7) Lack of new payable discoveries: (8) Lack of efficiently-supported prospecting.

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 value of the gold raised in the several States and in Australia as a whole during each of the eight decennial periods from 1851 to 1930, and in single years from 1921 to 1931, from the dates when payable discoveries were first reported. 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 diggers, who preferred to keep the amount of their wealth secret.

GOLD.—VALUE OF PRODUCTION.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	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	579,068	..	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	1,976,715	47,564	20,458,080	193,833	9,894	26,348,341
1921 ..	271,302	554,087	214,060	13,933	2,935,693	28,311	1,299	4,018,685
1922 ..	118,359	501,515	378,154	4,693	2,525,811	16,101	540	3,545,173
1923 ..	83,325	422,105	392,563	4,199	2,232,179	16,300	743	3,151,414
1924 ..	86,905	312,398	459,716	4,093	2,255,932	21,516	3,270	3,143,830
1925 ..	82,498	200,901	197,118	3,535	1,874,320	14,969	1,939	2,375,280
1926 ..	82,551	208,471	43,914	3,219	1,857,716	17,936	594	2,214,401
1927 ..	76,595	163,699	161,321	1,776	1,734,571	20,646	468	2,159,076
1928 ..	54,503	144,068	56,395	2,258	1,671,093	15,306	431	1,944,054
1929 ..	31,842	111,609	40,250	4,289	1,602,142	23,772	553	1,814,457
1930 ..	53,066	102,456	33,224	5,569	1,768,623	18,976	57	1,981,971
1931 ..	118,623	262,462	79,652	17,328	3,054,743	28,156	2,535	3,563,499
Total 1851–1931	64,039,439	303,861,122	86,001,986	1,659,447	168,348,586	9,015,504	2,286,307	635,212,391

In the figures quoted above, allowance has been made in the values for the years in which gold was at a premium in Australian currency.

The value of the gold yield in 1929 was the lowest recorded since the discovery of the precious metal in 1851, while the slight increase in 1930 was to some extent due to the increased activity in prospecting and the working over of old auriferous areas resultant on prevailing economic conditions. Consequent on the enhanced price realized for gold in 1931 the figures for the year show a considerable increase, the total for Australia being the highest recorded since 1921. The average price in Australian currency applied to the production for this year was £5 19s. 9d. Reference to the bounty paid by the Commonwealth Government on local production will be found in § 16. 1. hereinafter.

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 follow:—New South Wales 1852; Victoria, 1856; Queensland, 1900; South Australia, 1894; and Tasmania, 1899.

The following table shows the quantity in fine ounces of gold raised in each State and in Australia during each of the last five years. A separate line is added showing the total production in thousands of fine ounces since 1851:—

GOLD.—QUANTITY PRODUCED.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Ter. (a)	Australia.
	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.
1927 ..	18,032	38,538	37,979	418	408,353	4,861	110	508,291
1928 ..	12,831	33,917	13,277	532	393,408	3,603	101	457,669
1929 ..	7,496	26,275	9,476	1,009	377,176	5,597	130	427,159
1930 ..	12,493	24,119	7,821	1,311	416,369	4,467	13	466,593
1931 ..	19,673	43,637	13,147	2,782	510,572	4,760	552	595,123
Total (b) 1851–1931	15,022	71,392	20,147	388	38,814	2,115	537	148,415

(a) Year ended 30th June. (b) '000 omitted in each case.

3. **Changes in Relative Positions of States as Gold Producers.**—The figures in the table showing the value of gold raised will sufficiently 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 the year 1889, when its output was surpassed by that of Queensland, Victoria maintained its position as the chief gold-producer for a period of forty-seven years, or up to 1898, when its production was outstripped by that of Western Australia, the latter State from this year onward contributing practically half, and so far as the last ten years are concerned nearly four-fifths of the entire yield of Australia. New South Wales occupied the second place on the list until 1874, when Queensland returns exceeded those of the parent State, and, with the exception of the years 1921, 1926 and 1930, maintained this pre-eminence.

4. **Place of Australia in the World's Gold Production.**—In the table given below will be found the estimated value of the world's gold production, and the share of Australia therein in decennial periods since 1851 and during each of the last five years for which returns are available. The figures given in the table have been compiled chiefly from returns obtained directly by the Commonwealth Bureau of Census and Statistics from the gold-producing countries of the world.

GOLD.—WORLD'S PRODUCTION.

Period.	World's Production of Gold.	Gold Produced in Australia.	Percentage of Australia on Total.
	£	£	%
1851–60	260,645,000	105,671,000	40.5
1861–70	228,031,000	80,871,000	35.5
1871–80	214,427,000	61,293,000	28.5
1881–90	220,903,000	49,217,000	22.3
1891–1900	436,421,000	89,999,000	20.6
1901–10	777,696,000	142,009,000	18.3
1911–20	908,537,000	76,240,000	8.4
1921–30	823,212,000	26,348,000	3.2
1926	82,684,000	2,214,000	2.7
1927	82,567,000	2,159,000	2.6
1928	83,829,000	1,944,000	2.3
1929	83,312,000	1,814,000	2.2
1930	85,640,000	1,982,000	2.3

The value of the gold yield in the ten chief producing countries during each of the five years 1926 to 1930 is given in the table hereunder. Particulars of the quantity and value of the gold production for all countries for the ten years 1921–30 will be found in the Bulletin of Australian Production issued by this Bureau.

GOLD.—PRODUCTION, CHIEF COUNTRIES.

Country.	1926.	1927.	1928.	1929.	1930.
	£	£	£	£	£
Union of South Africa	42,285,000	42,998,000	43,982,000	44,229,000	45,520,000
United States ..	9,509,000	8,993,000	9,110,000	8,736,000	8,922,000
Canada	7,451,000	7,870,000	8,031,000	8,191,000	8,950,000
Russia	4,214,000	4,507,000	5,097,000	4,248,000	(a)4,248,000
Mexico	3,282,000	3,081,000	2,970,000	2,769,000	2,848,000
Rhodesia	2,521,000	2,470,000	2,447,000	2,382,000	2,358,000
Australia	2,214,000	2,159,000	1,944,000	1,814,000	1,982,000
India	1,631,000	1,632,000	1,597,000	1,546,000	1,398,000
Japan	1,285,000	1,374,000	1,312,000	1,419,000	1,512,000
Gold Coast ..	847,600	728,800	670,400	883,000	1,023,000

(a) Not available ; previous year's figures taken.

The next table shows the average yearly value in order of importance of the yield in the chief gold-producing countries for the decennium 1921–1930.

GOLD.—AVERAGE ANNUAL PRODUCTION, CHIEF COUNTRIES, 1921 TO 1930.

Country.	Value.	Country.	Value.
	£		£
Union of South Africa ..	42,078,600	Rhodesia	2,660,000
United States	10,050,000	Australia	2,634,800
Canada	7,125,800	India	1,692,300
Russia	3,395,700	Japan	1,306,800
Mexico	3,256,100		

The comparison has been restricted to countries where the average for the period is in excess of a million sterling.

5. **Employment in Gold Mining.**—The number of persons engaged in gold mining in each State in 1901 and during each of the last five years is shown in the following table :—

GOLD MINING.—PERSONS EMPLOYED.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Total.
	No.	No.	No.	No.	No.	No.	No.	No.
1901 ..	12,064	27,387	9,438	1,000	19,771	1,112	200	70,972
1926 ..	808	1,967	321	26	4,488	107	26	7,743
1927 ..	670	1,126	304	17	4,056	65	12	6,250
1928 ..	736	655	343	30	3,863	47	12	5,686
1929 ..	684	864	326	58	4,108	63	5	6,108
1930 ..	4,229	942	903	114	4,452	43	4	10,687

The heavy decline noticeable since 1901 is of course due to the exhaustion of accessible payable deposits and the failure to locate any considerable fresh sources of supply. As pointed out previously, the increase in number in 1930 as compared with 1929 was due to considerable accessions to the ranks of prospectors, particularly in New South Wales, where much attention was devoted to turning over old gold-fields.

6. **Bounty on Production.**—A reference to the bounty provided by the Commonwealth on gold production in Australia will be found in § 16. 1. hereinafter.

§ 3. Platinum and Platinoid Metals.

1. **Platinum.**—(i) *New South Wales.* The deposits at present worked in the State are situated in the Fifield division, near Parkes, and the production in 1930 amounted to 155 ozs., valued at £1,073 as compared with 128 ozs., valued at £1,352, in the preceding year, while the total production recorded to the end of 1930 amounted to 19,083 ozs., valued at £119,795.

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

(iii) *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.

2. **Osmium, Iridium, etc.**—(i) *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 sand 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.

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

(iii) *Tasmania.* For 1930 the yield of osmiridium was returned as 953 ozs., valued at £16,235, the quantity raised being about 400 ozs. less than in 1929. The decrease was largely due to the decline in price, which fell to £17 0s. 9d. in 1930, as compared with £22 18s. 1d. in 1929, and £25 9s. in 1928. It is stated that one of the reasons for the decreased demand for the metal and the consequent fall in price, is that osmiridium itself is of no commercial value, the value being in the osmium and iridium extracted therefrom. The process of extraction is a particularly dangerous one, owing to the fact that osmium oxide, which is a deadly poison, is given off in a gaseous state. Some of the American firms have ceased producing on this account, and are using African ore containing platinum and iridium, the extraction of which is simpler and less hazardous.

§ 4. Silver, Lead, and *Zinc.

1. **Occurrence in Each State.**—Particulars regarding the occurrence of silver in each State were given in Year Books, Nos. 1 to 5, but considerations of space precluded the repetition of this matter.

2. **Development of Silver Mining.**—The value of the production of silver, silver-lead and ore, and lead from each State during the five years ending 1930 is given hereunder :—

SILVER AND LEAD.—PRODUCTION.

Year.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter. (a)	Australia.
	£	£	£	£	£	£	£	£
1926 ..	4,399,953	307	147,724	865	85,604	281,155	447	4,916,055
1927 ..	3,487,980	304	32,102	143	30,421	222,427	379	3,773,756
1928 ..	2,492,089	275	3,387	..	10,836	180,517	22	2,687,126
1929 ..	3,032,741	100	14,807	258	12,525	233,353	79	3,293,863
1930 ..	2,088,790	65	9,696	90	9,330	133,658	1,684	2,243,313

(a) Year ended 30th June.

The figures quoted above for New South Wales for the year 1930 include silver to the value of £267 and silver-lead ore and concentrates valued at £2,088,523. Since the closing down of the Sulphide Corporation's works in 1922 the silver (metal) is obtained chiefly in the refining of gold and copper ores, and there has been no production of lead (pig) in the State. It may be noted here that the bulk of the carbonate and siliceous ore from the Broken Hill field is sent for treatment by the Broken Hill Associated Smelters Proprietary Limited at Port Pirie in South Australia, while the remainder of the ore is concentrated on the field and the product is dispatched to Port Pirie for refining.

Low prices coupled with increased costs of production were responsible for the decrease in values recorded in New South Wales during the period dealt with. The improvement in 1929 as compared with 1928 was mainly due to an advance in the price of lead.

It must be understood that the totals for New South Wales in the above table 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 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 lost sight of. The next table, however, which indicates the quantity of these materials locally produced, and the contents by assay of concentrates exported during the last five years, will show, as regards New South Wales, the estimated total production and the value of the metal contents of all ore mined :—

SILVER-LEAD MINES.—NEW SOUTH WALES, TOTAL PRODUCTION.

Year.	Metal Produced within Australia.				Contents of Concentrates Exported.			
	Silver.	Lead.	Zinc.	Value.	Silver.	Lead.	Zinc.	Value.
	ozs. fine.	tons.	tons.	£	ozs. fine.	tons.	tons.	£
1926 ..	7,338,477	142,654	39,277	6,730,689	2,371,264	23,242	96,167	1,591,673
1927 ..	7,901,861	156,306	42,757	5,955,009	2,339,382	26,709	115,123	1,467,235
1928 ..	7,068,964	151,475	44,004	5,256,649	1,259,931	11,372	94,087	835,620
1929 ..	7,619,884	165,364	46,163	5,918,014	835,697	7,009	76,619	734,261
1930 ..	7,876,894	162,703	53,958	4,579,412	844,188	14,044	87,913	911,724

* Further details in regard to zinc are given in § 7 hereinafter.

The figures given above are quoted on the authority of the Mines Department of New South Wales. Accurate details in regard to gold, copper, and antimony contained in the silver-lead ores are not available. Cadmium was first extracted in 1922 at Risdon, in Tasmania, and in 1930 the amount won from ores of New South Wales origin was given as 224 tons, valued at £76,275. As pointed out previously, credit for the value is not taken in the New South Wales returns, the value accruing to the State being taken as that of the declared value of the concentrates at the time of their dispatch.

3. **Sources of Production.**—Broken Hill, in New South Wales, is the chief centre of silver production in Australia.

(i) *New South Wales.* (*a*) *Broken Hill.* A description of the silver-bearing area in this district is given in earlier issues of the Year Book. (See No. 4, page 506.)

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

SILVER.—BROKEN HILL RETURNS TO END OF 1930.

Mine.	Value of Output to end of 1930.	Dividends and Bonuses Paid to end of 1930.
	£	£
Broken Hill Proprietary Co. Ltd.	53,263,050	13,655,247
Broken Hill Proprietary Block 14 Co. Ltd.	4,748,346	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)	26,811,642	3,436,875
Broken Hill South Ltd.	21,867,681	5,055,000
North Broken Hill Ltd.	17,226,649	5,202,690
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.	9,128,603	3,392,944
Barrier South Ltd.	151,517	50,000
Totals	148,700,473	33,975,627

The returns relating to dividends and bonuses paid are exclusive of £1,744,000 representing the nominal value of shares in Block 14, British, and Block 10 companies, allotted to shareholders of Broken Hill Proprietary Company. If the output of the companies which were, prior to 1930, engaged in treating the tailings, etc., be taken into consideration, the totals for output and dividends shown in the table would be increased to about 156 millions and 37 millions respectively. The authorized capital of the various companies amounted to £6,823,000. In 1931 the increase in dividends and bonuses paid amounted to £203,000 shared in by four only of the Companies included above, i.e., Zinc Corporation, £83,000 ; North Broken Hill, £70,000 ; Sulphide Corporation, £30,000 ; and Broken Hill South, £20,000.

(*b*) *Other Areas.* Silver is found in various other localities in New South Wales, but the production therefrom in 1930 was unimportant, with the exception of the Yerranderie area, from which a yield of 84,900 ozs. was reported. About 2,500 tons of ore were raised for experimental purposes in 1930 by the Lake George Mines Ltd. at Captain's Flat, but the products were not sold. At the end of the year the total ore reserves amounted to over 2 million tons, averaging 7.67 per cent. lead, 13.06 per cent. zinc, and 0.75 per cent. copper, together with silver 2.34 ozs. and gold 1.30 dwt.

(ii) *Victoria.* The silver produced in 1930 amounted to 813 ozs., valued at £65, and was obtained in the refining of gold at the Melbourne Mint.

(iii) *Queensland.* Owing to low prices, the yields from the chief silver and lead producing centres in 1930 showed a considerable decline, the total value of the production of both metals being only £9,696, as compared with £148,000 in 1926, and £241,000 in 1925. Great hopes are entertained from the activities of the Company engaged in

exploiting the immense silver-lead field at Mount Isa. The deposits are being worked on a large scale, and the most modern appliances have been installed. A well ordered town furnished with up-to-date conveniences has been established in close proximity to the workings.

(iv) *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. The production of silver in 1930 was valued at £84, and of lead at £6.

(v) *Western Australia.* The quantity of silver obtained as a by-product and exported in 1930 was 46,348 ozs., valued at £3,748. In addition, 391 tons of lead and silver-lead ore and concentrates valued at £5,582 were exported. No lead ore was produced from the Northampton mineral field in 1930.

(vi) *Tasmania.* The silver produced in 1930 amounted to 711,619 ozs., valued at £56,068, and the lead to 4,238 tons, valued at £77,590. About 529,000 ozs. of the total silver output were contained in silver-lead, while 183,000 ozs. were contained in the blister copper produced by the Mount Lyell Co.

(vii) *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, however, hindered by the low price of metals coupled with transport difficulties and lack of permanent water. Rich sulphides have been found at Barrow Creek. During the year a small quantity of silver-lead ore was raised in the Mt. Gardner district.

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.

Total.	1926.	1927.	1928.	1929.	1930.
World's production in 1,000 fine ozs. ..	253,186	251,232	257,273	261,715	245,290

The share of Australia in the world's silver production in 1919 was estimated at 7,800,000 ozs., or about 4½ per cent. of the total production, but in 1921, owing to the cessation of operations at the Broken Hill field, the total local extraction fell to 4,573,000 ozs., and the estimated silver contents of the ores, bullion, and concentrates exported to 732,000 ozs., the total being a little over 3 per cent. of the world's production. For 1930 local extraction was set down as 9,003,000 ozs., and exports as 783,000 ozs., the total being equivalent to about 4 per cent. on the production for the world. The figures for the world's production are given on the authority of *The Mineral Industry.*

Arranged in order of importance the estimated yields in 1930 from the chief silver producing countries were as follow :—

SILVER.—PRODUCTION, CHIEF COUNTRIES, 1930.

Country.	Production.	Country.	Production.
	Fine ozs. ('000 omitted.)		Fine ozs. ('000 omitted.)
Mexico	105,204	Japan	5,000
United States	48,638	Central America ..	2,500
South America	26,500	East Indies	1,750
Canada	26,436	Transvaal	1,050
Europe	10,750	China	150
Australia	9,786	Rhodesia	100
British India	7,050		

5. **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 of each metal during the last five years have been incorporated in the table hereunder :—

PRICES OF SILVER, LEAD, AND SPELTER.

Metal.	1927.	1928.	1929.	1930.	1931.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Silver (Standard) per oz.	0 2 2.04	0 2 2.75	0 2 0.46	0 1 5.66	0 1 2.60
Lead .. per ton	24 8 1	21 3 4	23 4 11	18 1 5	13 0 9
Spelter per ton	28 9 11	25 5 5	24 17 8	16 16 9	12 8 11

The above figures are quoted on the authority of the Mines Department of New South Wales.

6. **Employment in Silver, Lead and Zinc Mining.**—The number of persons employed in mining for these metals during each of the last five years is given below :—

SILVER MINING.—PERSONS EMPLOYED.

Year.	N.S.W. (a)	Q'land.	S. Aust.	W. Aust. (b)	Tasmania. (a)	Nor. Ter.	Australia.
	No.	No.	No.	No.	No.	No.	No.
1926 ..	5,924	390	25	138	523	2	7,002
1927 ..	5,833	277	1	51	718	..	(c) 6,882
1928 ..	4,666	282	..	12	627	..	(d) 5,589
1929 ..	5,001	447	7	31	540	2	6,028
1930 ..	4,489	474	2	..	231	35	5,231

(a) Silver, lead, and zinc. (b) Principally lead and silver-lead ore. (c) Including 2 in Victoria. (d) Including 2 in Victoria.

With the development of the great silver-lead field at Mount Isa, in Queensland, it is expected that the employment returns for that State will in future assume considerable importance.

§ 5. Copper.

1. **Production.**—The production of copper in the various States has been influenced considerably by the ruling prices, which have undergone extraordinary fluctuations. The value of the local production as reported and credited to the mineral industry for the years 1926 to 1930 is 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 AUSTRALIA.

State.	1926.	1927.	1928.	1929.	1930.
	£	£	£	£	£
New South Wales	22,473	12,655	3,497	14,183	8,347
Queensland	73,591	218,842	177,043	294,188	174,075
South Australia	14,681	12,452	13,321	22,982	6,966
Western Australia	84	101	765	2,778	102
Tasmania	454,854	362,988	444,802	740,985	620,578
Northern Territory (a) ..	60	..	..	..	589
Australia	565,743	607,038	639,428	b1,075,146	810,657
Ingot, Matte, etc. .. tons	8,722	9,940	9,455	12,613	13,063
Ore .. .. tons	7	192	100	416	251

(a) Year ended 30th June. (b) Includes £30, value of production in Victoria.

The total value of the production in 1920 was £2,658,000, and the heavy fall during recent years was due to the low price of the metal preventing the profitable working of many of the copper mines throughout Australia. Production in 1930 was again depressed by the fall in price.

2. **Sources of Production.**—(i) *New South Wales.* The depression in this branch of the mining industry during the last few years is likely to continue, unless copper appreciates in value, and less costly methods of production are evolved. For the year 1917 the yield was valued at upwards of £814,000, in 1918 it was returned at £697,000, but in 1928 it had declined to under £4,000. The rise in price during 1929 led to a moderate increase in activity. The small production in 1930 was obtained principally from the Mount Royal mine at Tottenham, the output for the year including 93 tons of electrolytic copper valued at £6,610, and 149 tons of ore valued at £1,737 exported overseas.

(ii) *Queensland.* The yield in this State amounted in 1930 to 2,930 tons valued at £174,075, and shows a serious decline as compared with 1920 when nearly 16,000 tons valued at £1,552,000 were raised. The falling-off in the yield in recent years was due partly to the low prices realized for copper and partly to old-fashioned plant and methods of treatment. Returns from the chief producing areas in 1930 were as follow :— Cloncurry, 2,169 tons, £128,841 ; Herberton, 350 tons, £20,824 ; Mount Morgan, 276 tons, £16,394 ; and Gladstone, 75 tons, £4,472.

(iii) *South Australia.* Taking the entire period over which production extended, the yield of copper in South Australia easily outstrips that of any other State. In recent years, however, Queensland, Tasmania, and New South Wales have come to the front as copper producers, as the table on the preceding page shows. Deposits of copper ore are found over a large portion of South Australia. A short account of the discovery, etc., of some of the principal mining areas, such as Kapunda, Burra Burra, Wallaroo, and Moonta, was given in earlier issues of the Official Year Book. Increased attention is being given to the possibility of making fresh discoveries in the Moonta and Wallaroo copper field. Opened in 1860, this field worked continuously until 1923, and produced copper to the value of £20,500,000. In 1930 the production fell to 94 tons, valued at £6,966, the lowest return since the year 1845. Owing to the low price of the metal a considerable tonnage of ore was held in reserve at Moonta.

(iv) *Western Australia.* The value of the copper ore exported from this State in 1930 was only £102 as compared with £18,200 in 1925, the small production in 1930 being due to the low price ruling for the metal.

(v) *Tasmania.* The quantity of copper produced in Tasmania during 1930 was 9,940 tons, valued at £620,578, the whole of the production being due to the Mount Lyell Mining and Railway Co. Ltd. This Company treated 58,320 tons of ore and concentrates and produced 10,018 tons of blister copper, containing copper, 9,900 tons ; silver, 183,000 ozs. ; and gold, 3,800 ozs., the whole being valued at £651,000.

(vi) *Northern Territory.* Copper has been found at various places, but lack of capital and difficulty of transport prevent the development of the deposits. The bulk of the production in 1930 was obtained chiefly from old mine dumps at Mount Diamond.

3. **Prices.**—The great variation in price that the metal has undergone is shown in the following table, which gives the average price in London and New York during each of the last five years. The figures are given on the authority of the *The Mineral Industry* :—

COPPER.—PRICES.

Year.	Average London Price per Ton Standard Copper.	Average New York Price in Cents per lb. Electrolytic Copper.
	£	Cents.
1926	57.90	13.80
1927	55.65	12.92
1928	63.70	14.57
1929	75.42	18.11
1930	54.62	12.98

In 1931 the average London price fell to £38.48 per ton.

As evidence of the tremendous variation in the price of copper it may be noted that in December, 1916, the average London price of standard copper was £145.32 per ton, while in June, 1927, it was quoted at £54.03. In 1930 the highest average was £71.47, recorded in January, but in October the price had fallen as low as £43.03.

4. **World's Production of Copper.**—The world's production of copper during the five years 1926–1930 is estimated to have been as follows. The figures for foreign countries have been taken from the latest issue of *The Mineral Industry* :—

COPPER.—WORLD'S PRODUCTION.

Year.	1926.	1927.	1928.	1929.	1930.
World's production—tons ..	1,459,000	1,502,000	1,689,000	1,899,000	1,562,000

The yields from the chief copper-producing countries in 1930 were as follow :—

COPPER.—PRODUCTION, CHIEF COUNTRIES, 1930.

Country.	Production.	Country.	Production.
	Tons.		Tons.
United States	634,600	Spain and Portugal ..	41,500
Chile	218,500	Germany	26,600
Africa	163,100	Yugoslavia	25,100
Canada	135,600	**Australia**	**18,200**
Japan	78,500	Norway	16,700
Mexico	67,300	Cuba	16,000
Russia	47,900	Bolivia	4,800
Peru	46,900	Austria	3,600

During the five years ending in 1930 the share of the United States in the world's copper production amounted to over 48 per cent.

The Australian production in 1930 amounted to a little over 1 per cent. of the total.

5. **Employment in Copper Mining.**—The number of persons employed in copper mining during each of the last five years was as follows :—

COPPER MINING.—PERSONS EMPLOYED.

Year.	N.S.W.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Australia.
	No.	No.	No.	No.	No.	No.	No.
1926	31	270	26	8	697	..	1,032
1927	29	271	20	9	760	..	1,089
1928	3	517	14	10	1,181	..	1,725
1929	32	366	74	9	1,307	..	(*a*)1,789
1930	33	376	58	3	1,333	6	1,809

(*a*) Including 1 in Victoria.

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

§ 6. Tin.

1. **Production.**—The development of tin mining is, of course, largely dependent on the price realized for the metal, and, as in the case of copper, the production has been subject to somewhat violent fluctuations. The table below shows the value of the production as reported to the Mines Departments in each of the States during the five years 1926 to 1930. A separate line is appended showing the recorded tonnages for Australia during each of the specified years.

TIN.—PRODUCTION, AUSTRALIA.

State.	1926.	1927.	1928.	1929.	1930.
	£	£	£	£	£
New South Wales	326,474	287,539	231,843	191,199	84,800
Victoria	5,075	11,454	12,954	3,545	..
Queensland	174,147	193,774	134,727	114,518	49,708
Western Australia	10,450	13,316	15,002	13,432	10,608
Tasmania	322,526	317,593	258,676	130,014	69,592
Northern Territory (*a*)	15,852	18,754	10,828	6,958	3,345
Total	854,524	842,430	664,030	459,666	218,053
Tonnage	3,482	3,507	3,425	2,723	1,798

(*a*) Year ending 30th June.

In 1923, the average London price of tin was £202 3s. per ton, while in 1926 it had advanced to £291 2s. per ton. There was a decline in the average for 1927 to £289 1s. 5d. per ton, although in March of that year the price was £313 9s. 5d. The sharp decline in values to £227 4s. 8d. in 1928, to £203 19s. 4d., in 1929, and the tremendous drop to £141 19s. in 1930, are reflected in the decreased production for those years. In December, 1930, the price had fallen to £111 13s. per ton.

2. **Sources of Production.**—(i) *New South Wales.* The production in 1930 was estimated at 590 tons of ingots valued at £84,800. A large proportion of the output in this State is obtained in normal years by dredging, principally in the New England district, the quantity so won in 1930 being 294 tons, valued at £25,266. The majority of the dredging plants, however, were not in operation during 1930, and many of the employees turned their attention to fossicking. The principal lode mines are at Torrington and Ardlethan.

(ii) *Victoria.* The production in 1929 was obtained by dredging, the Cock's Pioneer Gold and Tin Co. in the Beechworth district contributing 14 tons valued at £2,000, the balance mainly coming from Toora in Gippsland. No production was recorded in 1930.

(iii) *Queensland.* The chief producing districts in Queensland during 1930 were Herberton, 404 tons, valued at £32,359; Stanthorpe, 82 tons, £7,930; and Kangaroo Hills, 54 tons, £4,237. Chillagoe and Cooktown areas each produced about 30 tons. The total production was the lowest recorded since the year 1898.

(iv) *Western Australia.* The export of tin from the State during 1930 amounted to 62 tons, valued at £10,608. The production from the Greenbushes and Yilgarn fields was trifling, while only 12 tons of black tin valued at £1,300 were reported from the Pilbara field.

(v) *Tasmania.* During 1930 the output of tin amounted to 512 tons of metallic tin, valued at £69,592, the lowest return over a long series of years.

(vi) *Northern Territory.* The Maranboy field was the chief contributor to the output of tin in 1930. Small quantities were raised also at Finniss River, Pine Creek, Brock's Creek and other localities.

3. **World's Production.**—According to *The Mineral Industry* the world's production of tin during each of the last five years was as follows :—

TIN.—WORLD'S PRODUCTION.

1926.	1927.	1928.	1929.	1930.
Tons.	Tons.	Tons.	Tons.	Tons.
142,989	157,000	178,000	190,600	174,400

The yields from the chief producing countries in 1930 were as follow :—

TIN.—PRODUCTION, CHIEF COUNTRIES, 1930.

Country.	Production.	Country.	Production.
	Tons.		Tons.
Federated Malay States ..	62,100	Great Britain	2,500
Bolivia	38,100	Unfederated Malay States	1,700
Netherlands East Indies ..	34,500	Australia	1,500
Siam	11,200	Spain and Portugal ..	1,500
Nigeria	8,700	Congo	1,000
China	6,500	Indo-China	800
Burma	2,700	South Africa	700

Australia's share of the world's tin production would appear therefore to be less than 1 per cent.

4. **Prices.**—The average price of the metal in the London market for the years 1926 to 1931 was as follows :—

TIN.—PRICES.

Year.	Average Price Per Ton.	Year.	Average Price per Ton.
	£ s. d.		£ s. d.
1926	287 15 4	1929	203 18 10
1927	289 1 5	1930	141 19 1
1928	227 4 8	1931	118 9 1

At the London sales in December, 1930, the price fell as low as £104 a ton, the lowest rate quoted since 1902.

5. **Employment in Tin Mining.**—The number of persons employed in tin mining during the last five years is shown below :—

TIN MINING.—PERSONS EMPLOYED.

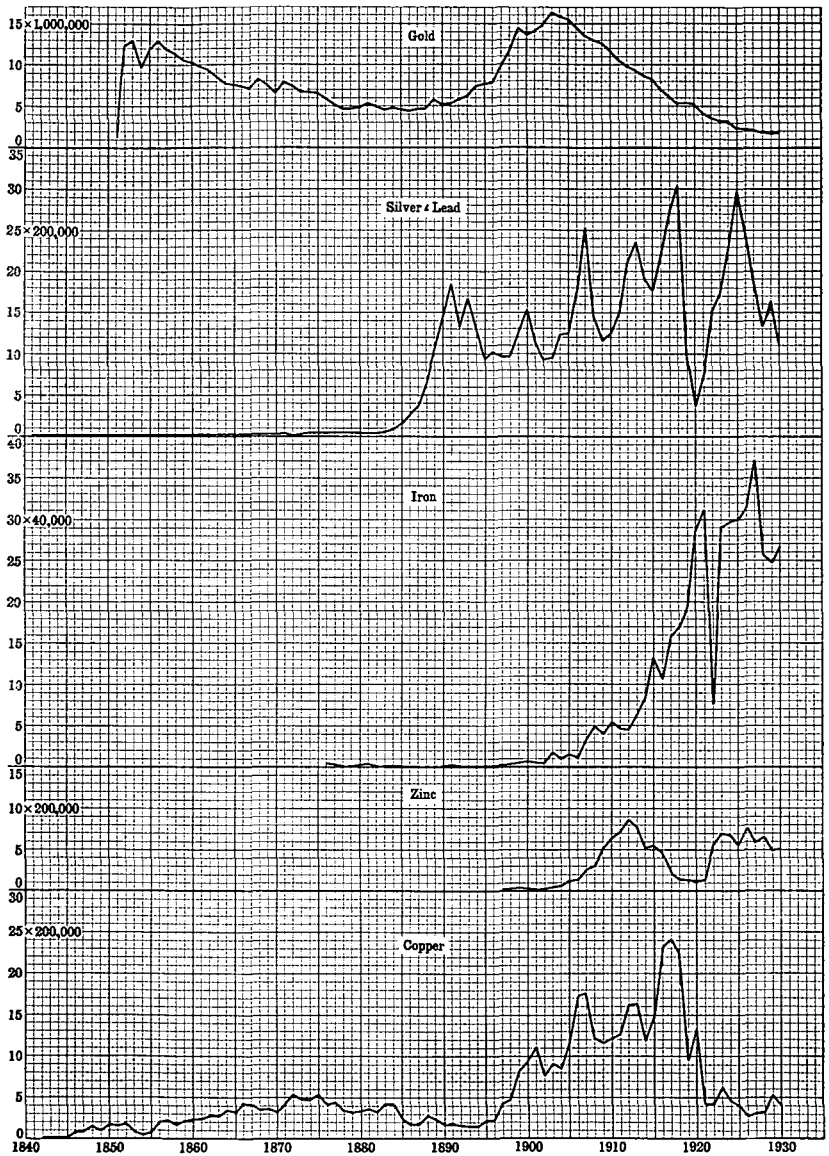
Year.	N.S.W.	Victoria. (a)	Q'land.	W. Aust.	Tas.	Nor. Ter.	Australia.
	No.	No.	No.	No.	No.	No.	No.
1926	1,235	..	714	78	1,057	112	3,196
1927	1,430	42	906	106	1,230	95	3,809
1928	1,275	118	954	119	1,113	95	3,674
1929	1,008	49	750	49	810	66	2,732
1930	870	..	579	30	443	60	1,982

(a) The tin produced in Victoria was raised by a dredging company operating primarily for gold.

§ 7. Zinc.

1. **Production.**—(i) *New South Wales.* (*a*) *Values Assigned.* The production of zinciferous concentrates is chiefly confined to the Broken Hill district of New South Wales, where zincblende forms one of the chief constituents in the enormous deposits of sulphide ores. During the earlier years of mining activity on this field a considerable amount of zinc was left unrecovered in tailings, but from 1909 onwards improved methods of treatment resulted in the profitable extraction of the zinc contents of the accumulations at the various mines.

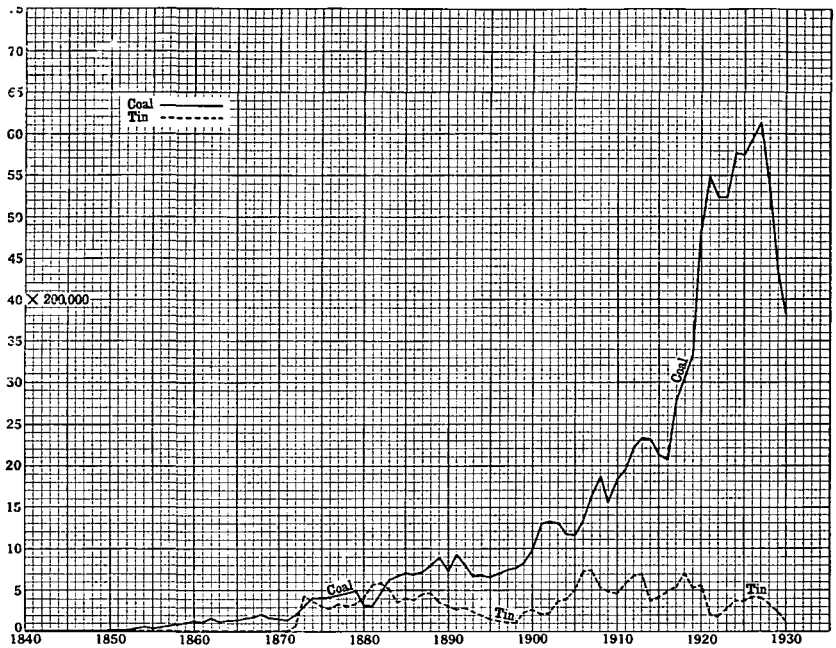
VALUES OF THE PRINCIPAL MINERALS PRODUCED—AUSTRALIA, 1840 TO 1930



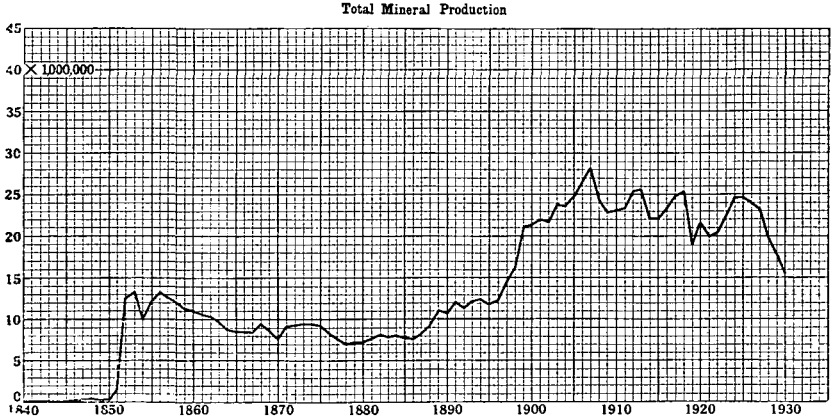
EXPLANATION.—The values shown are those of the total Australian production of certain of the most important minerals in successive years from 1840 onwards

The base of each small square represents an interval of one year, and the vertical height represents in the case of gold £1,000,000; in the case of silver and lead, zinc and copper £200,000; and in the case of iron £40,000.

VALUES OF PRINCIPAL MINERALS PRODUCED—AUSTRALIA, 1840 TO 1930—*continued.*



Total Mineral Production



EXPLANATION.—The values shown are those of the total Australian production of certain of the most important minerals in successive years from 1840 onwards.

The base of each small square represents an interval of one year, and the vertical height represents in the case of coal and tin £200,000, and in the case of total mineral production £1,000,000.

As the metallic contents of the bulk of the concentrates, etc., produced in the Broken Hill district 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 1930 the zinc concentrates actually exported amounted to 298,000 tons, valued at £986,000. Portion of the zinc concentrates produced is treated at Risdon in Tasmania, and the balance is exported overseas.

(*b*) *Local and Foreign Extraction.* A statement of the quantity of zinc extracted in Australia and the estimated zinc contents of concentrates exported overseas during the five years 1926 to 1930 will be found in § 17 hereinafter.

(ii) *Queensland.* The total production of zinc in 1926 was returned at 200 tons, valued at £6,827, produced from ores raised in the Chillagoe area, but there was no record of production in later years.

(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.* During the year 1930 the production from local ores was taken as 943 tons, valued at £19,322, almost the entire output coming from the mines worked by the Electrolytic Zinc Co., which has erected extensive works at Rosebery. In addition, about 3 tons of cadmium, valued at £1,333, were obtained as a by-product.

The Electrolytic Zinc Co. at Risdon operated on raw materials obtained partly from the West Coast district of Tasmania, but chiefly from Broken Hill in New South Wales. Production from other than Tasmanian ores in 1930 consisted of 53,958 tons of zinc valued at £1,015,610, and 224 tons of cadmium, alued at £76,275.

2. **World's Production.**—According to *The Mineral Industry* the world's production of zinc during the five years 1926–30 was as follows :—

ZINC.—WORLD'S PRODUCTION.

1926.	1927.	1928.	1929.	1930.
Tons.	Tons.	Tons.	1929.	Tons.
1,226,100	1,307,200	1,399,000	1,447,200	1,388,600

The yields from the chief producing countries in 1930 were as given hereunder.

ZINC.—PRODUCTION, CHIEF COUNTRIES, 1930.

Country.	Production.	Country.	Production.
	Tons.		Tons.
United States	450,400	Mexico	36,700
Belgium	175,300	Norway	36,700
Poland (*a*)	171,600	Netherlands	22,900
Australia	**142,000**	Japan	19,700
Canada	108,500	Italy	18,300
Germany	95,800	Rhodesia	17,900
France	89,300	Spain	10,500
Great Britain	48,600		

(*a*) Including Upper Silesia.

The figures for Australia have been taken from returns supplied by the Australian Mines and Metals Association.

3. **Prices.**—Information regarding prices of zinc will be found in the table in § 4.5, *ante.*

§ 8. Iron.

1. **General.**—The fact that iron ore is widely distributed in Australia had long been known, and extensive deposits have been discovered from time to time at various places throughout the States, but the utilization of these deposits for the production of iron and steel is, at present, confined to New South Wales.

2. **Production.**—(i) *New South Wales.* The production from local ores only in 1929 amounted to 3,911 tons, valued at £17,600, but there was no production from this source recorded in 1930, as the smelters now obtain their ore from places outside the State.

The figures quoted do not, of course, represent the total production of pig iron in New South Wales, since a considerable quantity of ore raised in South Australia, and credited therefore to the mineral returns of that State, is treated in New South Wales. A quantity of iron oxide is purchased by the various gasworks for use in purifying gas, and is also to some extent employed as a pigment, and in paper manufacture, the output in New South Wales being drawn chiefly from the deposits in the Port Macquarie Division. During 1930 the iron oxide raised amounted to 3,800 tons, valued at £2,600.

(ii) *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 1930, the ore raised amounting to over 928,000 tons, valued at £1,068,000.

(iii) *Other States.* Reference to the iron ore deposits in the other States will be found in preceding issues of the Official Year Book (see No. 22, page 779).

3. **Iron and Steel Bounties.**—During the year 1930-31 the bounties paid under the Iron and Steel Products Bounty Act on articles manufactured from locally produced materials were as follow:—fencing wire, £39,913; galvanized sheets, £79,429; wire-netting, £22,696; traction engines, £1,974.

4. **World's Production of Iron and Steel.**—(i) *General.* The Australian production of iron and steel at present forms a very small proportion of the world's output. According to *The Mineral Industry*, the world's production of each commodity in the years specified for the principal countries was as follows:—

PIG IRON AND STEEL.—WORLD'S PRODUCTION.

Country.	Pig Iron.			Steel Ingots and Castings.		
	1928.	1929.	1930.	1928.	1929.	1930.
	Thousands of Tons.			Thousands of Tons.		
United States ..	38,156	42,614	31,752	51,544	56,433	40,699
Germany	11,804	13,401	9,694	14,517	16,246	11,539
France	10,097	10,439	10,100	9,387	9,666	9,402
Saar Territory ..	1,936	2,088	1,884	2,040	2,209	1,935
Belgium	3,825	3,970	3,403	3,870	4,039	3,370
Luxemburg ..	2,724	2,906	2,473	2,510	2,702	2,269
Austria	457	450	287	637	630	468
Italy	539	678	534	1,910	2,115	1,774
Spain	565	709	650	734	929	850
Czechoslovakia ..	1,569	1,643	1,572	1,992	2,145	1,984
Poland	684	704	478	1,437	1,377	1,237
Sweden	396	490	457	576	694	603
Russia	3,274	4,018	4,969	4,246	4,723	5,552
China	400	250	400	300	50	200
Japan	1,508	1,750	1,400	1,519	2,100	1,750
United Kingdom ..	6,611	7,580	6,197	8,520	9,655	7,298
India	1,051	1,348	703	440	580	619
Canada	1,039	1,080	814	1,239	1,380	1,012
Australia	**420**	**333**	**440**	**439**	**348**	**420**
Total—All Countries	86,760	96,263	78,942	109,789	118,208	93,442

The figures for Japan include Manchuria and Korea. Production of both iron and steel improved somewhat in 1930 in Australia, the decline in the previous year being due principally to shortage in fuel owing to industrial disturbances on the coal-fields.

(ii) *Australia.* The table below, which is also given on the authority of *The Mineral Industry*, shows the estimated production of pig iron and steel ingots and castings in Australia during each of the last ten years for which particulars are available.

PIG IRON AND STEEL.—AUSTRALIAN PRODUCTION.

Year.	Pig Iron.	Steel.	Year.	Pig Iron.	Steel.
	Thousands of Tons.			Thousands of Tons.	
1921 ..	352	209	1926 ..	450	360
1922 ..	84	220	1927 ..	410	426
1923 ..	330	200	1928 ..	420	439
1924 ..	416	306	1929 ..	333	348
1925 ..	439	351	1930 ..	440	420

The principal producers in Australia are the Broken Hill Proprietary and the Australian Iron and Steel Co., the former situated at Newcastle and the latter at Port Kembla in New South Wales.

§ 9. Other Metallic Minerals.

Detailed information in regard to the occurrence and production of other metallic minerals in each of the States will be found in Official Year Book No. 22, and preceding issues.

§ 10. Coal.

1. **Production in each State.**—An account of the discovery of coal in each State will be found in preceding issues of the Year Book. (See No. 3, pp. 515–6.) The quantity and value of the production in each State and in Australia during the years specified are given in the table hereunder :—

COAL.—PRODUCTION, AUSTRALIA.

Year.	N.S.W.	Victoria. (a)	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
			QUANTITY.				
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1913 ..	10,414,165	593,912	1,037,944	..	313,818	55,043	12,414,882
1921 ..	10,793,387	514,859	954,763	..	468,817	66,476	12,798,302
1926 ..	10,885,766	591,001	1,221,059	..	474,819	102,358	13,275,003
1927 ..	11,126,114	684,245	1,099,040	..	501,505	112,056	13,522,960
1928 ..	9,448,197	658,323	1,076,340	..	528,420	128,500	11,839,780
1929 ..	7,617,736	703,828	1,368,745	..	544,719	130,291	10,365,319
1930 ..	7,093,055	703,487	1,094,676	..	501,425	138,716	9,531,359
			VALUE.				
	£	£	£	£	£	£	£
1913 ..	3,770,375	274,371	403,767	..	153,614	25,367	4,627,494
1921 ..	9,078,388	603,323	831,483	..	407,117	63,446	10,983,757
1926 ..	9,436,520	657,798	1,098,927	..	394,400	90,401	11,678,046
1927 ..	9,782,002	762,530	987,465	..	407,967	99,802	12,039,766
1928 ..	8,263,729	731,015	971,690	..	420,145	106,558	10,493,137
1929 ..	5,952,720	813,370	1,199,599	..	426,706	105,877	8,498,272
1930 ..	5,193,032	807,699	952,856	..	394,758	110,253	7,458,598

(a) Exclusive of brown coal, shown in next table.

The figures for Victoria quoted above are exclusive of brown coal, the quantity and value of which for the years specified were as follow :—

BROWN COAL.—PRODUCTION, VICTORIA.

Year.	Quantity.	Value.	Year.	Quanttiy.	Value.
	Tons.	£		Tons.	£
1913	2,984	569	1928	1,591,858	202,393
1921	79,224	31,074	1929	1,741,176	178,052
1926	957,935	188,899	1930	1,831,507	173,713
1927	1,455,482	220,003			

2. **Production Per Employee.**—The production per employee for New South Wales and for Australia as a whole is shown in the appended table.

COAL.—PRODUCTION PER EMPLOYEE.

Year.	Coal Production per Employee.		Year.	Coal Production per Employee.	
	New South Wales.	Australia.		New South Wales.	Australia.
	Tons.	Tons.		Tons.	Tons.
1913	550	530	1927	450	480
1921	500	480	1928	440	490
1925	470	480	1929	520	580
1926	440	440	1930	430	500

The averages for Australia include employment and production in connexion with brown coal.

3. **Distribution and Production of Coal in each State.**—(i) *New South Wales.* Estimates of the quantity of merchantable coal available in the deposits in each State were given in preceding issues of the Official Year Book (see No. 20, pp. 752 *et seq.*).

The coal from the various districts differs considerably in quality—that from the Northern district being especially suitable for gas-making and household purposes, while the product of the Southern (Illawarra) and Western (Lithgow) is an excellent steaming coal. At the present time the Greta coal seams are being extensively worked between West Maitland and Cessnock, and this stretch of country, covering a distance of 15 miles, is now the most important coal-mining district in Australasia.

The table hereunder gives the yields in each of the three districts during the five years 1926 to 1930 :—

COAL.—PRODUCTION IN DISTRICTS, NEW SOUTH WALES.

District.	*1926.*	*1927.*	*1928.*	*1929.*	*1930.*
	Tons.	Tons.	Tons.	Tons.	Tons.
Northern	7,257,598	7,145,116	5,978,480	3,019,693	3,715,805
Southern	2,024,520	2,155,461	1,817,225	2,339,837	1,529,674
Western	1,603,648	1,825,537	1,652,492	2,258,206	1,847,576
Total ..	10,885,766	11,126,114	9,448,197	7,617,736	7,093,055

The depression in industry is reflected in the decreased production, and the output for 1930 was the lowest since 1909. Of the total quantity of coal won in New South Wales since the inception of operations to the end of the year 1930, viz., 357 million

tons, about 244 millions or 68 per cent. was obtained in the Northern District, 75 million tons or 21 per cent. came from the Southern District, and 38 million tons or 11 per cent. was contributed by the mines in the Western District.

(ii) *Victoria.* (*a*) *Black Coal.* The deposits of black coal in Victoria occur in the Jurassic system, the workable seams, of a thickness ranging from two feet three inches to six feet, being all in the Southern Gippsland district.

The output of black coal in Victoria during the last five years was as follows :—

BLACK COAL.—PRODUCTION, VICTORIA.

Year.	State Coal Mine.	Other Coal Mines.	Total Production.	Value.
	Tons.	Tons.	Tons.	
1926	531,869	59,132	591,001	657,798
1927	610,618	73,627	684,245	762,530
1928	600,931	57,392	658,323	731,015
1929	634,805	69,023	703,828	813,370
1930	637,261	66,226	703,487	807,699

Amongst the other coal mines the chief producers in 1930 were the Kilcunda Coal Mining Co.. at Kilcunda, with 22,742 tons; the Sunbeam Colliery at Korumburra, with 15,586 tons; the South Gippsland Coal Mining Co. at Kilcunda, with 10,335 tons; the Austral Coal Mine, at Korumburra South, with 6,770 tons; and the Howitt at Outtrim, with 6,171 tons.

(*b*) *Brown Coal.*—(1) *General.* Some account of the brown coal deposits and of he operations of the State Electricity Commission in connexion therewith will be found in preceding Official Year Books (see No. 22, page 785), but it is not proposed to repeat this information in the present issue. The brown coal produced in Victoria was raised chiefly at the State Open Cut at Yallourn, where the output in 1930 amounted to 1,808,578 tons, while 22,929 tons were raised at the old open cut at Morwell.

(2) *Production of Briquettes.* The briquetting plant started operations in November, 1924, and the output for the year 1930–31 was 225,470 tons, an increase of nearly 64,000 tons on the total for the preceding year. This increase was due to the coming into operation of extensions on which construction had been in progress for some years. The Yallourn briquettes are considered to be equal in quality to those produced in the best German factories.

(3) *Distillation Products.* A new industry is in contemplation for the distillation of oil, motor spirit, and other valuable substances from brown coal, experiments in this direction on a small scale having yielded very satisfactory results.

(iii) *Queensland.* The distribution of production during the year 1930 was as follows :—

COAL PRODUCTION.—QUEENSLAND, 1930.

District.	1930.	Districts.	1930.
	Tons.		Tons.
Ipswich	566,392	Clermont	49,712
Darling Downs	85,942	Bowen	223,032
Wide Bay and Maryborough	106,525	Mount Mulligan (Chillagoe)	11,965
Rockhampton (Central) ..	51,108		
		Total	1,094,676

The output in 1929, amounting to 1,369,000 tons, was the highest recorded, but with the resumption of operations after the close of the dispute in New South Wales the trade slackened off. Amongst the chief contributing factors were the effect of the competition of southern coal as a result of reductions in award rates, increase in the

use of internal combustion engines, and general trade depression. There were 44 collieries operating in the Ipswich district, 7 in the Darling Downs, 9 in the Maryborough area, 4 in Clermont district, 2 in Rockhampton district, 1 in Chillagoe district, and 2 in the Bowen district. State coal mines are in operation at Collinsville in the Bowen field, and at Styx in the Central area.

(iv) *South Australia.* So far no coal has been worked in South Australia (see Official Year Book No. 22, page 786).

(v) *Western Australia.* The production from the six collieries operating at Collie amounted in 1930 to 501,425 tons, a decrease of about 43,000 tons on the return for 1929. The deposits at Wilga again remained unworked during the year.

(vi) *Tasmania.* The production in 1930 amounted to 138,700 tons, about 8,400 tons more than the total for 1929. About 72,000 tons of the total output in 1930 were contributed by the Cornwall Colliery; 39,000 tons by the Mt. Nicholas; and 19,000 tons by the Jubilee at St. Marys.

(vii) *Australia's Coal Reserves.* A summary of the information available in regard to estimated actual and possible reserves of coal for Australia as a whole was given in tabular form on page 755 of Official Year Book No. 20.

4. **Production in Various Countries.**—The total known coal production of the world in 1930 amounted to about 1,390 million tons, towards which Australia contributed about 11½ million tons, or 0.7 per cent. The following tables show the production of the chief British and foreign countries during each of the last three years where the returns are available:—

COAL PRODUCTION.—BRITISH EMPIRE.

Year.	Great Britain.	British India.	Canada.	Australia.	New Zealand.	Union of S. Africa.
BLACK COAL.						
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1928	237,471,900	22,542,900	12,241,400	11,839,800	1,348,700	12,407,500
1929	257,906,800	23,418,700	12,079,000	10,365,300	1,367,200	12,812,800
1930	243,881,800	23,803,000	10,202,700	9,531,400	1,382,900	12,029,500
BROWN COAL, LIGNITE.						
1928	640	..	3,439,300	1,591,900	1,088,000	..
1929	320	..	3,542,900	1,741,200	1,168,700	..
1930	..	..	3,074,400	1,831,500	1,159,200	..

COAL PRODUCTION.—FOREIGN COUNTRIES.

Year.	Germany.	Austria.	Hungary.	Belgium.	France. (*b*)	Czecho-slovakia.	Yugoslavia.
BLACK COAL.							
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1928 ..	148,478,000	198,900	770,900	27,142,700	50,554,000	14,330,300	351,900
1929 ..	160,859,300	204,700	813,200	26,514,400	52,930,400	16,260,500	435,100
1930 ..	140,444,000	212,500	798,700	26,972,700	53,033,000	14,207,000	360,400

Year.	Poland.	Nether-lands.	Russia.	Japan.	China.	United States.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1928	39,974,900	10,525,300	32,351,400	33,325,400	25,000,000	514,368,800
1929	45,505,800	11,398,300	38,084,000	33,716,800	25,000,000	541,232,000
1930	36,907,300	12,018,200	45,722,000	30,880,700	(*c*)	473,941,700

COAL PRODUCTION.—FOREIGN COUNTRIES—*continued.*

BROWN COAL, LIGNITE.

Year.	Germany.	Austria.	Hungary.	Belgium.	France.	Czecho-slovakia.	Yugoslavia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1928 ..	162,972,900	3,211,000	6,405,800	..	1,057,700	20,128,400	4,620,300
1929 ..	171,700,700	3,469,100	6,932,700	..	1,178,300	22,204,500	5,363,500
1930 ..	143,609,300	3,014,600	6,078,900	..	1,124,700	18,890,500	4,826,700

Year.	Poland.	Nether-lands.	Russia.	Japan.	China.	United States.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1928	72,400	193,600	2,836,800	120,000	..	(*a*)
1929	73,100	154,100	(*a*)	137,000	..	(*a*)
1930	(*a*)	141,900	(*a*)	126,600	..	(*a*)

(*a*) Included with black coal. (*b*) Exclusive of Saar District, which produced 12,899,700 tons in 1928; 13,364,900 tons in 1929; and 13,026,700 tons in 1930. (*c*) Not available.

5. **Exports.**—The exports of coal from Australia are chiefly confined to New South Wales.

The quantity of coal of Australian production (exclusive of bunker coal) exported to other countries in 1930–31 was 388,000 tons, valued at £412,000, of which 358,000 tons were exported from New South Wales, and 30,000 tons from Queensland. The quantity and value of the oversea exports of Australian coal for the years specified are shown in the appended table.

COAL.—OVERSEA EXPORTS, AUSTRALIA.

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Tons.	£		Tons.	£
1913 (*a*) ..	2,098,505	1,121,505	1928–29 ..	346,658	428,754
1921–22 ..	1,028,767	1,099,899	1929–30 ..	294,503	346,916
1926–27 ..	807,148	965,899	1930–31 ..	387,851	411,612
1927–28 ..	555,617	690,995	1931–32 ..	344,015	341,800

(*a*) Calendar Year.

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

COAL.—BUNKER, AUSTRALIA.

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Tons.	£		Tons.	£
1913 (*a*) ..	1,647,870	1,018,375	1928–29 ..	739,713	1,009,163
1921–22 ..	1,498,035	2,178,101	1929–30 ..	507,349	742,383
1926–27 ..	1,028,810	1,421,927	1930–31 ...	509,303	607,537
1927–28 ..	950,708	1,300,832	1931–32 ..	282,604	426,651

(*a*) Calendar Year

The oversea and interstate coal exports from New South Wales in 1930 amounted to 1,903,000 tons, valued at £2,113,000.

Of the exports of coal from New South Wales in 1930, about 60 per cent., or 1,136,000 tons, were shipped from the port of Newcastle. Victoria took 414,000 tons, South Australia 283,000 tons, other Australian States 97,000 tons, New Zealand 134,000 tons, while 58,000 tons went to the United Kingdom, 19,000 tons to India, 29,000 tons to Java, 14,000 to Philippine Islands, about 11,000 tons to Straits Settlements and Canada respectively, and 8,000 tons to Nauru. The figures quoted include bunker coal.

During the year 1930 the exports from Port Kembla, Bulli and Bellambi to other States amounted to 196,000 tons, while 43,000 tons were sent to New Zealand, and about 9,000 tons to New Caledonia. The coal shipped from Sydney went principally to New Zealand, New Guinea, and Pacific Islands. For the twelve months ended 30th June, 1930, about 54,000 tons of coal were dispatched to interstate ports from the jetty at Catherine Hill Bay, near Newcastle.

The distribution of the total output from New South Wales collieries during the last five years was as follows, the particulars given of quantity exported including coal shipped as bunker coal :—

COAL.—DISTRIBUTION OF OUTPUT, NEW SOUTH WALES.

Year.	Exports to Australian Ports.	Exports to Foreign Ports.	Local Consumption.	Total.
	Tons.	Tons.	Tons.	Tons.
1926	2,740,570	1,797,257	6,347,939	10,885,766
1927	2,651,492	1,687,716	6,786,906	11,126,114
1928	2,209,981	1,135,572	6,102,644	9,448,197
1929	1,237,272	694,913	5,685,551	7,617,736
1930	1,279,288	624,106	5,189,661	7,093,055

For the period of five years shown in the table above, 22 per cent. of the total output was exported to other States, 13 per cent. was sent overseas, and 65 per cent. was consumed locally.

The figures quoted in the table above are given on the authority of the New South Wales Mines Department.

6. **Consumption in Australia.**—An estimate of the consumption of coal in Australia may be arrived at by adding the imports to the home production, and deducting the exports (including bunker coal taken by oversea vessels). The following table shows the consumption computed in the manner spec ified for the last five years :—

COAL.—CONSUMPTION AUSTRALIA.

Year.	Quantity of Coal Consumed.		
	Home Produce.	Produce of Other Countries.	Total.
	Tons.	Tons.	Tons.
1926	12,338,644	26,080	12,364,724
1927	13,378,301	23,563	13,401,864
1928	12,273,727	17,870	12,291,597
1929	11,140,576	493,461	11,634,037
1930	10,446,019	392,675	10,838,694

The bunker coal taken away in 1930 was estimated at 623,500 tons. Figures for brown coal produced in Victoria are included in the total for home produce. The whole of the oversea imports in 1930, with the exception of 1,150 tons from New Zealand, came from the United Kingdom.

7. **Prices.**—(i) *New South Wales.* The price of New South Wales coal depends on the district from which it is obtained, the northern district coal generally realizing a much higher rate than the southern or western product. The average price on the mine in each district and for the State as a whole during the last five years was as follows :—

COAL.—PRICES, NEW SOUTH WALES.

Year.	Northern District.	Southern District.	Western District.	Average for State.
	Per ton. s. d.	Per ton. s. d.	Per ton. s. d.	Per ton. s. d.
1926	18 10	16 5	11 9	17 4
1927	19 2	16 8	12 6	17 7
1928	19 0	16 6	13 1	17 6
1929	16 8	16 11	12 11	15 8
1930	15 4	15 8	12 4	14 8

(ii) *Victoria.* In Victoria the average price of coal in 1926 was 22s. 3d.; in 1927, 22s. 3d.; in 1928, 22s. 2d.; in 1929, 23s. 1d.; and in 1930, 23s. per ton. These averages are exclusive of brown coal, the production of which in 1930 was valued at 1s. 11d. per ton.

(iii) *Queensland.* Prices in the principal coal-producing districts during the last five years were as follow :—

COAL.—PRICES, QUEENSLAND.

District.	Value at Pit's Mouth.				
	1926.	1927.	1928.	1929.	1930.
	Per ton. s. d.	Per ton. s. d.	Per ton. s. d.	Per ton. s. d.	Per ton. s. d.
Ipswich	17 2	17 0	16 11	16 10	16 7
Darling Downs	19 2	19 6	19 5	19 5	19 5
Wide Bay and Maryborough	24 2	23 9	23 8	23 2	23 0
Bundaberg	24 7	23 8	..	..	..
Mount Morgan	13 11	12 8	12 10	..	..
Rockhampton	17 10	22 10	23 3	22 11	20 5
Clermont	13 6	13 11	14 1	12 2	14 3
Bowen	16 2	16 3	15 2	15 4	15 5
Mackay	..	29 8	24 4	..	..
Mount Mulligan (Chillagoe)	30 4	32 0	31 11	31 9	29 9
Average for State ..	18 0	18 0	18 0	17 6	17 5

In 1901 the average value at the pit's mouth was 7s. per ton, and the average for the ten years 1901 to 1910 was about 6s. 8d.

(iv) *Western Australia.* The average price of the Collie (Western Australia) coal during the last five years was as follows :—In 1926, 16s. 7d.; in 1927, 16s. 3d.; in 1928, 15s. 11d.; in 1929, 15s. 8d.; and in 1930, 15s. 9d. per ton.

(v) *Tasmania.* The average price per ton of coal at the pit's mouth in Tasmania for the five years 1926 to 1930 was :—In 1926, 17s. 8d.; in 1927, 17s. 10d.; in 1928, 16s. 7d.; in 1929, 16s. 3d.; and in 1930, 15s. 11d.

8. **Prices in the United Kingdom.**—During the five years 1926 to 1930 the average selling value of coal at the pit's mouth in the United Kingdom was :—In 1926, 19s. 6d.; in 1927, 14s. 7d.; in 1928, 12s. 10d.; in 1929, 13s. 5d.; and in 1930, 13s. 7d. per ton.

9. **Employment and Accidents in Coal Mining.**—(i) *Australia.* The number of persons employed in coal mining in each of the States during the year 1930 is shown below. The table also gives the number of persons killed and injured, with the proportion per 1,000 employed, while further columns are added showing the quantity of coal raised for each person killed and injured, this being a factor which must be reckoned with in any consideration of the degree of risk attending mining operations. A further table gives the rate of fatalities during the last five years.

COAL MINING.—EMPLOYMENT AND ACCIDENTS, 1930.

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 ..	16,624	16	73	0.96	4.39	443,300	97,200
Victoria	2,267	2	13	0.88	5.73	1,267,500	195,000
Queensland ..	2,768	3	113	1.08	40.82	364,900	9,700
Western Australia ..	896	..	114	..	127.23	..	4,500
Tasmania	441	..	5	..	11.34	..	27,700
Total ..	22,996	21	318	0.91	13.83	453,900	30,000

Owing to lack of uniformity in the definition of "injury," the figures relating to persons injured possess little comparative value.

The next table shows the average number of miners employed, number of fatalities, and rate per 1,000 during the quinquennium 1926–30 :—

COAL MINING.—FATALITIES, 1926 TO 1930.

State.	Average No. of Coal Miners.	Average No. of Fatal Accidents.	Rate per 1,000 Employed.
New South Wales	20,388	18	0.8
Victoria	2,436	2	0.82
Queensland	2,815	4	1.42
Western Australia	797	1	1.25
Tasmania	363	..	..
Total	26,799	25	0.93

(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 quinquennium 1926–30 was 1.08, the rates varying between 1.11 in 1929, and 1.04 in 1928, while, as shown in the table preceding, the rate for Australia for the same period was 0.93. In the United States during the seven years 1923–29 the death rate per 1,000 employees averaged 4.8 for bituminous coal miners, and 3.8 for anthracite miners. Rates for other coal-producing countries for the same period were—Canada, 2.5; South Africa, 3.3; Germany, 2.2; Spain, 1.7; Belgium, 1.1; France, 1.0. In comparing these rates, allowance must be made for the circumstance that the methods of calculation are not identical in all countries.

§ 11. Coke.

Notwithstanding the large deposits of excellent coal in Australia, there was, prior to the war, a fairly considerable amount of coke imported from abroad. During recent years, however, a high standard of excellence has been attained in the local product, and the necessity for import has to a large extent disappeared. For the year 1930–31 the coke imported amounted to 4,267 tons, of which 3,705 tons were obtained from the United Kingdom and 562 tons from Germany, the bulk of the product being taken by South Australia for use in the ore-treating works at Port Pirie. The table hereunder gives the production in New South Wales during the last five years :—

COKE.—PRODUCTION, NEW SOUTH WALES.

Items.		1926.	1927.	1928.	1929.	1930.
Quantity ..	tons	597,663	709,342	520,201	464,360	367,772
Value, total ..	£	940,416	1,131,335	852,739	757,580	589,343
Value, per ton ..	..	31s. 6d.	31s. 10d.	32s. 9d.	32s. 8d.	32s. 1d.

The figures quoted refer to metallurgical coke, the product of coke ovens, and are exclusive of coke produced in the ordinary way at gas works. As regards both tonnage and value the production in 1927 was the highest recorded.

A small quantity of coke is made in Queensland, the quantity returned in 1930 being 3,444 tons, valued at £6,160. The following table shows the amount manufactured locally during the last five years :—

COKE.—PRODUCTION, QUEENSLAND.

Year.		1926.	1927.	1928.	1929.	1930.
Quantity ..	tons	6,191	4,196	4,058	4,079	3,444

Negotiations have recently been completed between the Mount Isa silver-lead mines and the Mines Department for the construction of coke ovens with an annual capacity of 30,000 tons, the largest proportion of the product to be taken by Mount Isa. Hitherto the coke used by the Company has been obtained from New South Wales.

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.

§ 12. Oil Shale and Mineral Oil.

Reference to the deposits of oil shale as well as to the efforts put forward in connexion with the search for mineral oil in Australia will be found in Official Year Book No. 22, pages 791 to 793. In 1930 the production of oil shale in New South Wales amounted to 346 tons, valued at £125. During the year 1931, however, renewed attention was given to the extensive deposits in the Wolgan Valley. (See also Appendix.) Boring operations were in progress in 1930 at Belford Dome, at Farley, at Bargo, and at Half Way Creek on the Clarence River, and preliminary investigations were continued on other sites in the search for petroleum.

About 55,000 gallons of crude oil were produced in 1930 from shale treated in Tasmania, while the total quantity of oil distilled from shale up to the end of 1930 was set down at 152,000 gallons.

Great hopes were at one time entertained in regard to the petroliferous area in Queensland, but at time of writing it appears that all that can legitimately be said is that while gas and light to medium gravity oils have been found at Roma, and gas and oily wax at Longreach, structural conditions for accumulations on a commercial scale have not yet been located in the drilled areas. Attention, however, is being given to the scientific testing of structures in other areas.

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.

Boring was continued in 1930 on the area held by the Freney Kimberley Oil Company in the West Kimberley Gold-field, and the indications encountered were regarded as promising.

The Commonwealth Government encourages the search for oil by placing at the disposal of companies and individuals the advice and experience of its technical staff appointed for this purpose. In co-operation with the Air Board useful aerial

reconnaissances have already been made in Queensland by the Commonwealth Geological Adviser, the photographs and mosaics produced proving of great value in conjunction with the ground geological surveys. A further aerial reconnaissance is to be undertaken to cover most of the possible oil producing regions in Australia.

Attention is at present being devoted to the problem of economically obtaining fuel oil and other products from black and brown coals, to a review of the wasteful practice of burning lump coal to generate power, and to the more effective utilization of the known deposits of oil shale, particularly in New South Wales and Tasmania.

§ 13. Other Non-metallic Minerals.

A more or less detailed statement regarding the occurrence and production of other non-metallic minerals is given in preceding Official Year Books (see No. 22, pages 793 to 796). The tables of quantity and value in § 1 of this Chapter will, however, show the production for each State during the year 1930.

§ 14. 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 1930 in New South Wales was estimated at 667 carats, valued at £714, while the total production to the end of 1930 is given at 203,245 carats, valued at £145,678. The yield in 1930 was obtained wholly at Copeton in the Tingha division. There was no production from the other States in 1930.

2. **Sapphires.**—The production of sapphires in New South Wales during 1929 was returned as 65 ozs., valued at £450, obtained wholly at Sapphire in the Inverell division, but no output was recorded in 1930. Production during recent years was restricted owing to the unfavourable market.

In Queensland, production in 1930 was restricted by the poor demand for ordinary blue sapphires and small stones, although there was a fair market for good quality blue sapphires and industrial machine stones. The yield was valued at £4,948.

3. **Precious Opals.**—The estimated value of the opal won in New South Wales during the year 1930 was £5,500, obtained on the Lightning Ridge and Grawin fields, while a little opal of poor quality was obtained at Glenogy near Angledool. Some very fine stones are at times obtained, one weighing 5 ozs. and valued at £300 being recovered 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. No finds of importance were made in 1930. 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 the year 1890 is estimated at £1,597,000, but it is a well known fact that fine pieces of the gem have been found and sold privately without notification to the Mines Department.

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

The opaliferous district in Queensland stretches over a considerable area of the western interior of the State, from Kynuna and Opalton as far down as Cunnamulla. The yield in 1930 was estimated at £800, and up to the end of that year at about £186,000. These figures are, however, merely approximations, as large quantities of opal, of which no record is obtained, are disposed of privately.

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 £1,142 in 1930. The field is extremely prolific, a large quantity of precious white opal having been raised therefrom, while only a small portion of the known opal-bearing area has been thoroughly tested.

According to a report a few years ago by the Australian Trade Commissioner in the East there is a good sale for the gems in China. It is stated that there is no difficulty in cutting and polishing, as the Chinese method of dealing with jade, dating back many centuries, can also be applied to opal.

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, olivines, moonstones, rubies, topazes, tourmalines, turquoises, and zircons. In Western Australia, 609 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.

§ 15. Numbers 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 the year 1930 the number so employed was as follows :—

NUMBER OF PERSONS ENGAGED IN MINING, 1930.

State.	Number of Persons engaged in Mining for—						Total.
	Gold.	Silver, Lead, and Zinc.	Copper.	Tin.	Coal.	Other.	
New South Wales ..	4,229	4,489	33	870	16,624	1,267	27,512
Victoria	942	..	..	..	2,267	46	3,255
Queensland	903	474	376	579	2,768	434	5,534
South Australia	114	2	58	..	..	391	565
Western Australia ..	4,452	..	3	30	896	61	5,442
Tasmania	43	231	1,333	443	441	789	3,280
Northern Territory ..	4	35	6	60	..	68	173
Australia	10,687	5,231	1,809	1,982	22,996	3,056	45,761

Included in the figures for "other" in South Australia were 149 engaged in mining iron ore, 48 gypsum miners, 107 salt gatherers, and 60 opal miners. The Tasmanian figures include 372 zinc miners and 258 osmiridium miners, and those for the Northern Territory, 31 wolfram miners, 26 mica miners, and 11 tantalite miners.

The following table shows the number of persons engaged in mining in Australia during each of the years 1901, 1911, 1921, 1928, 1929, and 1930, together with the proportion of the total population so engaged :—

NUMBER ENGAGED IN MINING PER 100,000 OF POPULATION.

State.	1901.		1911.		1921.	
	Miners employed.	No. per 100,000 of Population.	Miners employed.	No. per 100,000 of Population.	Miners employed.	No. per 100,000 of Population.
New South Wales ..	36,615	2,685	37,017	2,177	29,701	1,408
Victoria	28,670	2,381	15,986	1,193	5,211	339
Queensland	13,352	2,664	13,201	2,122	5,847	765
South Australia	7,007	1,931	6,000	1,435	2,020	406
Western Australia ..	20,895	11,087	16,596	5,644	7,084	2,126
Tasmania	6,923	4,017	5,247	2,713	3,170	1,486
Northern Territory ..	..	..	715	..	131	3,351
Australia	113,462	2,992	94,762	2,074	53,164	974

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

State.	1928.		1929.		1930.	
	Miners employed.	No. per 100,000 of Population.	Miners employed.	No. per 100,000 of Population.	Miners employed.	No. per 100,000 of Population.
New South Wales ..	29,859	1,227	22,893	926	27,512	1,106
Victoria	3,045	174	3,231	183	3,255	183
Queensland	5,283	580	5,069	548	5,534	588
South Australia	593	103	619	107	565	97
Western Australia ..	4,853	1,215	5,159	1,254	5,442	1,300
Tasmania	3,778	1,783	3,603	1,685	3,280	1,515
Northern Territory ..	160	3,803	153	3,662	173	3,720
Australia	47,571	757	40,727	639	45,761	710

The general falling-off since 1901 is largely due to the causes mentioned in § 1. 6 *ante*. As compared with the preceding year, the proportion to population for Australia as a whole shows a slight increase in 1930, attributable mainly to the larger numbers engaged in the search for gold, particularly in New South Wales and Queensland.

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

3. **Accidents in Mining, 1930.**—The following table gives particulars of the number of men killed and injured in mining accidents during the year 1930 :—

MINING ACCIDENTS, 1930.

Mining for—	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Australia.
KILLED.								
Coal ..	16	2	3	..	..	..	..	21
Copper ..	..	..	..	..	..	3	..	3
Gold ..	1	..	..	..	14	..	..	15
Silver, lead, and zinc ..	6	..	4	..	..	..	..	10
Tin	..	..	1	..	..	..	..	1
Other minerals	..	..	..	1	..	..	..	1
Total ..	23	2	8	1	14	3	..	51
INJURED.								
Coal ..	73	13	113	..	114	5	..	318
Copper ..	..	..	5	2	..	17	..	24
Gold ..	..	1	3	..	218	..	..	222
Silver, lead, and zinc ..	42	..	29	..	..	6	..	77
Tin	1	..	4	..	..	..	..	5
Other minerals	1	..	..	4	..	4	..	9
Total ..	117	14	154	6	332	32	..	655

The number killed in mining accidents in 1930 was considerably less than that for 1921 when 132 deaths were recorded, the figures for the earlier year being swollen by the 75 fatalities in the colliery disaster at Mount Mulligan in Queensland.

§ 16. Government Aid to Mining.

1. **Commonwealth.**—Assistance to mining is given by the Commonwealth under the provisions of the *Precious Metals Prospecting Act* 1926, and the Petroleum Prospecting Acts of 1926, 1927, and of 1928.

The first-mentioned Act provides for a sum of £40,000, of which £15,000 is to be expended in the Northern Territory, and the balance is to be allocated to the States in such proportions as the Minister determines. At the 30th June, 1931, the expenditure amounted to £15,623. No further assistance is being granted to the States from this fund.

Prior to the passage of the *Petroleum Prospecting Act* 1926 the Commonwealth Government had expended a sum of £368,790 in connexion with the search for oil principally in Papua and New Guinea.

Under the *Petroleum Prospecting Act* 1926–27 a trust account of £160,000 was established to assist in the search for oil. The Minister was authorized to make advances out of the money standing to the credit of this account to persons or companies engaged in the search for oil, and to assist persons, companies, or State Governments to make geological surveys. The Petroleum Prospecting Act of 1928 provides a further sum of £50,000. Up to the 30th June, 1931, the total of advances under these Acts amounted to £184,363. The Government has decided to discontinue the granting of subsidies for deep drilling and to confine its attention to assistance in the carrying out of geological surveys and scout boring. Owing to financial stringency, however, the payment of all subsidies for oil prospecting has been temporarily suspended.

A small geological staff, including palaeontologists, has been appointed. The Geological Adviser was instructed to proceed to the United States and the Argentine in 1930 to study oil-field conditions on the spot, and submitted a comprehensive report, which was published as a Parliamentary Paper in 1931.

Experimental aerial photographic surveys have been carried out in conjunction with the Royal Australian Air Force to determine to what extent this technique is applicable under Australian conditions.

The *Gold Bounty Act* 1930 provides that for a period of ten years from 1st January, 1931, a bounty of £1 per ounce is payable under prescribed conditions by the Commonwealth on each ounce of fine gold produced in excess of the average production for the three years 1928–30. Under the *Financial Emergency Act* 1931 the bounty was reduced to 10s. per ounce, subject to increases of 1s. according to each decrease of 3s. per cent. in the average rate of exchange. The rate of exchange on which the reduction to 10s. per ounce was based was taken as 30 per cent.

To provide for geophysical prospecting in Australia, a sum of £32,000 was made available by the Commonwealth Government in conjunction with the Empire Marketing Board. This survey was completed and the covering report in connexion therewith has been issued.

2. **New South Wales.**—The chief aid given in this State is in the direction of assistance to prospectors. Up to the end of 1930 the total sum expended in this manner amounted to £662,461, of which £11,992 was advanced in 1930. Advances are also made for the purpose of assisting in the erection of crushing batteries or reduction plants, but the expenditure in 1930 under this heading was only £50. A sum of £35,000 was appropriated during the year to assist unemployed who had experience in prospecting. To the end of December the expenditure therefrom amounted to £29,418, the men assisted numbering 3,685.

3. **Victoria.**—During the year 1930 expenditure in connexion with mining amounted to £3,681, the whole of which was expended in advances to miners. Of the sum advanced, £357 was provided by the Commonwealth.

4. **Queensland.**—State assistance to the mining industry in 1930–31 amounted to £13,414, of which £12,545 was advanced to prospectors, the balance consisting of grants under the Mining Machinery Advances Act and for the provision of transport facilities, etc., to mineral fields.

State coal mines were in operation at Bowen, Styx (No. 3), and at Mount Mulligan The last mentioned mine, however, was worked on tribute during the year. There is also a State Assay Office at Cloncurry at which assays and sampling are carried out for the public, and State batteries were maintained at Kidston, Charters Towers, and Bamford. The battery at Charters Towers was leased privately, also the State works for the treatment of tin at Irvinebank.

5. **South Australia.**—Aid is given to the mining industry under the terms of the Mining Act of 1893, and previous measures. Up to the end of 1930 the total amount of subsidy paid was £68,612, of which £13,678 has been repaid, and £4,549 written off, leaving a debit of over £50,000. Portion of this amount is represented by machinery that has fallen into the hands of the Government. Repayments must be provided from profits, but in only two instances have the profits enabled a full return to be made. The State maintains batteries and cyanide works at Mount Torrens, Peterborough, Tarcoola, and Glenloth, and assays for public purposes are made at the School of Mines. Advances to prospectors in 1930 amounted to £519.

6. **Western Australia.**—Under the Mining Development Act of 1902 assistance was granted in 1930 in accordance with the subjoined statement:—Advances in aid of mining work and equipment of mines with machinery, £4,632; aid to prospectors, £7,562; subsidies on stone crushed for the public, £96; total, £12,290. In addition to the foregoing the vote was also charged with rebates on water supplied to the amount of £28,569, while other assistance granted from the vote on various matters during the year amounted to £18,279.

In 1930 there were 22 State batteries in operation. The amount expended thereon up to the end of 1930 was £91,981 from revenue and £322,918 from loan, giving a total of £414,899. The working expenditure up to the end of 1930 exceeded the revenue by £184,570. The total value of gold and tin recovered to the end of 1930 at the State plants was £6,377,805. Free assays and determinations of mineral values for prospectors are made at the Kalgoorlie School of Mines.

7. **Tasmania.**—Aid to Mining in 1930 amounted to £6,642, of which £3,506 was expended under Part II. of the *Aid to Mining Act* 1921, on drilling and boring, and £1,855 represented assistance and sustenance to prospectors, the balance being expended on miscellaneous assistance under Parts III. and IV. of the *Aid to Mining Act* 1927. The amount received from ore sales was £218, the bulk of which was paid to tributers. Receipts amounted to £1,175, of which a grant from the Commonwealth Treasury in aid of prospecting for precious metals accounted for £1,123.

Tributers' assays are made at a nominal charge, and all tribute surveys are carried out free of charge by the Assay and Survey Office at Zeehan.

8. **Northern Territory.**—During the year 1930–31 assistance was granted to approved prospectors at the rate of £1 per week per man for rations and an additional amount not exceeding £2 to each prospector for purchase of tools, etc. At 30th June, 1931, 63 miners were receiving assistance, and the sums advanced amounted to £1,067.

The Government maintains a battery at Marranboy, and the Government Assayer makes free assays for prospectors, and arranges for the sampling, storage, and sale of ores.

§ 17. Metallic Contents of Ores, etc., Produced and Exported.

1. **Local Production.**—According to returns compiled from various sources by the Australian Mines and Metals Association, the quantities of the principal metals (exclusive of gold) extracted in Australia during the five years 1926 to 1930 were as follow :—

REFINED METALS PRODUCED IN AUSTRALIA.

Metal.		1926.	1927.	1928.	1929.	1930.
Silver	ozs.	8,946,218	9,390,070	8,053,251	9,229,514	9,002,705
Lead, pig ..	tons	150,460	164,480	155,076	176,820	168,291
Zinc	tons	47,356	49,155	50,223	51,872	54,901
Copper	tons	11,148	9,564	11,858	10,874	14,900
Tin	tons	3,188	2,989	3,133	2,260	1,544

The local production of pig iron during the quinquennium 1923–27 ranged between 330,000 tons in 1923, and 517,000 tons in 1927. Complete information for later years is not available from the returns published by the Association, but according to the metal extraction returns published in the Statistical Register of New South Wales, the production of pig iron in that State amounted in 1927–28 to 428,000 tons, in 1928–29 to 461,000 tons, and in 1929–30 to 308,369 tons.

2. **Metallic Contents of Ores, Concentrates, etc., Exported.**—The estimated metallic contents of ores, concentrates, etc., exported during the five years 1926 to 1930 are given in the following table :—

METALLIC CONTENTS OF ORES, CONCENTRATES, ETC., EXPORTED.

Metal.		Contained in—	1926.	1927.	1928.	1929.	1930.
Silver	ozs.	Lead-Silver-Gold Bullion	..	..	..	44,677	44,777
		Lead Concentrates and Ores	190,647	615,484	117,846	31,121	179,185
		Zinc Concentrates and Ores	1,206,313	1,640,891	1,453,396	604,014	558,577
		Copper and Gold Ores ..	..	..	..	..	..
		Total	1,396,960	2,256,375	1,571,242	679,812	782,539
Lead	tons	Lead-Silver-Gold Bullion	2,483	488	..	689	252
		Lead Concentrates and Ores	7,174	12,115	2,221	878	12,986
		Zinc Concentrates and Ores	13,943	14,198	12,726	5,704	9,482
		Total	23,600	26,801	14,947	7,271	22,720
Zinc	tons	Lead Concentrates and Ores	529	579	77	21	396
		Zinc Concentrates and Ores	94,043	111,755	117,858	69,958	86,761
		Total	94,572	112,334	117,935	69,979	87,157
Copper	tons	Ores, Matte, etc. ..	1,112	1,597	1,989	2,737	3,277
Tin	tons	Concentrates and Ores ..	1	12	..	4	..

§ 18. Oversea Exports of Ores, Metals, etc.

The following table shows the quantity and value of the principal oversea exports of ores, concentrates, and metals, the produce of Australia, together with the countries to which the respective products were forwarded, for the year 1930–31 :—

OVERSEA EXPORTS OF AUSTRALIAN ORES, METALS, ETC., 1930–31.

Article.	Total Exports.	Exports to— United Kingdom.	United States.	Belgium.	Germany.	Japan.	New Zealand.	Other Countries.
QUANTITY.								
Ores—	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Copper	8,272	2,135	5,083	..	1,054	..	..	..
Silver and Silver-lead	46,542	702	223	15,994	29,623	..	..	..
Iron	2,615,080	..	1,334,220	278,100	..	1,002,760	..	..
Wolfram	907	38	752	..	..	..	..	..
Concentrates—								
Silver and Silver-lead	461,339	207	..	295,754	84,323	..	..	(a) 81,055
Zinc	3,085,929	2,527,297	..	558,632	..	..	..	..
Cadmium—Blocks, Ingots, etc.	2,449	1,204	..	..	..	70	..	(b) 1,175
Copper—								
Matte	47,862	..	..	47,862	..	..	..	..
Ingot	193,165	138,900	46,011	..	8,109	..	145	..
Tin—Ingot	11,990	4,200	5,400	..	71	..	2,298	21
Lead (f)—								
Matte	233	3	..	..	230	..	..	..
Pig	3,092,962	2,154,450	..	367,346	462,460	56,308	22,192	(c) 30,206
Zinc—Bars, Blocks, etc.								
(d) Platinum, Osmium, etc.	ozs. 913	ozs. 840	ozs. 6	ozs. ..	ozs. 67	ozs. ..	ozs. ..	ozs. ..
Gold—								
Bar, Dust, etc.	253,800	253,224	136	..	128	..	312	..
Silver—								
Bar, Ingot, etc.	8,441,617	544,626	7,109	..	20,063	..	623	e 7,869,196
VALUE—£.								
Ores—								
Copper	8,162	1,206	6,861	..	95	..	..	..
Silver and Silver-lead	17,142	350	135	7,280	9,377	..	..	..
Iron	82,838	..	45,621	9,725	..	27,492	..	..
Wolfram	4,224	72	3,787	..	365	..	..	..
Concentrates—								
Silver and Silver-lead	214,579	70	..	129,842	39,236	..	..	45,431
Zinc	520,720	466,942	..	53,778	..	..	..	..
Cadmium—Blocks, Ingots, etc.	30,262	16,283	..	..	..	910	..	13,069
Copper—								
Matte	23,267	..	..	23,267	..	..	..	..
Ingot	462,013	340,313	98,531	..	22,729	..	440	..
Tin—Ingot	81,660	25,322	38,990	..	467	..	16,741	140
Lead—								
Matte	164	..	..	..	150	..	14	..
Pig	2,418,710	1,707,917	..	263,152	349,591	49,975	21,973	26,102
Zinc—Bars, Blocks, etc.								
Platinum, Osmium, etc.	13,414	12,340	94	..	980	..	..	..
Gold—								
Bar, Dust, etc.	1,073,134	1,070,266	578	..	540	..	1,750	..
Silver—								
Bar, Ingot, etc.	555,947	32,738	533	..	1,337	..	60	521,279

(a) France. (b) Sweden, 1,000 cwt. (c) Hong Kong, 23,299 cwt.; South Africa, 6,192 cwt. (d) Mainly osmiridium and platinum produced in Tasmania and New South Wales. (e) India, 7,394,032 ozs., China, 473 599 ozs. (f) In addition, 54,088 cwt. of lead slime residues were exported, mainly to France.