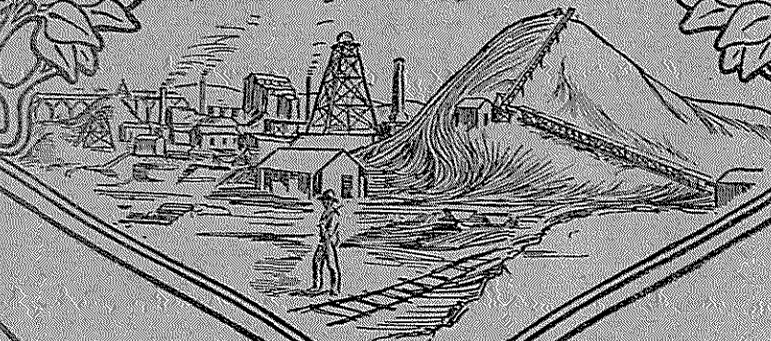
REPORT
OF THE
DEPARTMENT OF MINES
FOR THE YEAR
WESTERN · 1922. · AUSTRALIA



PRESENTED TO BOTH HOUSES OF PARLIAMENT BY HIS EXCELLENCY'S COMMAND

1923.

—

WESTERN AUSTRALIA.

REPORT

OF THE

DEPARTMENT OF MINES

FOR THE YEAR

1922.

Presented to both Houses of Parliament by His Excellency's Command.

[THIRD SESSION OF THE ELEVENTH PARLIAMENT.]

PERTH:
BY AUTHORITY: FRED. WM. SIMPSON, GOVERNMENT PRINTER.

1923.

Q18/23.

ANNUAL REPORT OF THE DEPARTMENT OF MINES, WESTERN AUSTRALIA, 1922.

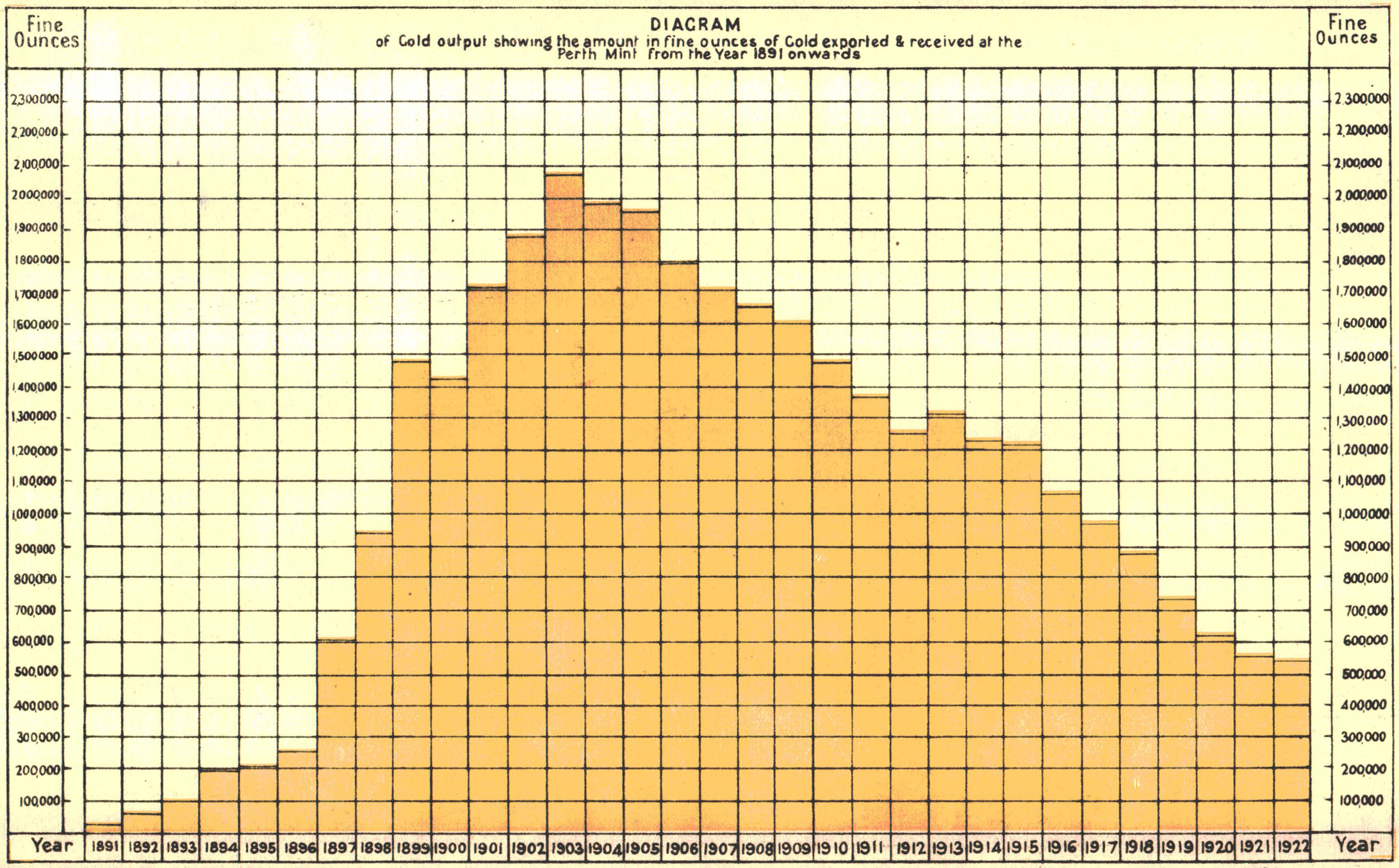
TABLE OF CONTENTS.

DIVISION I.

TABLE OF CONTENTS—*continued.*

DIAGRAM

of Gold output showing the amount in fine ounces of Gold exported & received at the Perth Mint from the Year 1891 onwards



1922

STATE OF WESTERN AUSTRALIA.

Report of the Department of Mines for the State of Western Australia, for the Year 1922.

To the Hon. the Minister for Mines.

Sir,—

I have the honour to submit the Annual Report of the Department for the year 1922, with summaries of reports from the Wardens and other officers, together with various comparative tables furnishing statistics relating to the mining industry of the State.

Reports from the officers controlling the various sub-departments are also submitted.

I have, etc.,
M. J. CALANCHINI,
Under Secretary for Mines.

Department of Mines,
Perth, 31st March, 1923.

DIVISION I.

Summary by the Under Secretary for Mines.

PART I.—GENERAL REMARKS.

The value of the mineral output of the State for the year 1922 was £2,801,626, being £78,543 less than that for the previous year.

Copper ore exported showed a decrease of 688 tons, and copper ingot, matte, etc., an increase of 454 tons.

Coal showed a decrease, also Silver, but Tin an increase.

The value of the Gold yield was £2,286,325, being 81.60 per cent. of the total output.

The value of the Coal output was £381,555; Copper £20,379; Silver, £18,164, and Tin, £10,930.

The dividends paid by mining companies amounted to £191,251, and in the preceding year £306,958: a decrease of £115,707.

The total dividends paid to the end of 1922 amounted to £28,306,956. To the same date the total mineral production was £156,673,839, and the total gold production £147,992,477.

GOLD.

The gold yield again shows a decline, being 15,485 fine ounces less than in 1921, which was 64,111 fine ounces less than in 1920.

The average value per ton of ore treated in the State as a whole has risen from 51.56 shillings in 1921 to 53.17 shillings in 1922, but in the East Coolgardie Goldfield, which produced over 70 per cent. of the State's reported yield, it fell from 50.37 shillings to 48.63 shillings.

Comparing the tonnage of ore treated in 1921 and 1922, there was a decrease of 7,388 tons in the latter year, during which 850,122 tons were treated.

There were increases in all the fields excepting West Pilbara, East Murchison, Murchison, Mount Margaret, Broad Arrow, North-East Coolgardie, and Yilgarn, where there were decreases of 34; 14,186; 9,229; 12,414; 13,282; 548, and 19,473 tons respectively.

The largest increases were in Peak Hill, Yalgoo, and East Coolgardie fields, viz., 9,024, 17,838, and 20,605 tons respectively.

It is not possible, for many reasons, to give an accurate figure relative to working costs that would not be misleading. It is, however, safe to assume that they are in excess of previous years. For the last few years the costs per ton of 2,000 lbs. as furnished by the Chamber of Mines have been:—In 1915, 19s. 9d.; in 1916, 22s. 3d.; in 1917, 23s. 7d.; in 1918, 24s. 8d.; in 1919, 26s. 2d. to 35s. 10d.; in 1920, 29s. 6d. to 37s. 3d.; in 1921, 38s. 7d.

There were increases in the outputs of Pilbara, West Pilbara, Peak Hill, Yalgoo, Mount Margaret, North Coolgardie, North-East Coolgardie, Coolgardie, and Dundas; the others recorded small decreases.

The acreage held under mining lease for all minerals is 56,334 acres, being an increase of 2,598 acres when compared with 1921.

The area leased for gold mining is lesser by 984 acres, but for minerals greater by 3,582 acres.

The area held under prospecting area is 44,043 acres, including 16,480 acres for coal and oil. This is a decrease of 26,758 acres on the area held in 1921, and is more than accounted for by the smaller area held for coal and oil. In the case of the former many prospecting areas have been converted into leases, and in regard to oil the whole of the Crown lands of the State are held under license and the acreage so occupied is not included in these figures.

The number of men engaged in all classes of mining was 6,776; a decrease of 308 on the figures for 1921.

The number of men engaged in mining for minerals other than gold decreased by 76, principally in coal, tin, and copper mines. In lead-mining there was a substantial increase.

In gold mining there was a decrease of 232 men, mostly in the outlying centres. In Kalgoorlie the figures were practically unaltered.

The average value of gold produced per man employed on gold mines has risen from £378.30 in 1921 to £408.16 in 1922.

The average tonnage raised per man was 153.53 tons, and in the previous year 146.76 tons.

In the East Murchison field there was a falling off, attributable to the closing down of the Yuanmi Company's mine in the Black Range district.

At Lawlers there was a good production and prospecting was active. At Wiluna practically all the gold produced was won by tributers, and the introduction of capital to open up the large lodes is badly needed.

The Murchison field had a small decrease, due to a lessened output from the Meekatharra district, caused by the closing down of the Fenian mine, otherwise the position was well maintained.

In the Cue district there was also a decrease, the Light of Asia Mine having ceased working. The Big Bell mine continued production.

In the Day Dawn and Mount Magnet districts there were small increases, but the position was practically unchanged.

The Mount Margaret field had an increase. In the Mount Margaret district there was a falling off, and excepting for a reported discovery of promising auriferous country at a locality situated about 78 miles N.E. of Laverton, no improvement was noticeable.

In the Mount Morgans district there was an increase, the principal producers being the "Westralia Mt. Morgans," at Morgans, and the "Bindah," at Linden.

In the Mount Malcolm district there was also an increase, the result of the treatment of large quantities of sands by the Sons of Gwalia mine, on which a new crushing plant is about to be erected.

The Coolgardie field had an increase.

In the Gibraltar district the Lloyd George mine has been producing regularly and opening up most promisingly.

Developments in other shows in the district are also encouraging.

In the Kununalling district the Carbine mine and a couple of others were regular contributors, and the output showed an improvement.

In the Widgiemooltha district matters were very quiet.

The St. Ives district recorded good progress and several mines are developing well. On the Ives Reward the erection of a treatment plant is contemplated.

The North Coolgardie field recorded an increase.

In the Menzies district there was an improvement, consequent on the resumption of operations at the Menzies Consolidated mine at Yunndaga.

At Comet Vale mining was quiet, but an improvement is anticipated. At Mount Ida the position improved and this, it is hoped, will be maintained.

In the Ularring district, the Riverina South mine closed down and no new finds were reported.

There was no improvement in either the Niagara or Yerilla district.

The North-East Coolgardie field had a small increase, but there was practically no change to record. A good many assisted prospectors were at work in the various centres. Boring for deep alluvial was temporarily suspended, but is expected to be resumed shortly.

The Broad Arrow field recorded a decrease, but notwithstanding this, the prospects at the close of the year were much brighter. A great many prospectors were at work and two or three finds of much promise were made.

In the East Coolgardie Goldfield the number of men engaged in mining was 2,787, and in 1921, 2,776; an increase of 11. This goldfield gave employment to over 48 per cent. of the number of men engaged

COMPARATIVE STATISTICAL DIAGRAMS

RELATING TO

OUTPUT AND VALUE OF GOLD AND OTHER MINERALS, LANDS LEASED FOR GOLD MINING

IN WESTERN AUSTRALIA

AND THE GOLD PRODUCTION OF AUSTRALASIA FOR THE YEAR 1922.

FIG. 1.

Output of Gold from various Goldfields as reported to Mines Dept.

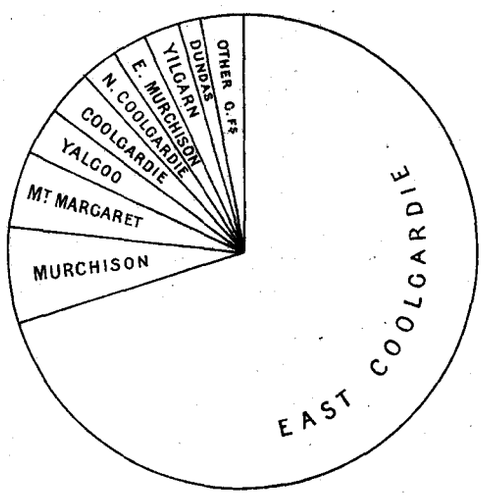


FIG. 2.

Gold produced from various Goldfields as given by the Export and Mint Returns.

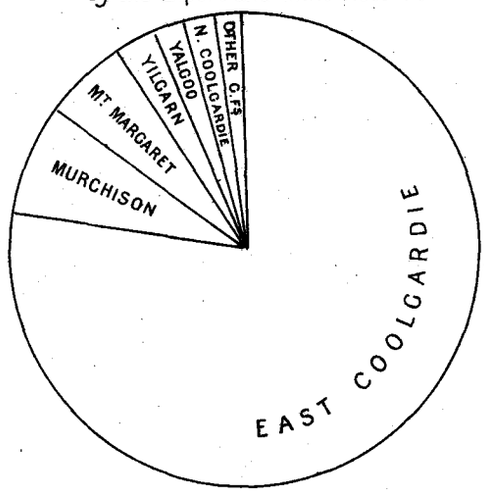


FIG. 3.

Value of Gold and other Minerals.

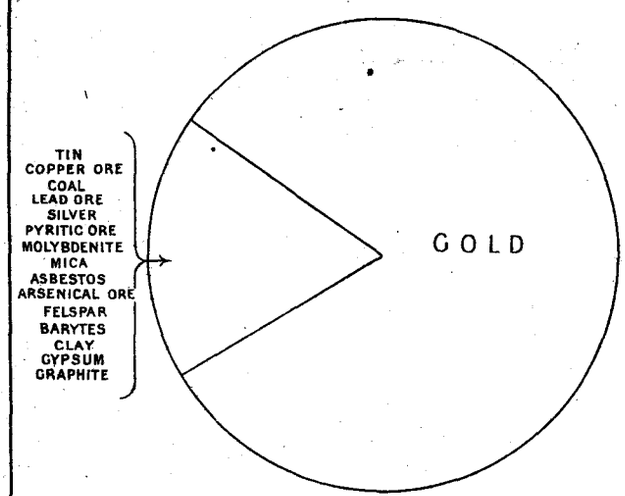


FIG. 4.

Value of Minerals other than Gold.

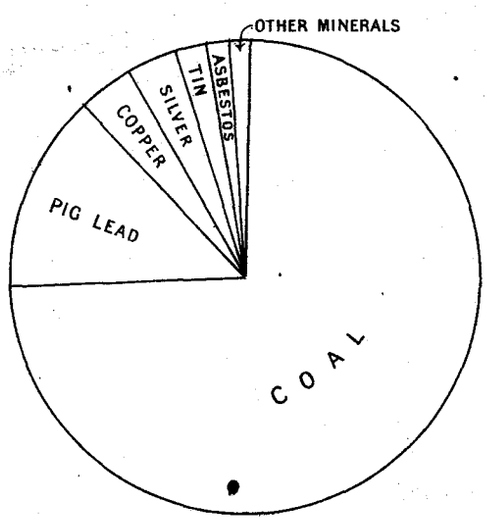


FIG. 5.

Areas of Land leased for Goldmining on various Goldfields.

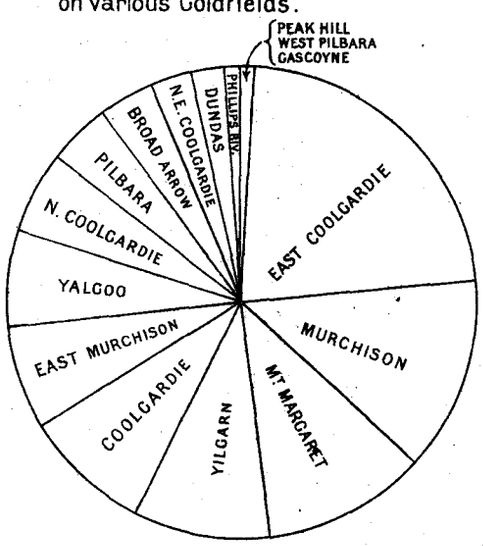
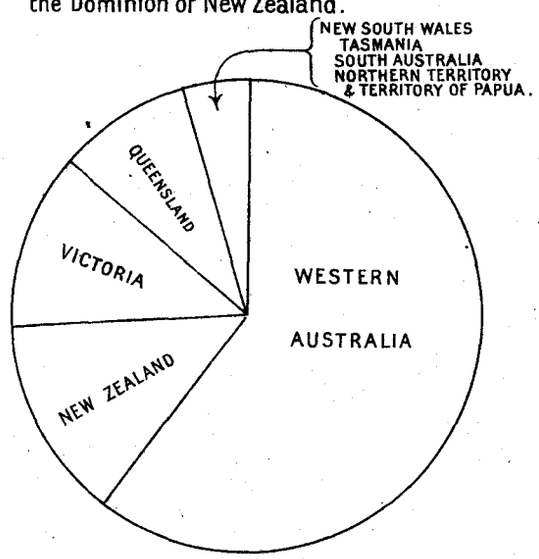


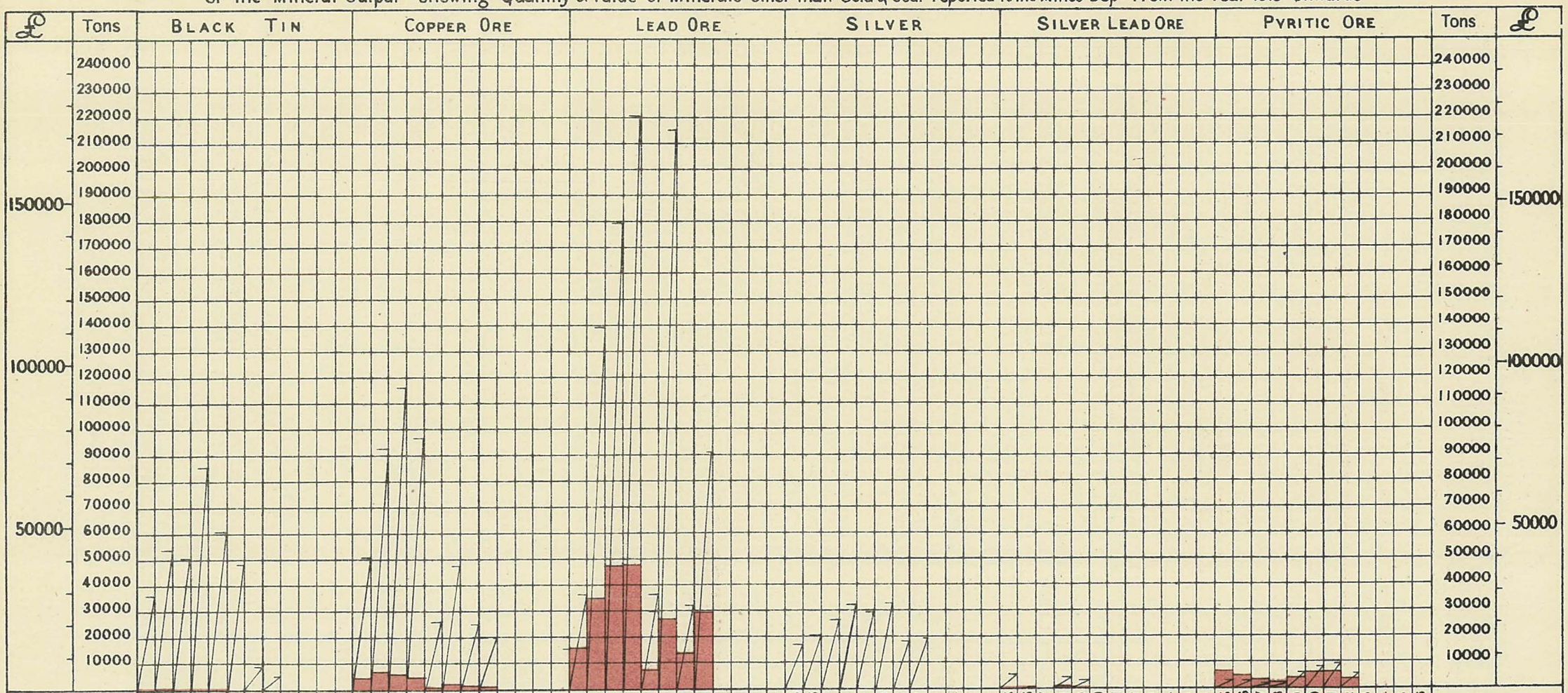
FIG. 6.

Output of Gold in the States of Australia and the Dominion of New Zealand.



DIAGRAM

of the Mineral Output - showing Quantity & Value of Minerals other than Gold & Coal reported to the Mines Dept from the Year 1915 onwards



NOTE. The Pink denotes Quantities produced and Diagonal lines Values thereof

Other Minerals not shown above,
Viz { Asbestos 182 Tons, Value £7,600,
Gypsum 63 " " £16,
Manganese 18 " " £142,
also reported in the Year 1922. }

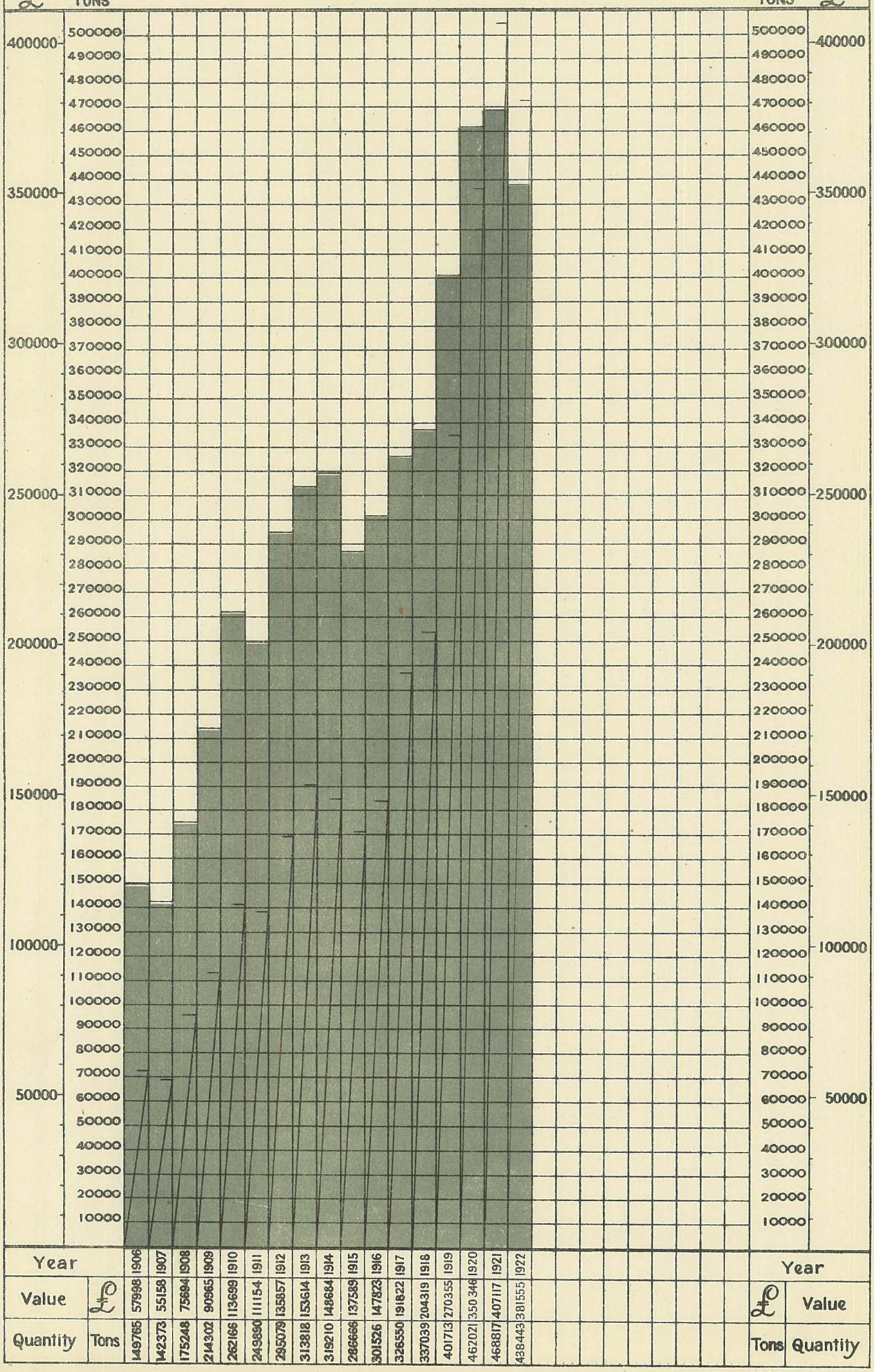
Previous to 1915 the Quantity & Value of various Minerals reported amounted to .....

Black Tin	14299 Tons	£1,142,902	
Copper	201879 "	1,254,298	
Ironstone	57820 "	36695	
Lead	61820 "	134,711	
Asbestos	43 "	1,754	
Silver Lead	2064 Tons	£ 22427	
Tantalite	89 "	13,486	
Limestone	93706 "	18,290	
Silver	1,537,935 Ozs.	180,846	
	Total	£2,805,409	

1922.

DIAGRAM

Of the Coal Output – Shewing Quantity & Value as reported to Mines Dept from 1906 onwards.



Year		1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
Value	£	57998	55158	75694	90965	113699	111154	135857	153614	148684	137589	147823	191822	204319	270355	350346	407117	381555
Quantity	Tons	149765	142373	175248	214302	262166	249890	295079	313818	319210	286666	301526	326550	337039	401713	462021	468817	438443

Year
£ Value
Tons Quantity

1922.

in gold mining, and the reported production during the year was 376,389 fine ounces, over 70 per cent. of the total reported yield.

The tonnage treated was 656,421 tons, being 20,605 tons more than in 1921. The yield showed a decrease of 2,041 fine ounces. The average grade of the ore per ton fell from 50.37 in 1921 to 48.63 shillings in 1922.

In the Yilgarn field there was a decrease.

At Westonia there was a big decline, and the outlook is not encouraging.

At Southern Cross the Government is assisting in an effort to revive the Fraser's Central mine, and success in this would mean much to the district. At Nevoria the Great Victoria mine has changed owners and a vigorous development policy is foreshadowed.

At Forrestonia there has been little change.

In the other centres a good many prospectors have been working.

In the Dundas goldfield there was an increase.

The principal producer was the O.K. mine. There was practically no change in the field.

The Phillips River field had a small decrease.

Matters remained very quiet, and many of the mines were under exemption. Until the introduction of a good deal of capital for systematic development eventuates there is not much likelihood of any marked improvement.

In the Northern goldfields, Kimberley, West Kimberley, West Pilbara, Ashburton, and Gascoyne, no developments of note were reported. In the Pilbara field there was an increase. The principal production was at Bamboo Creek, and generally the position was well maintained and the outlook is good.

TIN.

The quantity of tin exported was 110 tons, valued at £10,930; an increase in tonnage of 43 tons, and in value of £4,445.

The Greenbushes tinfield produced 15.86 tons, valued at £1,393; a decrease in tonnage of 37.01 tons, and in value of £4,385; the Pilbara field 25.35 tons, valued at £2,446; an increase in tonnage of 10.85 tons, and in value of £986. None was produced in any other field.

TANTALITE.

None of this mineral was exported or reported.

COPPER.

The value of the copper exported was £20,379, being £4,222 less than in 1921. The ore raised in the West Pilbara field was 164 tons, valued at £2,481; a decrease on the preceding year in tonnage of 891 tons, and in value of £16,474. The Whim Well mine was practically the only producer, but consequent on the low price ruling for the metal little work was done.

In the Northampton field 998.66 tons, valued at £13,435 were produced, but none in the preceding year.

In the Phillips River field the production was 31.84 tons, valued at £217; a decrease in tonnage of 63.50 tons, and in value of £990.

There was little change in this field.

The number of men engaged in copper mining was 10 and in 1921, 36.

COAL.

The output of coal was 438,443 tons, being 30,374 tons less than in 1921.

There were five (5) collieries producing, all situated at Collie.

At Wilga a company is boring with a view to locating the best site for opening up a colliery. No further work has been done at Irwin River.

The number of men employed, 744, is less by 126 than in 1921, and the output per man was in 1921, 539 tons, and in 1922, 589 tons.

OIL.

At the close of the year the whole of the Crown lands of the State were held under license to search for oil. Boring operations were carried out during the year on "Freney's" Area in the Kimberley division, and the results so far have been very encouraging. Boring is expected to be in full swing shortly on the area known as "Okes Durack."

Most of the other licensees have had their areas reported on geologically and are endeavouring to arrange for the necessary capital for boring as early as possible.

ASBESTOS.

In the Pilbara field 181.68 tons, valued at £7,600 were produced; and in the preceding year 235.35 tons, valued at £13,581; a decrease in tonnage of 53.67 tons, and in value of £5,981. Large deposits exist at Nullagine and elsewhere on this field, and a good deal of development work was accomplished during the year. There are also known deposits in the West Pilbara field which would justify proper investigation.

The Department renders valuable help by monetary advances against the ore pending realisation.

OTHER MINERALS.

The quantity of silver obtained as a by-product and exported was 118,696 ounces, valued at £18,164, and in the preceding year 116,151 ounces, valued at £18,658; an increase of 2,545 ounces and decrease in value of £494.

Pig lead to the amount of 2,796 tons, valued at £69,528 was exported, and in the preceding year 2,156 tons, valued at £48,863.

Pyritic ore amounting to 3,441 tons, valued at £4,203 was reported, and in the preceding year 6,117 tons, valued at £7,871. Also 63 tons of gypsum, valued at £16, and in the preceding year 664 tons, valued at £622. 1,075 tons of arsenical ore, valued at £1,784; 60 tons of felspar, valued at £485, and 51 tons of molybdenite, valued at £505, were exported, also small quantities of barytes, clay, mica, and graphite.

MINING GENERALLY.

The States of Queensland and Victoria had increases of 40,208 and 2,360 fine ounces respectively, but New South Wales, Tasmania, and South Australia recorded decreases. New Zealand, as in the preceding year, reports an increase.

The Western Australian production was 60.52 per cent. of the total for Australasia, and in the previous year 63.01 per cent. There is little doubt that the continual falling off is almost entirely attributable to the high costs obtaining for practically every mining requisite. This year has demonstrated that good mines can still be discovered, and the improved output in several of the fields is very heartening. It is only to be expected that from time to time mines will come to the end of their resources and close down, but so long as new discoveries continue to be made the position is satisfactory.

In mining for base metals the depressed market which obtained for most of them was also a retarding factor. The assistance to prospectors by way of sustenance, loans of equipment, and transport facilities has been continued, and the Board controlling recommended the granting of assistance to 180 parties, comprising 316 men, at a cost of £6,733, and all were approved. A party of 10 men (known as the State Prospecting Party) was also equipped and sent out to prospect a defined area where little or no prospecting had hitherto been done. The cost was £1,800, and on its return the party reported the existence of very promising auriferous country in a locality situated about 78 miles N.E. of Laverton. A good deal of attention has been attracted to the discovery, and the expenditure seems to have been fully justified.

The area held under prospecting areas for gold and minerals other than coal and oil, viz.:—27,563 acres, being 6,224 acres more than in 1921, is most satisfactory, being indicative of the fact that prospecting is on the increase and being actively pursued.

As hitherto, a considerable amount of financial assistance was rendered to mine owners under the provisions of the Mining Development Act, full particulars relating to which will be found in the report of the State Mining Engineer, Division II. of this Report. As usual, every application that had a reasonable chance of success was approved.

Part II.—MINERALS RAISED.

Table 1.

Quantity and Value of all the Minerals produced during 1921 and 1922.

Description of Minerals.	1921.		1922.		Increase or Decrease for Year compared with 1921.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value
		£		£		£
1. Arsenical ore (exported), statute tons	7	16	1,075	1,784	+ 1,068	+ 1,768
2. Asbestos (reported), statute tons	235	13,581	181	7,600	— 54	— 5,981
3. Barytes (exported), cwts.	2	18	378	73	+ 376	+ 55
4. Clay (exported), statute tons	3½	40	1	16	— 2½	— 24
5. Coal (raised), statute tons	468,817	407,117	438,443	381,555	— 30,374	— 25,562
6. Copper — Ore (exported), statute tons	1,040	16,153	352	5,519	— 688	— 10,634
6. Copper — Ingot, Matte, etc. (exported), statute tons	206	8,448	660	14,860	+ 454	+ 6,412
7. Corundum (exported), cwts.	½	2	...	...	— ½	— 2
8. Felspar (exported), statute tons	1	47	60	485	+ 59	+ 438
9. Gold (exported and minted), fine ounces	553,731	2,352,098	538,246	2,286,325	— 15,485	— 65,773
10. Graphite (exported), statute tons	...	...	...	3	...	+ 3
11. Gypsum (reported), statute tons	664	622	63	16	— 601	— 606
12. Jarosite (exported), cwts.	12	5	...	...	— 12	— 5
13. Lead, Pig (exported), statute tons	2,156	48,863	2,796	69,528	+ 640	+ 20,665
14. Manganese (exported), statute tons	16	145	...	...	— 16	— 145
15. Mica (exported), statute tons	...	...	2	60	+ 2	+ 60
16. Molybdenite (exported), statute tons	...	...	51	505	+ 51	+ 505
17. Pyritic Ore (reported), statute tons	6,117	7,871	3,441	4,203	— 2,676	— 3,668
18. Silver (exported), fine ounces	116,151	18,658	118,696	18,164	+ 2,545	— 494
19. Tin (exported), statute tons	67	6,485	110	10,930	+ 43	+ 4,445
Total Values	...	2,880,169	...	2,801,626	...	— 78,543

Table 2.

Value and Percentage of Mineral Exports in relation to the Value of Total Exports from Western Australia.

Year.	Total Exports.	Mineral Exports (exclusive of Coal).	Percentage.
	£	£	
1901	8,515,623	6,920,118	81·27
1902	9,051,358	7,530,319	83·20
1903	10,324,732	8,727,060	84·53
1904	10,271,489	8,625,676	83·98
1905	9,871,019	7,731,954	78·33
1906	9,832,679	7,570,305	76·99
1907	9,904,860	7,544,992	76·17
1908	9,518,020	7,151,317	75·13
1909	8,860,494	5,906,673	66·66
1910	8,299,781	4,795,654	57·78
1911	10,606,863	7,171,638	67·61
1912	8,941,008	5,462,499	61·09
1913	9,128,607	4,608,188	50·48
1914	8,406,182	3,970,182	47·23
1915	6,291,934	2,969,502	47·19
1916	10,878,153	6,842,621	62·92
1917	9,323,229	5,022,694	53·87
1918	6,931,834	2,102,923	30·34
1919	14,279,240	6,236,585	43·67
1920	15,149,323	3,096,849	20·44
1921	10,331,405	1,373,810	13·30
1922	11,848,025	2,875,402	24·27
Total since 1900	216,565,858	124,236,961	57·37

TABLE 3.

Showing for every Goldfield the amount of Gold reported to the Mines Department as required by the Regulations; also the percentage for the several Goldfields of the total reported and the average value of the Gold per ton of ore treated.

Goldfield.	Reported Yield.					
	1921.	1922.	Percentage for each Goldfield.		Average Value of Gold per ton of Ore treated.	
			1921	1922.	1921.	1922.
	fine ozs.	fine ozs.			shillings.	shillings.
1. Kimberley	49	5	·01	...	...	...
2. West Kimberley	...	...	...	...	...	...
3. Pilbara	2,627	3,100	·50	·58	113·22	116·01
4. West Pilbara	67	94	·01	·01	55·82	263·60
5. Ashburton	22	14	·01	·01	...	...
6. Gascoyne	7	1	·01	...	...	...
7. Peak Hill	1,079	2,160	·20	·40	23·03	13·81
8. East Murchison	18,762	13,051	3·57	2·43	53·94	71·75
9. Murchison	41,257	36,304	7·85	6·77	53·50	54·08
10. Yalgoo	3,579	18,132	·68	3·38	128·89	75·68
11. Mt. Margaret	20,803	27,649	3·96	5·16	53·80	117·12
12. North Coolgardie	10,640	13,624	2·02	2·54	52·68	46·80
13. Broad Arrow	8,875	3,629	1·69	·68	42·20	89·31
14. North-East Coolgardie	4,148	4,545	·79	·85	60·23	78·15
15. East Coolgardie	378,430	376,389	72·00	70·15	50·37	48·63
16. Coolgardie	9,548	16,171	1·82	3·01	69·21	86·40
17. Yilgarn	19,241	12,794	3·66	2·37	48·85	78·36
18. Dundas	5,456	8,044	1·04	1·50	131·09	118·90
19. Phillips River	866	689	·16	·13	68·60	51·96
State generally	100	144	·02	·03	...	...
Totals and averages ...	525,556	536,539	100·00	100·00	51·56	53·17

The total gold yield of the State is as shown in Table 1, being the amount of gold exported, and also that lodged at the Royal Mint, which total includes alluvial gold and gold not reported to the Department.

When comparisons are made as to the yield from any particular field with the preceding year, the figures reported to the Department are used.

TABLE 4.

Number of Gold-producing Mines in the several Goldfields and Districts during 1921 and 1922.

Goldfield.	District.	1921.		1922.		Increase or Decrease.
		District.	Goldfield.	District.	Goldfield.	
Kimberley	... ...	...	...	...	...	...
West Kimberley	... ...	...	...	...	...	...
Pilbara	Marble Bar	11	11	13	14	+ 3
	Nullagine	...		1		
West Pilbara	... ...	...	1	...	...	— 1
Ashburton	... ...	...	...	...	...	...
Gascoyne	... ...	...	...	...	...	...
Peak Hill	... ...	...	8	...	7	— 1
East Murchison	Lawlers	8	25	5	22	— 3
	Wiluna	9		9		
	Black Range ...	8		8		
	Cue	13		9		
Murchison	Meekatharra ...	10	33	17	43	+ 10
	Day Dawn	2		6		
	Mt. Magnet	8		11		
Yalgoo	... ...	...	10	...	16	+ 6
Mt. Margaret	Mt. Morgans	10	31	11	29	— 2
	Mt. Malcolm	7		8		
	Mt. Margaret	14		10		
	Menzies	8		8		
North Coolgardie	Ularring	3	20	2	19	— 1
	Niagara	3		3		
	Yerilla	6		6		
Broad Arrow	... ...	...	13	...	10	— 3
North-East Coolgardie ...	Kanowna	12	16	11	12	— 4
	Kurnalpi	4		1		
East Coolgardie	East Coolgardie ...	58	60	55	59	— 1
	Bulong	2		4		
Coolgardie	Coolgardie	31	36	29	38	+ 2
	Kunanalling	5		9		
Yilgarn	... ...	...	29	...	38	+ 9
Dundas	... ...	...	17	...	12	— 5
Phillips River	... ...	...	6	...	5	— 1
State generally	... ...	...	...	...	1	+ 1
	Totals	...	316	...	325	+ 9

TABLE 5.

Gold Yield from Registered Gold Mining Companies and Gold Mining Leases for the Years 1919, 1920, 1921, *and* 1922.

Goldfield	Registered Companies producing over 12,000 ozs.								Registered Companies producing under 12,000 ozs.								Leases, exclusive of Sundry Claims and Treatment.							
	1919.		1920.		1921.		1922.		1919.		1920.		1921.		1922.		1919.		1920.		1921.		1922.	
	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.	No.	Fine ozs.
Kimberley	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
West Kimberley ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pilbara	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	2,449	15	3,478	11	1,902	14	2,229
West Pilbara	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	57	1	90	1	25	...	...
Ashburton	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gascoyne	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Peak Hill	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	683	3	523	8	735	7	1,740
East Murchison	1	13,468	...	...	...	...	...	...	3	7,346	6	14,229	6	13,462	5	6,483	20	5,154	21	3,289	19	3,264	17	2,599
Murchison	1	14,500	...	...	...	...	...	...	3	1,734	2	6,669	2	5,193	2	1,917	46	28,928	41	35,200	31	32,059	41	29,423
Yalgoo	...	...	...	...	...	...	...	...	1	715	1	889	1	1,214	2	3,980	14	3,737	9	1,846	9	914	14	12,040
Mt. Margaret	2	77,265	2	67,436	...	...	1	14,890	6	6,918	5	4,544	5	13,443	4	1,999	23	2,357	19	4,236	26	5,705	24	7,863
N. Coolgardie	...	...	...	...	...	...	...	...	7	14,612	3	9,499	3	7,502	2	10,318	16	5,789	11	900	17	1,690	17	1,215
Broad Arrow	...	...	...	...	...	...	...	...	2	8,622	1	5,174	2	6,048	1	92	7	2,000	4	1,664	11	1,373	9	2,451
N.E. Coolgardie	...	...	...	...	...	...	...	...	1	60	...	...	2	44	2	1,655	7	4,874	10	1,578	14	3,584	10	1,917
E. Coolgardie	10	361,151	9	363,254	8	337,097	8	343,664	8	3,808	14	15,422	14	19,889	12	13,148	24	24,685	37	14,732	38	15,465	39	11,334
Coolgardie	...	...	...	...	...	...	...	...	2	679	1	43	...	...	1	2,897	30	3,507	29	4,889	36	6,665	37	10,068
Yilgarn	2	27,297	1	13,826	...	...	...	...	3	16,017	8	17,234	11	15,518	9	8,239	29	9,321	23	5,623	18	2,531	29	2,830
Dundas	...	...	...	...	...	...	...	...	1	5,466	1	2,647	2	1,425	1	4,150	16	6,034	13	3,196	15	1,786	11	2,119
Phillips River	...	...	...	...	...	...	...	...	1	37	1	50	1	30	1	12	12	1,579	10	1,300	5	770	4	587
State generally	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	7,929	1	46	1	7	...	...	...	...
Total	16	493,681	12	444,516	8	337,097	9	358,554	38	66,014	43	76,400	49	83,768	43	62,819	271	101,200	247	82,551	259	78,468	273	88,415

TABLE 6.

Increase or Decrease in Output of certain producing Gold Mines in 1922 *as compared with* 1921.

Goldfield.	District.	Name of Mine.	Gold Production.		Increase or Decrease for Year compared with 1921.
			1921.	1922.	
			Fine ozs.	Fine ozs.	Fine ozs.
Pilbara	Marble Bar ...	1. Haig	445·75	198·18	— 247·57
		2. Kitchener	572·45	403·00	— 169·45
	Nullagine ...	3. Doherty's Reward	...	183·41	+ 183·41
Peak Hill ...	... ...	4. Evening Star	118·54	258·59	+ 140·05
		5. No. 1 North Leases	161·61	266·98	+ 105·37
		6. Wowser	...	971·44	+ 971·44
East Murchison	Lawlers ...	7. Queen: Daisy Queen G.M. Co., N.L. ...	500·87	988·20	+ 487·33
		8. Waroonga G.M. Co., Ltd.	859·72	1,156·97	+ 297·25
		9. Yellow Aster leases	197·39	430·07	+ 232·68
	Wiluna ...	10. Moonlight leases	572·37	736·14	+ 163·77
		11. Western Machinery Co., Ltd.	2,763·92	969·91	— 1,794·01
		12. Wiluna Gold Mines, Ltd.	47·76	2,636·44	+ 2,588·68
	Black Range	13. United	1,207·51	177·60	— 1,029·91
		14. Yuanmi G.Ms., Ltd.	9,222·88	731·06	— 8,491·82
Murchison ...	Cue	15. Big Bell	193·51	1,023·66	+ 830·15
		16. Mararoa G.M. Co., N.L.	4,927·84	1,669·77	— 3,258·07
		17. Turn of the Tide	73·67	178·90	+ 105·23
	Meekatharra ...	18. Fenian leases	13,026·23	6,088·98	— 6,937·25
		19. Ingliston Consols Extended leases	13,968·71	12,997·06	— 971·65
		20. Ingliston leases	833·98	4,006·06	+ 3,172·08
		21. Marmont	529·25	388·64	— 140·61
		22. Waterloo	594·16	613·28	+ 19·12
	Day Dawn ...	23. Great Fingall Consolidated, Ltd.	264·78	247·53	— 17·25
	Mt. Magnet ...	24. Moyagee	1,140·18	654·23	— 485·95
Yalgoo	... ...	25. Brown's Reward	...	861·19	+ 861·19
		26. Carnation	395·70	575·02	+ 179·32
		27. Gnow's Nest	...	9,766·34	+ 9,766·34
		28. Lake View: Payne's Find Development Co., N.L.	1,214·33	1,259·94	+ 45·61
		29. Royal Standard: Bullrush Gold Estates, N.L.	...	2,719·65	+ 2,719·65
Mt. Margaret ...	Mt. Morgans ...	30. Bindah	2,237·91	4,486·48	+ 2,248·57
		31. Murrin Queen	523·10	4·50	— 518·60
		32. Torquay leases	681·90	69·56	— 612·34
		33. Westralia Mt. Morgans Mines, N.L.	3,259·02	1,873·24	— 1,385·78
	Mt. Malcolm ...	34. Sons of Gwalia, Ltd.	7,078·05	14,889·98	+ 7,811·93
	Mt. Margaret	35. Lancefield, G.Ms., Ltd.	2,981·77	23·01	— 2,958·76
		36. Nil Desperandum	277·49	782·50	+ 505·01
North Coolgardie	Menzies ...	37. Menzies Consolidated G.Ms., Ltd.	5,993·80	9,281·45	+ 3,287·65
	Ularring ...	38. Riverina South G.M. Co., N.L.	1,353·20	1,036·96	— 316·24
Broad Arrow ...	... ...	39. Lady Evelyn	266·33	695·35	+ 469·02
		40. Slippery Gimblet: Associated Northern Blocks (W.A.), Ltd.	753·58	...	— 753·58
		41. Victorious: Associated Northern Blocks (W.A.), Ltd.	5,294·46	91·53	— 5,202·93
		42. Oversight	223·42	403·28	+ 179·86
North-East Coolgardie	Kanowna ...	43. Golden Valley	1,467·49	1,103·93	— 363·56
		44. Kanowna: Red Hill G.M. Co., N.L. ...	722·89	1,510·76	+ 787·87
East Coolgardie	East Coolgardie	45. Associated G.Ms. of W.A., Ltd.	23,862·24	23,095·62	— 766·62
		46. Associated Northern Blocks (W.A.), Ltd. ...	6,092·70	4,616·16	— 1,476·54
		47. Central	...	2,360·33	+ 2,360·33
		48. Central and West Boulder G.Ms., Ltd. ...	417·02	301·95	— 115·07
		49. Croesus South	810·40	286·50	— 523·90
		50. Eureka	576·13	3,896·57	+ 3,320·44
		51. Golden Horseshoe Estates Co., Ltd. ...	55,289·80	62,034·39	+ 6,744·59
		52. Great Boulder Perseverance G.M. Co., Ltd.	48,192·95	41,581·07	— 6,611·88
		53. Great Boulder Proprietary G.Ms., Ltd. ...	73,713·16	72,751·55	— 961·61
		54. Great Hope	3,063·47	195·37	— 2,868·10
		55. Great Hope North	628·31	452·20	— 176·11
		56. Hampton Celebration (W.A.), Ltd.	...	3,353·26	+ 3,353·26
		57. Hopeful	571·32	1,504·83	+ 933·51
		58. Idaho leases	3,406·20	463·24	— 2,942·96
		59. Ironsides North leases	947·66	583·09	— 364·57
		60. Ivanhoe Gold Corporation, Ltd.	60,601·54	71,919·77	+ 11,318·23
		61. Lake View and Star, Ltd.	31,391·17	25,664·74	— 5,726·43
		62. Mutooroo	1,361·80	61·95	— 1,299·85
		63. North Kalgurli (1912), Ltd.	1,075·57	2,246·34	+ 1,170·77
		64. Oroya Links, Ltd.	9,620·38	12,675·55	+ 3,055·17
		65. South Kalgurli Consolidated, Ltd.	31,863·49	32,941·67	+ 1,078·18
		66. Union Jack	1,645·80	774·17	— 871·63
Coolgardie ...	Coolgardie ...	67. Cockshot	3·25	751·41	+ 748·16
		68. Griffith's Gold Mine	299·06	1·11	— 297·95
		69. Lloyd George	...	2,897·45	+ 2,897·45
	Kunanalling ...	70. Carbine leases	3,562·05	4,930·55	+ 1,368·50
		71. Turn of the Tide	757·95	267·49	— 490·46
Yilgarn ...	... ...	72. Bullfinch Proprietary (1919), Ltd.	3,042·72	31·05	— 3,011·67
		73. Edna May Battler G.M. Co., N.L.	1,915·61	...	— 1,195·61
		74. Edna May Central G.Ms., N.L.	3,102·07	1,238·59	— 1,863·48
		75. Edna May Deep Levels G.M. Co., N.L. ...	5,278·10	5,250·79	— 27·31
		76. Golden Butterfly G.M. Co., N.L.	2,044·82	478·68	— 1,566·14
		77. Great Victoria leases	...	329·29	+ 329·29
		78. Radio	991·73	415·53	— 576·20
Dundas ...	... ...	79. Great Boulder Proprietary G.Ms., Ltd. ...	268·82	4,150·52	+ 3,881·70
		80. Viking No. 1 leases	416·79	613·57	+ 196·78
Phillips River ...	... ...	81. Fair Play leases	...	60·91	+ 60·91

TABLE 7.

Averages of Gold Ore raised and treated, and Gold produced therefrom, per man employed on the several Goldfields of the State, during 1921 *and* 1922.

Goldfield.	1921.				1922.			
	Tons of Gold Ore raised and treated.		Fine ounces of Gold produced therefrom.		Tons of Gold Ore raised and treated.		Fine ounces of Gold produced therefrom.	
	Per man employed under ground.	Per man employed above and under ground.	Per man employed under ground.	Per man employed above and under ground.	Per man employed under ground.	Per man employed above and under ground.	Per man employed under ground.	Per man employed above and under ground.
	tons.	tons.	fine ozs.	fine ozs.	tons.	tons.	fine ozs.	fine ozs.
1. Kimberley	...	...	...	...	...	...	...	...
2. West Kimberley	...	...	...	...	...	...	...	...
3. Pilbara	50·91	26·20	67·85	34·92	48·37	23·60	66·05	32·22
4. West Pilbara	11·40	6·33	7·49	4·16	23·00	11·00	71·37	35·68
5. Ashburton	...	...	...	...	...	...	...	...
6. Gascoyne	...	...	...	...	...	...	...	...
7. Peak Hill	355·00	108·47	96·25	29·41	680·48	253·51	110·61	41·20
8. East Murchison	225·04	89·19	142·87	56·63	163·79	61·25	138·34	51·79
9. Murchison	195·76	108·43	123·28	68·28	240·95	111·02	153·39	70·67
10. Yalgoo	60·33	28·00	91·53	41·31	199·91	105·71	178·09	94·17
11. Mt. Margaret	190·17	75·71	120·43	47·95	203·22	61·65	280·19	85·01
12. North Coolgardie	148·54	67·25	92·11	41·70	226·78	104·30	124·94	57·46
13. Broad Arrow	261·73	136·28	130·00	67·69	72·90	33·76	76·65	35·50
14. North-East Coolgardie ...	157·89	84·21	111·94	59·70	115·50	50·04	106·23	46·03
15. East Coolgardie	401·15	222·96	237·83	136·48	400·25	237·83	229·14	136·19
16. Coolgardie	43·04	22·20	35·06	18·09	65·55	31·90	66·67	32·44
17. Yilgarn	164·25	72·01	94·45	41·41	104·28	39·07	96·18	36·03
18. Dundas	62·91	34·69	97·06	51·96	113·52	62·50	158·89	87·48
19. Phillips River	67·01	36·97	54·11	29·85	75·04	36·31	45·91	22·22
Total Averages ...	281·43	146·76	170·79	89·06	298·81	153·53	187·03	96·09

The average value of gold produced per man above and under ground was £378·30 in 1921 and £408·16 in 1922. The average tonnage or ore raised shows an increase from 146·76 tons to 153·53 tons. The average tonnage raised per man is highest in the Peak Hill Goldfield, viz., 253·51 tons, average value £175·01, the next being East Coolgardie Goldfield with 237·83 tons, average value £578·50.

TABLE 8.

Output of Gold from the several States of Australia, the Northern Territory, the Territory of Papua, and the Dominion of New Zealand during 1922.

State.	Output of Gold.	Value.	Percentage of total Output of Australasia.
	Fine ozs.	£	
1. Western Australia	538,246	2,286,325	60·52
2. Victoria	106,872	453,962	12·02
3. Queensland	80,584	342,300	9·06
4. New South Wales	25,222	107,139	2·84
5. Tasmania	3,431	14,576	·39
6. South Australia	1,000	4,248	·11
7. Northern Territory	171	726	·02
8. Territory of Papua	12,989	55,174	1·46
9. New Zealand	120,811	513,173	13·58
Total	889,326	3,777,623	100·00

TABLE 9.

Dividends paid by Western Australian Gold Mining Companies during 1922 and Total to date.

(Compiled from information supplied by the Government Statistician's Office and the Chamber of Mines of W.A., Kalgoorlie.)

Goldfield.	Name of Company.	Capital.				Dividends.		
		Authorised	No. of Shares.	Par Value Shares.	Paid up to.	Paid in 1922.		Grand Total paid to end of 1922.
						No.	Total Amount.	
		£		£ s. d.	£ s. d.		£	£
Peak Hill ...	Various Companies ...	...	...	...	...	...	...	160,666
East Murchison...	Various Companies ...	...	...	...	...	...	...	437,968
Murchison ...	Mararoa G.M. Co., N.L. ...	48,000	100,000	0 8 0	0 4 0	2	5,000	81,875
			10,000	0 8 0	0 8 0			
Do. ...	Other Companies	...	...	...	...	...	...	1,835,170
Mt. Margaret ...	Various Companies ...	...	...	...	...	...	...	1,504,701
North Coolgardie	Various Companies ...	...	...	...	...	...	...	575,032
North-East Coolgardie	Various Companies ...	...	...	...	...	...	...	82,971
East Coolgardie...	Golden Horseshoe Estates Co., Ltd.	1,500,000	300,000	5 0 0	5 0 0	1	37,500	3,547,500
Do. ...	Great Boulder Proprietary G.Ms., Ltd.	175,000	1,750,000	0 2 0	0 2 0	2	87,500	6,013,050
Do. ...	Ivanhoe Gold Corporation, Ltd.	1,000,000	200,000	5 0 0	5 0 0	2	30,000	3,963,750
Do. ...	South Kalgurli Consolidated, Ltd.	150,000	250,007	0 10 0	0 10 0	2	31,251	252,501
Do. ...	Other Companies	...	...	...	...	...	...	8,781,453
Coolgardie ...	Various Companies ...	...	...	...	...	...	...	339,495
Yilgarn	Various Companies ...	...	...	...	...	...	...	508,199
Dundas	Various Companies ...	...	...	...	...	...	...	222,625
	Total Dividends paid during 1922	...	...	...	...	...	191,251	...
	Total Dividends paid to end of 1922	...	...	...	...	...	...	28,306,956

TABLE 10.

Value of Gold Production and Percentage of Dividends paid.

Year.	Value of Gold Production.	Dividends paid by Gold Mining Companies.	Dividends % of Total Production.	Value of Gold Production by Gold Mining Companies only.	Dividends % upon Production by Gold Mining Companies.
	£	£	%	£	%
Prior to 1913 ...	109,298,872	22,992,351	21·03	...	...
1913	5,581,701	910,326	16·30	4,528,106	20·10
1914	5,237,353	799,392	15·26	4,094,336	19·52
1915	5,140,228	792,317	15·41	4,109,254	19·28
1916	4,508,532	632,883	14·04	3,518,531	17·90
1917	4,121,645	590,856	14·34	3,310,536	17·85
1918	3,723,183	368,295	9·81	2,914,325	12·64
1919	3,118,113	338,244	10·85	2,337,433	14·23
1920	2,624,427	384,083	14·63	2,212,711	17·36
1921	2,352,098	306,958	13·05	1,787,721	17·17
1922	2,286,325	191,251	8·36	1,789,879	10·69
Total ...	147,992,477	28,306,956	19·13	*30,602,832	*17·37

* Ten last years only.

TABLE 11.

Quantity and Value of Minerals, other than Gold and Coal, reported to the Mines Department during 1922.

Goldfield, District, or Mineral Field.	1922.		Increase or Decrease for Year compared with 1921.	
	Quantity.	Value.	Quantity.	Value.
	tons.	£	tons.	£
BLACK TIN.				
Pilbara Goldfield (Marble Bar District)	25·35	2,446	+ 10·85	+ 986
Greenbushes Mineral Field	15·86	1,393	— 37·01	— 4,385
Total	41·21	3,839	— 26·16	— 3,399
PYRITIC ORE.				
Mt. Margaret Goldfield (Mt. Morgans District)	3,441·15	4,203	— 2,675·51	— 3,668
COPPER ORE.				
West Pilbara Goldfield	164·00	2,481	— 891·00	— 16,474
Northampton Mineral Field	998·66	13,435	+ 998·66	+ 13,435
Phillips River Goldfield	31·84	217	— 63·50	— 990
Total	1,194·50	16,133	+ 44·16	— 4,029
LEAD ORE.				
Northampton Mineral Field	29,602·90	72,338	+ 19,272·47	+ 46,689
ASBESTOS.				
Pilbara Goldfield (Marble Bar District)	2·50	250	— 30·10	— 1,110
Pilbara Goldfield (Nullagine District)	179·18	7,350	— 23·57	— 4,871
Total	181·68	7,600	— 53·67	— 5,981
GYPSUM.				
State Generally (Koorda)	63·00	16	— 601·50	— 606
MANGANESE.				
Peak Hill Goldfield	18·11	142	+ 18·11	+ 142

The output of black tin shows decreases in tonnage of 26.16 tons and in value of £3,399. In pyritic ore there were decreases in tonnage of 2,675.51 tons and in value of £3,668. In copper ore there was an increase in tonnage of 44.16 tons and a decrease in value of £4,029. Lead ore shows increases in tonnage of 19,272.47 and in value of £46,689. The output of asbestos decreased by 53.67 tons and in value by £5,981. Gypsum shows a decrease of 601.50 tons and in value of £606, and there were 18.11 tons of manganese produced of a value of £142, there not being any in the previous year.

The production of tin was again confined to Pilbara and Greenbushes fields and pyritic ore to the Mount Margaret Goldfield. Copper ore came from West Pilbara Goldfield, Northampton Mineral Field, and Phillips River Goldfield. The production of lead ore was confined to Northampton Mineral Field. Gypsum was obtained at Koorda, outside any proclaimed goldfield or mineral field, and manganese came from Peak Hill Goldfield.

It will be observed that the figures in this table differ from those in Table 1. The figures above are those reported to the Department, and this table is published as an index to the amount of mining in each field named.

TABLE 12.

Quantity of Coal raised during 1921 and 1922, and estimated Value thereof, with Number of Men employed, and Output per Man.

Coalfield.	Year.	Quantity raised.	Estimated Value.	Men employed.		Quantity raised	
				Above ground.	Under-ground.	Per Man employed under-ground.	Per Man employed above and under-ground.
		tons.	£			tons.	tons.
Collie	1921	468,817	407,117	198	672	698	539
	1922	438,443	381,555	175	569	771	589

The number of men employed at collieries decreased by 126, and the output was 30,374 tons less.

PART III.—LEASES AND OTHER HOLDINGS UNDER THE VARIOUS ACTS RELATING TO MINING.

TABLE 13.

Total Number and Acreage of Leases held for Mining on 31st December, 1921 and 1922.

Description of Leases.	1921.		1922.	
	No.	Acreage.	No.	Acreage.
Gold mining leases on Crown land	735	11,831	688	10,847
„ „ „ private property	...	...	...	...
Mineral leases on Crown land	275	41,534	265	45,116
„ „ private property	11	371	11	371
	1,021	53,736	964	56,334

The total number of leases held for mining purposes decreased by 57 and the area increased by 2,598 acres, as compared with the year 1921. The number of leases for gold mining decreased by 47 and the area by 984 acres. The number of mineral leases decreased by 10 and the area increased by 3,582 acres.

TABLE 14.

Number and Acreage of Gold Mining Leases in force each year for the Five Years ending the 31st December, 1922.

Goldfield.		District.		1918.		1919.		1920.		1921.		1922.		Percentage of Total Acreage.		Increase or Decrease in Acreage for 1922 compared with 1921.		Goldfield.
Name.	Proclaimed.	Name.	Pro-claimed.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.	1921.	1922.	Increase.	Decrease.	
West Kimberley ...	19-3-20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	West Kimberley
Kimberley ...	20-5-86	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Kimberley.
Yilgarn	1-10-88	...	...	98	1,742	94	1,697	91	1,584	65	1,080	60	1,032	9·13	9·52	...	48	Yilgarn.
Pilbara	1-10-88	Marble Bar ...	6-11-96	13	115	15	125	20	227	14	126	30	435	1·27	4·12	297	...	Pilbara.
		Nullagine ...	6-11-96	5	48	5	42	3	24	3	24	1	12					
Ashburton ...	11-12-90	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Ashburton.
Murchison... ...	24-9-91	Cue	7-12-94	30	378	37	471	33	474	22	248	18	226	8·87	13·22	385	...	Murchison.
		Meekatharra ...	7-12-94	56	713	36	468	33	451	40	581	48	770					
		Day Dawn ...	10-1-96	36	377	19	215	11	116	8	82	15	228					
		Mount Magnet ...	7-12-94	21	189	16	169	14	144	14	138	21	210					
Dundas	31-8-93	...	...	41	423	37	416	34	451	23	284	22	253	2·40	2·33	...	31	Dundas.
Coolgardie ...	6-4-94	Coolgardie ...	7-12-94	41	594	43	723	338	7,233	57	1,029	50	865	9·90	9·17	...	177	Coolgardie.
		Kunanalling ...	1-9-97	15	179	13	155	15	203	12	143	11	130					
East Coolgardie ...	1-10-94	East Coolgardie	7-12-94	129	1,836	168	2,689	380	7,173	233	4,112	135	2,134	34·76	22·46	...	1,676	East Coolgardie.
		Bulong	15-4-96	5	95	3	53	15	323	...	...	13	302					
Yalgoo	23-1-95	...	...	32	484	26	375	25	364	15	259	45	753	2·17	6·94	494	...	Yalgoo.
North Coolgardie	28-6-95	Menzies	15-4-96	37	522	30	450	26	417	16	293	18	298	5·30	5·42	...	40	North Coolgardie.
		Ularring	15-4-96	16	167	15	183	16	221	13	161	13	161					
		Yerilla	15-4-96	4	72	5	78	6	108	9	138	6	81					
		Niagara	1-4-97	5	72	5	72	4	60	2	36	3	48					
East Murchison ...	28-6-95	Lawlers	1-7-04	16	193	14	169	18	297	14	213	13	212	7·72	7·15	...	137	East Murchison.
		Black Range ...	1-7-04	22	365	18	296	19	326	16	292	15	270					
		Wiluna	1-3-10	24	401	23	400	29	517	22	408	16	294					
North-East Coolgardie	15-4-96	Kanowna ...	15-4-96	19	268	14	207	29	434	19	315	20	276	3·00	2·76	...	56	N.E. Coolgardie
		Kurnalpi ...	15-4-96	2	20	3	23	6	47	6	40	4	23					
Broad Arrow ...	20-11-96	...	...	23	507	47	829	25	415	21	314	26	401	2·65	3·70	87	...	Broad Arrow.
Peak Hill ...	1-4-97	...	...	11	87	11	90	13	137	14	116	7	69	·98	·64	...	47	Peak Hill.
Mount Margaret	1-4-97	Mount Margaret	1-4-97	47	815	38	712	50	965	20	348	20	364	10·79	11·35	...	43	Mount Margaret.
		Mount Malcolm...	1-4-97	64	1,265	57	1,232	59	1,276	32	668	30	627					
		Mount Morgans...	2-4-02	19	315	17	283	22	379	16	259	15	241					
West Pilbara ...	1-11-95	...	...	2	12	1	6	3	36	1	6	2	12	·05	·11	6	...	West Pilbara.
Phillips River ...	14-9-00	...	...	13	182	8	118	10	138	8	118	9	108	1·01	1·00	...	10	Phillips River.
Other Localities ...	...	...	...	1	12	1	12	...	...	...	...	...	...	...	...	...	...	Other Localities.
Gascoyne	15-4-97	...	...	...	...	...	...	...	...	...	...	2	12	...	·11	12	...	Gascoyne.
Totals ...	... ...		...	847	12,448	819	12,758	1,347	24,540	735	11,831	688	10,847	100·00	100·00	1,281	2,265	

Decrease for the year 1922: Leases 47, acres 984. The largest percentage of the area leased for gold mining purposes is in this respective order:—East Coolgardie, 22·46; Murchison, 13·22; Mt. Margaret, 11·35; Yilgarn, 9·52; Coolgardie, 9·17; East Murchison, 7·15.

Table 15.

Number and Acreage of Mineral Leases in force 31st December each year, for the Five Years ending 31st December, 1922.

Mining District.		Sub-District.		1918.		1919.		1920.		1921.		1922.		Increase or Decrease in Acreage for 1922, compared with 1921.		Mining District.
Name.	Proclaimed.	Name.	Proclaimed.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage	Increase.	Decrease	
Ashburton	11–12–90	...	...	5	69	4	45	3	44	1	10	3	30	20	...	Ashburton.
Murchison	24–9–91	Cue	7–12–94	2	63	7	222	4	135	2	63	3	90	21	...	Murchison.
		Meekatharra ...	7–12–94	...	...	...	...	...	...	...	...	...	...			
		Day Dawn ...	10–1–96	1	6	1	6	2	54	1	48	...	...			
		Mt. Magnet ...	7–12–94	...	...	...	...	...	...	...	...	...	...			
Greenbushes ...	7–4–92	...	...	51	644	27	409	29	421	18	287	18	282	...	5	Greenbushes.
Pilbara	16–6–92	Marble Bar ...	16–6–92	11	259	8	145	11	247	15	415	13	367	...	98	Pilbara.
		Nullagine ...	6–11–96	2	54	6	120	10	144	14	175	12	125			
Yalgoo	23–1–95	...	...	11	282	13	284	14	320	10	238	3	132	...	106	Yalgoo.
Yilgarn	22–3–95	...	...	...	...	...	...	1	48	1	48	1	48	...	...	Yilgarn.
Coolgardie	22–3–95	Coolgardie ...	22–3–95	1	10	2	28	2	28	3	76	5	112	36	...	Coolgardie.
		Kunanalling ...	1–9–97	...	...	...	...	...	...	...	...	...	...			
East Coolgardie ...	22–3–95	East Coolgardie	22–3–95	3	13	8	120	2	3	1	1	1	1	...	...	East Coolgardie.
		Bulong	15–4–96	...	...	...	...	1	24	...	...	...	...			
East Murchison ...	28–6–95	Lawlers	17–4–04	1	10	...	...	...	...	...	...	...	...	...	...	East Murchison.
		Black Range ...	1–7–04	1	6	1	6	1	6	1	6	1	6			
		Wiluna	1–3–10	...	...	...	...	...	...	...	...	...	...			
North Coolgardie ...	16–8–95	Menzies	15–4–96	...	...	...	...	...	...	1	48	1	48	...	...	North Coolgardie.
		Ularring	15–4–96	...	...	...	...	...	...	...	...	...	...			
		Yerilla	15–4–96	...	...	...	...	...	...	...	...	...	...			
		Niagara	1–3–97	...	...	...	...	...	...	...	...	...	...			
West Pilbara ...	1–11–95	...	...	15	550	14	540	26	751	21	798	18	710	...	88	West Pilbara.
Dundas	27–12–95	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Dundas.
Collie	21–2–96	...	...	114	34,661	115	34,981	115	34,979	117	35,621	127	38,671	3,050	...	Collie.
North-East Coolgardie	15–4–96	Kanowna ...	15–4–96	7	145	6	125	4	71	3	47	1	10	...	37	North-East Coolgardie.
		Kurnalpi ...	15–4–96	...	...	...	...	...	...	...	...	...	...			
Broad Arrow ...	20–11–96	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Broad Arrow.
Northampton	1–1–97	...	...	14	315	17	365	28	637	14	286	12	250	...	36	Northampton.
		(Private Property)	...	3	84	3	75	8	297	4	167	4	167			
Peak Hill	1–4–97	...	...	9	225	8	183	12	375	8	261	5	216	...	45	Peak Hill.
Mt. Margaret ...	1–4–97	Mt. Margaret ...	1–4–97	...	...	...	...	...	...	...	...	...	...	...	...	Mt. Margaret.
		Mt. Malcolm ...	1–4–97	1	48	...	...	...	...	...	...	...	...			
		Mt. Morgans ...	2–4–02	4	74	3	69	3	69	3	69	3	69			
Gascoyne	15–4–97	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Gascoyne.
Yandanooka ...	1–12–97	...	...	1	10	1	10	1	10	...	...	...	...	...	...	Yandanooka.
Phillips River ...	1–7–99	...	...	18	447	15	397	16	437	16	446	15	485	39	...	Phillips River.
Other localities ...	...	...	...	12	391	29	2,728	18	2,187	15	2,151	13	3,016	865	...	Other localities.
		(Private Property)	...	1	48	2	72	5	108	7	204	7	204			
West Kimberley	19–3–20	...	...	...	...	...	...	10	448	10	440	10	448	8	...	West Kimberley.
Totals ...	...	...	...	288	38,414	290	40,930	326	41,843	286	41,905	276	45,487	4,039	415	

In the Collie Mineral Field the largest area is held, *viz.*: 38,671 acres, worked entirely for coal; then follow West Pilbara, 710 acres for copper, silver-lead, asbestos; Pilbara, 492 acres for tin, asbestos, tantalite; Phillips River, 485 acres for copper, manganese; West Kimberley, 448 acres for iron; Northampton, 417 acres for coal and lead.

TABLE 16

Number and Acreage of Mineral Leases in force on 31st December, 1922, showing Minerals for which they are worked.

Goldfield or Mineral Field.	District.	Mineral. Coal. Leases.	Coal. Acres.	Tin. Leases.	Tin. Acres.	Copper. Leases.	Copper. Acres.	Iron. Leases.	Iron. Acres.	Beryl. Leases.	Beryl. Acres.	Limestone. Leases.	Limestone. Acres.	Ochre. Leases.	Ochre. Acres.	Silver and Lead. Leases.	Silver and Lead. Acres.	Asbestos. Leases.	Asbestos. Acres.	Magnesite. Leases.	Magnesite. Acres.	Clay. Leases.	Clay. Acres.
Pilbara	Marble Bar	...	...	6	155	...	...	...	...	...	...	...	...	...	...	...	...	5	192	...	...	...	...
	Nullagine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	125	...	...	...	...
West Pilbara	... ...	...	...	...	...	11	404	...	...	...	...	...	...	...	...	1	24	6	282	...	...	...	...
Ashburton	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	30	...	...	...	...
Peak Hill	... ...	...	...	...	...	1	24	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Yilgarn	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
East Murchison	Black Range	...	...	...	...	...	...	...	...	...	...	1	6	...	...	...	...	...	...	...	...	...	...
Murchison	Cue	...	...	...	...	...	...	...	...	3	90	...	...	...	...	...	...	...	...	...	...	...	...
North Coolgardie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	48	...	...
Yalgoo	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mt. Margaret	Mt. Morgans	...	...	...	...	3	69	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
East Coolgardie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...
Coolgardie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
North-East Coolgardie ...	Kanowna	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phillips River	... ...	...	...	...	...	14	437	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Collie	... ...	127	38,671	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Greenbushes	... ...	...	...	18	282	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Northampton	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	(Private Property) ...	1	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Outside Proclaimed Fields	... ...	9	2,880	1	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	(Private Property) ...	...	...	...	...	...	...	1	48	...	...	...	...	1	48	...	...	...	...	...	...	...	...
West Kimberley	... ...	...	...	...	...	...	...	10	448	...	...	...	...	...	...	...	...	...	...	...	...	1	24
	Totals	137	41,651	25	443	29	934	11	496	3	90	1	6	2	49	1	24	26	629	1	48	1	24

Goldfield or Mineral Field.	District.	Mineral. Phosphatic Rock. Leases.	Phosphatic Rock. Acres.	Alunite. Leases.	Alunite. Acres.	Tantalite. Leases.	Tantalite. Acres.	Lead. Leases.	Lead. Acres.	Gypsum. Leases.	Gypsum. Acres.	Graphite. Leases.	Graphite. Acres.	Molybdenite. Leases.	Molybdenite. Acres.	Mica. Leases.	Mica. Acres.	Manganese. Leases.	Manganese. Acres.	Total: Leases.	Total: Acres.
Pilbara	Marble Bar	...	...	...	...	2	20	...	...	...	...	...	...	...	...	...	...	...	...	13	367
	Nullagine	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	125
West Pilbara	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18	710
Ashburton	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	30
Peak Hill	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	192	5	216
Yilgarn	... ...	...	...	...	...	...	...	...	...	1	48	...	...	...	...	...	...	...	...	1	48
East Murchison	Black Range	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	6
Murchison	Cue	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	90
North Coolgardie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	48
Yalgoo	... ...	...	...	...	...	...	...	...	...	...	...	...	...	3	132	...	...	...	...	3	132
Mt. Margaret	Mt. Morgans	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	69
East Coolgardie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Coolgardie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	28	3	84	5	112
North-East Coolgardie ...	Kanowna	...	...	1	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	10
Phillips River	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	48	15	485
Collie	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	127	38,671
Greenbushes	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18	282
Northampton	... ...	...	...	...	...	...	...	12	250	...	...	...	...	...	...	...	...	...	...	12	250
	(Private Property) ...	...	...	...	...	...	...	3	67	...	...	...	...	...	...	...	...	...	...	4	167
Outside Proclaimed Fields	... ...	...	...	...	...	...	...	...	...	1	40	1	42	...	...	...	...	1	48	13	3,016
	(Private Property) ...	2	12	...	...	...	...	...	...	1	48	1	24	...	...	...	...	...	...	7	204
West Kimberley	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	448
	Totals	2	12	1	10	2	20	15	317	3	136	2	66	3	132	2	28	9	372	276	45,487

TABLE 17.

Number and Acreage of Miscellaneous Leases in force on 31st December, 1922.

Goldfield.	District.	Leases.										Total.	
		Tailings.		Tramway.		Water.		Machinery.		Residence.			
		No.	Acres.	No.	Acres.	No.	Acres.	No	Acres.	No.	Acres.	No.	Acres.
Yalgoo	... ...	...	...	...	...	...	...	1	24	...	...	1	24
West Pilbara	... ...	...	...	2	25	...	...	...	...	...	...	2	25
East Murchison	Black Range	2	36	...	...	...	...	...	...	...	...	2	36
Mt. Margaret	Mt. Margaret	1	22	...	...	...	...	...	...	...	...	1	22
North Coolgardie	Menzies	2	15	...	...	1	5	...	...	...	...	3	20
East Coolgardie	East Coolgardie ...	13	254	...	...	1	34	3	21	...	...	17	309
Coolgardie	Coolgardie	2	12	...	...	1	13	...	...	...	...	3	25
Phillips River	... ...	...	...	3	7	...	...	...	...	...	...	3	7
	Total	20	339	5	32	3	52	4	45	...	...	32	468

TABLE 18.

Claims and Authorised Holdings, under "The Mining Act, 1904," and Regulations, existing on 31st December, 1921 and 1922.

Goldfield or Mineral Field.	District.	Prospecting Areas.				Water Rights.				Lode Claims.		Alluvial Claims.		Mineral Claims.		Dredging Claims.		Residence Areas.		Business Areas.		Machinery Areas.		Tailings Areas.		Garden Areas.		Washing Areas.		Quarrying Areas.	
		Number.		Acreage.		Number.		Acreage.																							
		1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.
West Kimberley ...	... ...	1	...	3,000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
Northampton ...	... ...	4	2	139	36	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Pilbara	Marble Bar ...	12	35	141	877	2	2	2	2	2	2	...	2	...	...	...	...	1	1	6	6	2	2	1	1	4	5	...	...	...	...
Do.	Nullagine ...	12	8	142	98	3	3	3	3	...	4	...	...	...	...	...	...	3	3	...	...	1	1	...	...	4	3	...	...	...	...
West Pilbara ...	... ...	5	7	140	144	1	1	5	5	1	1	...	...	...	...	...	...	7	7	15	13	1	1	...	...	3	2	...	...	...	...
Ashburton	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Peak Hill	... ...	4	16	51	211	3	1	16	10	1	...	...	...	...	...	...	...	1	1	...	...	...	...	3	3	...	...	...	...	...	...
East Murchison ...	Lawlers	10	16	155	259	11	7	14	12	...	...	...	...	...	...	...	...	...	...	...	...	3	3	11	8	3	3	...	...	...	...
Do.	Wiluna	11	14	191	253	6	6	11	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	3	...	...	...	...
Do.	Black Range ...	14	17	219	219	...	...	...	...	1	...	1	...	...	...	...	...	58	33	...	...	1	1	...	...	4	2	...	...	...	...
Murchison	Cue	23	22	289	280	5	5	18	18	...	...	...	...	...	...	...	...	5	5	2	...	...	...	...	...	1	1	...	...	...	...
Do.	Meekatharra ...	22	24	442	341	...	...	...	...	...	...	...	...	...	...	...	...	4	4	4	2	2	1	2	2	1	1	...	...	...	...
Do.	Day Dawn ...	12	11	127	115	3	3	4	4	...	...	...	...	...	...	...	...	7	7	...	...	...	...	...	1	2	1	...	...	...	...
Do.	Mt. Magnet ...	36	19	442	210	1	1	1	1	...	...	...	...	...	...	...	...	1	1	1	1	1	1	...	...	5	5	...	...	...	...
Yalgoo	... ...	22	28	375	476	1	1	4	4	...	...	...	...	...	...	...	...	3	3	11	14	2	2	...	...	...	...	...	...	...	...
Mt. Margaret ...	Mt. Morgans ...	17	18	230	289	5	7	9	11	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	1	3	3	...	...	...	...
Do.	Mt. Malcolm ...	33	22	599	370	18	17	173	171	...	...	...	...	...	...	...	...	...	...	4	4	...	1	2	1	11	12	...	...	...	...
Do.	Mt. Margaret ...	16	14	297	229	18	14	34	25	...	...	...	...	...	...	...	...	6	6	11	10	3	3	4	3	7	8	...	...	...	...
North Coolgardie ...	Menzies	29	13	452	143	3	3	15	15	...	...	...	...	...	...	...	...	19	7	4	4	1	1	6	4	7	7	...	...	...	...
Do.	Ularring	8	5	105	84	4	5	4	5	...	...	...	...	...	...	...	...	2	1	6	4	1	1	1	1	1	1	...	...	...	...
Do.	Niagara	9	2	129	18	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	2	...	...	...	...	...	...
Do.	Yerilla	10	12	125	189	5	4	8	7	...	...	...	...	...	...	...	...	...	...	3	2	...	...	...	...	1	1	...	...	...	...
Broad Arrow ...	... ...	37	93	628	1,253	8	8	21	21	...	6	...	...	...	...	...	...	...	...	5	4	1	1	1	1	...	...	...	...	...	...
N.E. Coolgardie ...	Kanowna ...	13	29	261	528	1	1	3	3	...	...	...	...	...	...	...	...	...	...	...	...	2	2	2	2	3	4	...	...	...	...
Do.	Kurnalpi ...	6	9	72	97	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1	...	...	...	...	...	...
East Coolgardie ...	... ...	95	214	1,738	3,828	9	9	31	31	...	4	...	1	2	...	...	...	1	...	...	...	2	3	3	5	20	23	...	...	...	...
Do.	Bulong	15	80	305	1,655	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Coolgardie	... ...	68	76	1,185	1,500	10	10	30	41	1	...	...	...	...	...	...	...	...	2	4	3	2	1	2	2	1	...	...	1	...	...
Do.	Kunanalling ...	14	15	225	260	6	6	40	40	...	...	...	...	...	...	...	...	2	1	2	2	...	...	...	...	...	...	...	...	...	...
Yilgarn	... ...	46	46	782	826	5	4	15	12	...	...	...	...	1	...	...	...	255	254	42	23	3	4	2	4	...	...	...	...	...	...
Dundas	... ...	15	16	193	167	12	11	69	23	...	...	...	...	2	2	...	...	...	...	...	...	3	3	...	2	1	1	...	...	...	...
Phillips River ...	... ...	4	4	63	66	1	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	2	2	1	4	4	...	...	...	...
Collie	... ...	3	4	5,840	12,000	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Greenbushes ...	... ...	1	...	3	...	5	...	4	...	...	...	11	...	...	...	4	4	24	24	...	...	2	1	...	...	11	12	...	...	...	...
Gascoyne	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Outside Proclaimed Fields	... ...	36	26	51,716	17,022	...	...	...	...	...	...	...	...	6	12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Totals ...	663	916	70,801	44,043	147	131	536	477	6	17	12	3	13	17	4	4	399	360	122	93	38	38	46	45	100	102	...	1	...	...
Increase or Decrease for 1922 compared with 1921		+ 253		— 26,758		— 16		— 59		+ 11		— 9		+ 4		...		— 39		— 29		...		— 1		+ 2		+ 1		...	

For the year 1921 the number of prospecting areas held was 663, the total acreage being 70,801, which included 29 areas of 49,462 acres for coal and oil.
For the year 1922 the number held is 916 of a total acreage of 44,043, including 9 areas of 16,480 acres for coal.

TABLE 19.

Miners' Rights issued during 1921 and 1922.

Place of Issue.	Miners' Rights.		Place of Issue.	Miners' Rights.	
	1921.	1922.		1921.	1922.
Albany	40	35	Mullewa	39	5
Boulder	26	31	Mulline	...	...
Bridgetown	16	4	Nannine	21	...
Broad Arrow	19	...	Narrogin	3	4
Broome	38	21	Norseman	67	61
Bullfinch	9	...	Northampton	36	25
Bunbury	5	...	Northam	3	14
Busselton	19	4	Nullagine	41	32
Carnarvon	17	24	Onslow	16	21
Collie	31	12	Ora Banda	44	61
Coolgardie	156	170	Payne's Find	16	24
Cue	134	168	Peak Hill	18	23
Derby	10	13	Perth	297	360
Esperance	1	2	Port Hedland	10	3
Geraldton	46	11	Ravensthorpe	21	21
Greenbushes	57	42	Roebourne	71	54
Hall's Creek	53	32	Sandstone	30	36
Kalgoorlie	762	766	Southern Cross	129	91
Lake Darlot	15	6	St. Ives	7	22
Laverton	123	133	Wagin	...	17
Lawlers	42	39	Westonia	88	41
Leonora	148	103	Wiluna	36	28
Linden	8	6	Wyndham	18	8
Marble Bar	78	118	Yalgoo	49	89
Marvel Loch	14	23	Yarri	8	9
Meekatharra	102	184	York	3	5
Menzies	120	101	Youanmi	38	26
Mount Magnet	115	107			
			Total	3,313	3,235

TABLE 20.

Number and Acreage of Miners' Homestead Leases in force on 31st December, 1921 and 1922.

Goldfield.	District.	1921.		1922.		Increase.		Decrease.	
		Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.	Leases.	Acreage.
West Pilbara	... ...	...	...	...	...	...	...	...	...
Greenbushes	... ...	6	611	7	733	1	122	...	...
Pilbara	Marble Bar ...	...	...	...	...	...	...	...	...
	Nullagine	...	...	...	...	...	...	...	...
Dundas	... ...	27	1,345	28	1,365	1	20	...	...
Broad Arrow	... ...	2	40	3	44	1	4	...	...
Yilgarn	... ...	18	1,018	13	410	...	...	5	608
Mt. Margaret ...	Mt. Malcolm ...	5	1,239	5	1,239	...	...	3	530
	Mt. Margaret ...	18	911	15	381				
Murchison ...	Cue	6	1,264	5	1,244	...	...	1	40
	Day Dawn ...	4	55	3	30				
	Meekatharra ...	14	1,850	14	1,850				
	Mt. Magnet ...	2	256	3	261				
Yalgoo	... ...	2	680	3	690	1	10	...	...
Coolgardie ...	Coolgardie	28	1,111	27	1,101	...	...	1	10
	Kunanalling ...	3	540	3	540				
East Coolgardie ...	... ...	88	2,735	92	3,266	4	531	...	...
Phillips River	... ...	142	19,740	141	19,720	...	...	1	20
Peak Hill	... ...	4	247	4	247	...	...	...	...
North-East Coolgardie ...	Kanowna	16	782	13	722	...	...	3	60
North Coolgardie	Menzies	5	690	5	690				
	Yerilla	1	10	1	10				
	Niagara	1	20	1	20	...	...	...	...
	Ularring	1	20	1	20				
East Murchison...	Lawlers	5	1,110	6	1,115				
	Black Range ...	5	120	4	380	...	265	...	...
	Wiluna	4	69	4	69				
	Total ...	407	36,463	401	36,147	8	952	14	1,268

As compared with the year 1921, the number of leases held has decreased by 6 and the area by 316 acres.

PART IV.—MEN EMPLOYED

TABLE 21.

Average number of Men engaged in Mining during 1921 and 1922.

Goldfield.	District.	Reef or Lode.		Alluvial.		Total.	
		1921.	1922.	1921.	1922.	1921.	1922.
1. Kimberley	...	...	6	6	6	6	
2. West Kimberley	...	...	...	...	...	...	
3. Pilbara	Marble Bar	49	60	21	12	70	72
	Nullagine	19	22	26	36	45	58
4. West Pilbara	...	9	2	10	6	19	8
5. Ashburton	...	...	...	1	2	1	2
6. Gascoyne	...	...	...	1	2	1	2
7. Peak Hill	...	36	51	3	4	39	55
8. East Murchison	Lawlers	73	81	1	1	74	82
	Wiluna	78	69	...	...	78	69
	Black Range	177	96	...	...	177	96
9. Murchison	Cue	125	84	7	3	132	87
	Meekatharra	350	286	10	24	360	310
	Day Dawn	41	45	3	3	44	48
	Mt. Magnet	78	82	1	1	79	83
10. Yalgoo	...	84	191	...	1	84	192
11. Mt. Margaret	Mt. Morgans	142	110	5	1	147	111
	Mt. Malcolm	210	159	...	1	210	160
	Mt. Margaret	75	54	5	...	80	54
12. North Coolgardie	Menzies	137	156	...	...	137	156
	Ularring	58	30	...	...	58	30
	Niagara	23	21	...	...	23	21
	Yerilla	36	30	...	...	36	30
13. Broad Arrow	...	121	95	3	11	124	106
14. North-East Coolgardie	Kanowna	52	79	2	8	54	87
	Kurnalpi	8	11	2	4	10	15
15. East Coolgardie	East Coolgardie	2,735	2,695	10	18	2,745	2,713
	Bulong	27	65	4	9	31	74
16. Coolgardie	Coolgardie	437	420	44	83	481	503
	Kunanalling	69	65	10	11	79	76
17. Yilgarn	...	463	355	...	...	463	355
18. Dundas	...	99	89	...	...	99	89
19. Phillips River	...	29	31	1	3	30	34
State generally	...	3	3	...	...	3	3
Total—Gold Mining	...	5,843	5,537	176	250	6,019	5,787
MINERALS OTHER THAN GOLD.							
Tin	Greenbushes	27	6	...	...	27	6
	Marble Bar	20	5	*12	20	32	25
Copper	West Pilbara	21	5	...	...	21	5
	Phillips River	12	5	...	...	12	5
	Peak Hill	3	...	...	...	3	...
Pyritic Ore	Mt. Morgans	16	14	...	...	16	14
Lead Ore	Northampton	41	152	...	...	41	152
Coal	Collie River	870	744	...	...	870	744
Asbestos	Marble Bar	5	...	...	...	5	...
	Nullagine	34	34	...	...	34	34
Gypsum	State Generally	4	4	...	...	4	4
	Total—Other Minerals	1,053	969	12	20	1,065	989
	GRAND TOTAL	6,896	6,506	188	270	7,084	6,776

*Classified elsewhere as employed at mines.

TABLE 22.

Average Number of Men employed at Mines during 1922.

Mineral.	Above ground.	Under ground.	Total.	Percentage of total men employed.	Increase or decrease compared with 1921.
Coal	175	569	744	11·40	— 126
Copper	6	4	10	·15	— 26
Gold	2,692	2,845	5,537	84·85	— 306
Lead	45	107	152	2·33	+ 111
Pyritic Ore	5	9	14	·21	— 2
Tin	*26	5	31	·48	— 28
Asbestos	22	12	34	·52	— 5
Gypsum	4	...	4	·06	...
Total	2,975	3,551	6,526	100·00	— 382

*As the tin obtained is principally "stream tin" the average number of alluvial workers has been, in this case, included in the heading "above ground."

The above table deals with men working their own mines, or employed on wages, and is compiled from returns furnished to the Department by mine-owners.

TABLE 23.

Average Number of Men employed at Gold Mines during 1922, classified according to the several Goldfields and the proportion of Men employed in each Goldfield.

Goldfield.	Above Ground.	Under Ground.	Total.	Increase or Decrease compared with 1921.	Percentage of total men employed.	
					1921.	1922.
1. Kimberley	...	...	...	...	...	...
2. West Kimberley	...	...	...	...	...	...
3. Pilbara	42	40	82	+ 14	1·16	1·48
4. West Pilbara	1	1	2	— 7	·15	·04
5. Ashburton	...	...	...	...	...	...
6. Gascoyne	...	...	...	...	...	...
7. Peak Hill	32	19	51	+ 15	·62	·92
8. East Murchison	154	92	246	— 82	5·61	4·44
9. Murchison	268	229	497	— 97	10·17	8·98
10. Yalgoo	90	101	191	+ 107	1·44	3·45
11. Mt. Margaret	225	98	323	— 104	7·31	5·83
12. North Coolgardie	128	109	237	— 17	4·35	4·28
13. Broad Arrow	51	44	95	— 26	2·07	1·72
14. North-East Coolgardie	51	39	90	+ 30	1·03	1·63
15. East Coolgardie	1,120	1,640	2,760	— 2	47·27	49·85
16. Coolgardie	249	236	485	— 21	8·66	8·76
17. Yilgarn	222	133	355	— 108	7·92	6·41
18. Dundas	40	49	89	— 10	1·69	1·60
19. Phillips River	16	15	31	+ 2	·50	·56
State generally	3	...	3	...	·05	·05
Total	2,692	2,845	5,537	— 306	100·00	100·00

TABLE 24.

Alluvial Gold Workers.

Goldfield.	1921.	1922.	Increase or Decrease compared with 1921.
1. Kimberley	6	6	...
2. West Kimberley	...	...	...
3. Pilbara	47	48	+ 1
4. West Pilbara	10	6	— 4
5. Ashburton	1	2	+ 1
6. Gascoyne	1	2	+ 1
7. Peak Hill	3	4	+ 1
8. East Murchison	1	1	...
9. Murchison	21	31	+ 10
10. Yalgoo	...	1	+ 1
11. Mt. Margaret	10	2	— 8
12. North Coolgardie	...	...	...
13. Broad Arrow	3	11	+ 8
14. North-East Coolgardie	4	12	+ 8
15. East Coolgardie	14	27	+ 13
16. Coolgardie	54	94	+ 40
17. Yilgarn	...	...	...
18. Dundas	...	...	...
19. Phillips River	1	3	+ 2
Total	176	250	+ 74

TABLE 25.

Table showing Rate of Wages Payable in the Mining Industry at the 31st December, 1922.

Class of Employee.	Yilgarn, Coolgardie, Dundas, E. Coolgardie, N.E. Coolgardie, N. Coolgardie, Mt. Margaret, and East Murchison Goldfields.	Meekatharra and Youanmi Districts.	Cue and Day Dawn Districts.	Norseman.	Murrin, Gwalia, Hampton Plains, Mt. Monger, Laverton, St. Ives.	Lawlers and Wiluna.
	Rate per Shift. s. d.	Rate per Shift. s. d.	Rate per Shift. s. d.			
Rock Drill Men in Shafts	18 4	18 10	18 1			
Rock Drill men in Rises	17 10	18 4	17 7			
Rock Drill Men in Winzes	17 6	18 0	17 3			
Rock Drill Men in Other places	17 2	17 8	16 11			
Hand Miners in Shafts	17 6	18 0	17 3			
Hand Miners in Rises	17 0	17 6	16 9			
Hand Miners in Winzes	16 8	17 2	16 5			
Hand Miners in Other places	16 4	16 10	16 1			
Shaft Timbermen	18 4	18 0	17 3			
Timbermen	17 6	18 0	17 3			
Mullockers, Truckers, Shovellers, etc.	15 6	16 0	15 3			
Bracemen, Platmen, and Skipmen	16 6	16 6	15 9			
Man in charge Explosives Magazine	17 0	...	...			
Platelayer (Underground)	16 6	...	...			
Pipe Fitter	18 3	...	...			
Scalers (Underground)	17 6	...	...			
Sampler	16 8	...	...			
Rock Breaker—Crackermen	16 0	16 6	15 9			
Battery Feeders and Mill Hands	15 0	16 0	15 3			
Battery—Repairers, etc.	16 6	...	...			
Mechanic's Labourer	15 6	16 0	15 3			
Iron Furnacemen	17 0	...	...			
Castings Dresser	15 6	...	...			
Pitman and Pumpman	17 6	...	...			
Fireman, Leading	17 0	...	...			
Fireman, Steam or Roaster	16 0	...	...			
Wood Trimmer	15 6	...	...			
Pumpman on the Surface	16 6	...	...			
Greaser, Cleaner, and Oiler	16 0	...	...			
Motorman	16 10	...	...			
Ball Mill Hand	16 0	...	...			
Boiler Cleaners	17 6	...	...			
Filterpress Filler	16 10	18 0	17 3			
Cyanide and Filterpress Men	16 0	16 6	15 9			
Amalgamator	16 8	...	...			
Wilfley Tablemen	15 4	...	...			
Grinding Panman	15 6	...	...			
Vacuum Plant Hands (Top)	17 0	18 0	17 3			
Vacuum Plant Hands (Bottom)	15 8	16 6	15 9			
Timber Dresser, Sawyer, etc.	16 10	...	...			
Tool Sharpeners	17 0	18 0	17 3			
Holman Hoist	17 0	...	...			
Blacksmith's Striker	15 6	16 4	15 7			
Platelayer on Surface	16 0	...	...			
Driver (Above Ground)	16 10	...	...			
Driver (Underground)	17 4	...	...			
Roper and Rigger	17 0	17 6	16 9			
Sailor Gang Men	15 6	...	...			
Conveyor Belt men	15 0	...	...			
*Horse-driver	15 0	16 0	15 3			
Sanitary Man	18 4	...	...			
Watchman	16 6	...	...			
Smelter (Gold Room)	16 8	...	...			
General Labourer	15 0	16 0	15 3			
†Winding Engine Drivers	18 0	17 3	...			
†Winch Drivers	17 0	16 2	...			
Other Engine Drivers	16 6 to 17 6	...	...			
‡Locomotive Drivers	17 0	17 3	...			

Rate as per Column 1, plus District Allowance sixpence per day.

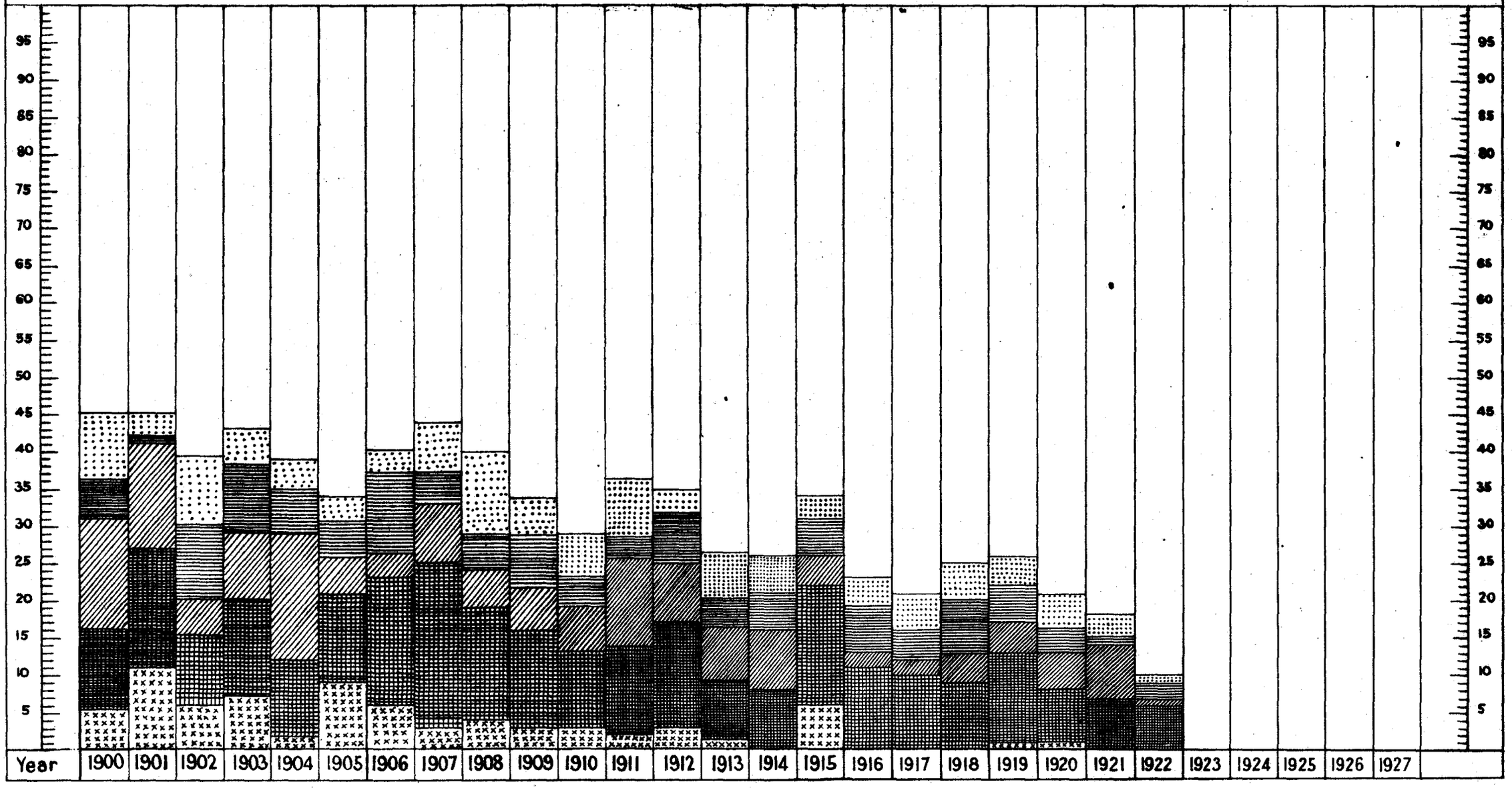
Rate as per Column 1, plus District Allowance one shilling per day.

Rate as per Column 1, plus District Allowance one shilling and ninepence per day.

Forty-eight hours on surface and forty-four hours underground constitute a week's work.

* 1s. per day extra for feeding and grooming horse. † 6d. per day extra if they raise or lower human beings.
‡ 1s. per day extra if carrying passengers.

DIAGRAM SHEWING THE NUMBER OF DEATHS FROM ACCIDENTS ARRANGED IN FIVE CLASSES, IN THE MINES OF WESTERN AUSTRALIA DURING THE YEARS 1900 AND ONWARDS.



1922.

Part V. Table 26B.

PART V.—ACCIDENTS.

TABLE No. 26.

MEN EMPLOYED IN MINES KILLED AND INJURED IN MINING ACCIDENTS DURING 1921 AND 1922.

A.—*According to Locality of Accident.*

Goldfield.	Killed.		Injured.		Total Killed and Injured.	
	1921.	1922.	1921.	1922.	1921.	1922.
1. Kimberley	...	...	...	...	...	...
2. West Kimberley	...	...	...	...	...	...
3. Pilbara	...	...	...	...	...	...
4. West Pilbara	...	...	...	...	...	...
5. Ashburton	...	...	...	...	...	...
6. Gascoyne	...	...	...	...	...	...
7. Peak Hill	...	...	...	...	...	...
8. East Murchison	...	...	15	...	15	...
9. Murchison	2	...	20	19	22	19
10. Yalgoo	...	2	...	2	...	4
11. Mt. Margaret	...	...	16	5	16	5
12. North Coolgardie	...	...	5	3	5	3
13. N.E. Coolgardie	1	...	...	...	1	...
14. Broad Arrow	...	...	1	1	1	1
15. East Coolgardie	11	3	232	240	243	243
16. Coolgardie	...	1	...	1	...	2
17. Yilgarn	1	...	1	1	2	1
18. Dundas	...	...	1	...	1	...
19. Phillips River	...	...	1	...	1	...
MINING DISTRICTS—						
Northampton	...	1	...	...	...	1
Yandanooka	...	...	...	...	...	...
Greenbushes	1	...	...	...	1	...
Collie	1	1	53	63	54	64
Swan	1	1	...	1	1	2
Kendenup	...	...	...	...	...	...
Roelands	...	...	...	...	...	...
State generally	...	1	...	...	...	1
Total	18	10	345	336	363	346

From the above table it will be seen that the total number of fatal accidents for the year 1922 was eight less than for 1921. The number injured shows a decrease of nine compared with the preceding year. The 1921 serious accidents for Collie are amended in this year's tables owing to an accident classified as *minor* having serious consequences in 1922. Details of these accidents will be found in the report of the State Mining Engineer, published as Division II. to this Report.

B.—*According to Causes of Accidents.*

	1921.		1922.		Comparison with 1921.	
	Fatal.	Serious.	Fatal.	Serious.	Fatal.	Serious.
1. Explosives	...	7	...	2	...	— 5
2. Falls of Ground	7	30	6	41	— 1	+ 11
3. In Shafts	7	13	1	13	— 6	...
4. Miscellaneous—Underground	1	204	2	199	+ 1	— 5
5. Surface	3	91	1	81	— 2	— 10
Total	18	345	10	336	— 8	— 9

Of the fatal accidents 6 occurred in gold mines, one in a coal mine, one in a stone quarry, one in a lead mine, and one in a mica mine. The death-rate per 1,000 men employed in gold mines was 1·08 as against 2·57 in 1921.

Table No. 27.

Deaths from Accidents of Persons employed at Mines during 1921 and 1922.

	1921.						1922.					
	Number of Persons killed.			Death Rate per 1,000 men employed.			Number of Persons killed.			Death Rate per 1,000 men employed.		
	Above Ground.	Under Ground.	Total.	Above Ground.	Under Ground.	Total.	Above Ground.	Under Ground.	Total.	Above Ground.	Under Ground.	Total.
Coal Mines	...	1	1	...	1·49	1·15	...	1	1	...	1·76	1·34
Men employed	(198)	(672)	(870)	...	...	...	(175)	(569)	(744)	...	...	...
Gold Mines	1	14	15	·34	4·59	2·49	...	6	6	...	2·11	1·04
Men employed	(2,972)	(3,047)	(6,019)	...	...	...	(2,942)	(2,845)	(5,787)	...	...	...
Other Mines	1	...	1	8·26	...	5·13	...	2	2	...	14·59	8·16
Men employed	(121)	(74)	(195)	...	...	...	(108)	(137)	(245)	...	...	...
Total for all mines ...	2	15	17	·61	3·95	2·40	...	9	9	...	2·53	1·33
Total number of men employed	(3,291)	(3,793)	(7,084)	...	...	...	(3,225)	(3,551)	(6,776)	...	...	...

Table No. 28.

Deaths from Accidents of Persons employed at Quarries during 1921 and 1922.

Mining District.	Number of Persons employed.				Number of Persons killed.				Death Rate per 1,000 men employed.			
	Above Ground.		Total.		Above Ground.		Total.		Above Ground.		Total.	
	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.
Swan ...	203	262	203	262	1	1	1	1	4·93	3·82	4·93	3·82
Roelands ...	...	5	...	5	...	...	...	...	...	...	...	...
Total ...	203	267	203	267	1	1	1	1	4·93	3·75	4·93	3·75

Table No. 29.

Deaths from Accidents of Persons Employed in Gold Mines during 1922, and the Death Rate per 1,000 Men Employed and per 1,000 tons of Gold Ore raised during 1921 and 1922. (Number of men taken as in Table No. 23, not including Alluvial Gold Workers.)

Goldfield.	Number of Deaths.			Death Rate per 1,000 men employed.				Number of Deaths per 1,000 tons of Gold Ore raised.	
	1922.			1922.			1921.		
	Above Ground.	Under Ground.	Total.	Above Ground.	Under Ground.	Total.	Total.	1922.	1921.
1. Kimberley	...	...	...	...	...	...	...	...	...
2. West Kimberley	...	...	...	...	...	...	...	...	...
3. Pilbara	...	...	...	...	...	...	...	...	...
4. West Pilbara	...	...	...	...	...	...	...	...	...
5. Ashburton	...	...	...	...	...	...	...	...	...
6. Gascoyne	...	...	...	...	...	...	...	...	...
7. Peak Hill	...	...	...	...	...	...	...	...	...
8. East Murchison	...	...	...	...	...	...	...	...	...
9. Yalgoo	...	2	2	...	19·80	1·47	...	·099	...
10. Mt. Margaret	...	...	...	...	...	...	...	...	...
11. North Coolgardie	...	...	...	...	...	...	...	...	...
12. North-East Coolgardie ...	...	...	...	...	...	...	16·67	...	·198
13. East Coolgardie	...	3	3	...	1·83	1·09	3·98	·004	·017
14. Broad Arrow	...	...	...	...	...	...	...	...	...
15. Coolgardie	...	1	1	...	4·24	2·06	...	·065	...
16. Murchison	...	...	...	...	...	...	3·37	...	·031
17. Yilgarn	...	...	...	...	...	...	2·16	...	·030
18. Dundas	...	...	...	...	...	...	...	...	...
19. Phillips River	...	...	...	...	...	...	...	...	...
Total	...	6	6	...	2·11	1·08	2·57	·007	·017

The number of deaths per 1,000 men employed shows a decrease from 2·57 in 1921 to 1·08 in 1922, and that per 1,000 tons of gold ore raised also shows a slight decrease, being ·007 as against ·017 for the preceding year.

PART VI.—STATE AID TO MINING.

The number of batteries existing at the end of the year was 29.

From inception to the end of 1922, gold and tin to the value of £5,654,871.19 have been recovered from the State plants. 1,354,004.69 tons of auriferous ore have been treated and have produced £4,626,251.70 by amalgamation, £687,402.39 by cyanidation, £238,958.13 worth by slimes treatment, £9,353.37 worth of residues, and 80,067.75 tons of tin ore produced tin to the value of £92,419.99; and, in addition, a sum of £572.32 has been recovered from residues.

During the year the gold ore treated was 35,722.25 tons for 32,736.25 ozs. bullion.

The working expenditure for all plants for the year totalled £46,875 15s. 4d., and the revenue £38,675 2s. 3d., which shows a loss of £8,200 13s. 1d. on the year's operations.

The capital expenditure since the inception of the scheme has been £395,144 16s. 5d.; £303,163 14s. 9d. from General Loan Fund and £91,981 1s. 8d. from Consolidated Revenue.

The cost of administration for the year was £4,070 0s. 10d. as against £4,293 11s. 1d. for 1921.

The working expenditure from inception to the end of the year exceeds the revenue by £112,506 16s. 6d.

GEOLOGICAL SURVEY.

The work of the Survey during the year 1922 has been somewhat restricted owing to the small staff now employed.

The field work carried out was:—

1. A detailed geological examination and survey of the gold deposits and their surroundings of the mining centre of Youanmi on the East Murchison Goldfield.
2. Alluvium and laterite in the vicinity of the Helena River.
3. An investigation into the basic dykes, Wongong Brook weir site.
4. Field work at Melville (Noongal), Yalgoo, and Mugga Mugga, Yalgoo Goldfield.

Full reports and detailed information of all work carried out will be found in the report of the Government Geologist, published as Division IV. of this Report.

ASSISTANCE UNDER MINING DEVELOPMENT ACT, 1902.

The following statement shows the sums advanced during the year 1922 under the Mining Development Act:—

	£	s.	d.
Advanced in aid of mining work and equipment of mines with machinery	10,959	5	11
Subsidies paid on stone crushed for public	302	3	9
Boring	554	8	9
Providing means of transport and equipment to prospectors ..	8,430	10	5
	£20,246	8	10

In addition to the above, amounts totalling £14,501 5s. were expended from Mining Development Vote on various matters for the assistance of mining, such as water supply, subsidies to assist carting of ore long distances, and subsidies for development work done below 100 feet level in small mines, and rebates to prospectors working low grade mines. The subsidies paid on stone crushed for the public amounting to £302 3s. 9d. are subsidies paid to owners of plants crushing for the public, the conditions being that they crush at fixed rates; in most cases a further requirement being imposed as to purchasing or treating tailings. The ore crushed at such plants during the year amounted to 2,927½ tons. The receipts under the Mining Development Act, exclusive of interest payments, amount to £1,868 18s., and include:—

	£	s.	d.
Refunds of advances	1,074	5	10
Sale of securities	529	8	0
Miscellaneous refunds	265	4	2
	£1,868	18	0

PART VII.—REMARKS ON THE GOLDFIELDS AND MINERAL DISTRICTS AND SUMMARIES OF THE WARDENS' AND OTHER OFFICERS' REPORTS.

ASHBURTON GOLDFIELD.

Fourteen (14) fine ounces were reported, and in the preceding year 22 fine ounces. This was probably got by alluvial miners, as for years there has been no mining on this field.

BROAD ARROW GOLDFIELD.

The output of gold was 3,629 fine ounces, and in the preceding year 8,875 fine ounces; a decrease of 5,246 fine ounces. Despite this falling off the outlook was more promising at the close of the year than for some time. Two or three finds of much promise were made, and a great many prospectors were at work.

COLLIE COAL FIELD.

The output of coal for the year was 438,443 tons, and in the preceding year 468,817 tons; a decrease of 30,374 tons. Five (5) collieries were producing, viz., the Proprietary, Co-operative, Cardiff, Westralian, and Premier.

The industry progressed very satisfactorily, and all of the mines are opening up well.

COOLGARDIE GOLDFIELD.

The output of gold was 16,171 fine ounces, and in the preceding year 9,548 fine ounces; an increase of 6,623 fine ounces.

In the Kunanalling district there was an increase, and matters looked well.

The Carbine mine and a couple of others continued steady producers.

At Gibraltar there was much activity, and the Lloyd George has been producing and developing satisfactorily.

At Widgiemooltha matters were very quiet.

At St. Ives there has been good progress, and several mines give much promise.

In the other centres there have been one or two encouraging finds and, taken altogether, the outlook for this field is much brighter.

DUNDAS GOLDFIELD.

The output of gold was 8,044 fine ounces, and in the preceding year 5,456 fine ounces; an increase of 2,588 fine ounces.

The O.K. mine was the principal contributor, but excepting that the number of prospectors has been maintained there was little change.

EAST COOLGARDIE GOLDFIELD.

The output of gold was 376,389 fine ounces, and in the preceding year 378,430 fine ounces; a decrease of 2,041 fine ounces. On the large mines work has proceeded steadily and there has been little change. Boring at the South end has been continued throughout the year and is still in progress, but nothing sensational has been reported. In the Bulong district there was a good deal of activity and some promising finds reported.

At the other outside centres there was little change.

EAST MURCHISON GOLDFIELD.

The output of gold was 13,051 fine ounces, and in the preceding year 18,762 fine ounces; a decrease of 5,711 fine ounces, due entirely to the closing down of the Youanmi Gold Mining Company's mine in the Black Range district.

This district is very quiet excepting for one or two shows in the vicinity of Sandstone which give some promise. In the Lawlers district there was an increase and several mines have been actively working and contributing to the production. In the Wiluna district there was also an increase, but the production was mostly by tributors on the large mines. It is hoped that capital will soon be forthcoming to properly open up and exploit the immense lodes known to exist in the neighbourhood of Wiluna itself. A good many prospectors are operating in this district.

GASCOYNE GOLDFIELD.

There is practically no mining on this field. One (1) ounce of gold was reported, presumably got by fossickers.

GREENBUSHES MINERAL FIELD.

The output of black tin was 15.86 tons, valued at £1,393, and in the preceding year 52.87 tons, valued at £5,778; a decrease in tonnage of 37.01 tons, and in value of £4,385.

Mining was practically at a standstill throughout the year consequent on the low price ruling for tin, and until there is a considerable improvement in this direction, there is no hope of a revival.

KIMBERLEY GOLDFIELD.

Five (5) ounces of gold were reported, and in the preceding year 49 ounces. There is no mining other than prospecting for alluvial gold.

MOUNT MARGARET GOLDFIELD.

The output of gold was 27,649 fine ounces, and in the preceding year 20,803 fine ounces; an increase of 6,846 fine ounces. In addition, 3,441.15 tons of pyritic ore, valued at £4,203, were raised, and in the preceding year 6,116.66 tons, valued at £7,871; a decrease in tonnage of 2,675.51 tons, and in value of £3,668.

In the Mt. Margaret district there was a decrease and little change excepting for a reported discovery by a prospecting party, equipped by the State, at a locality about 78 miles N.E. of Laverton. The indications are very encouraging. The Lancefield mine, which was the principal producer in this district, remained closed down throughout the year.

In the Mt. Morgans district there was a small increase, the principal producers being the "Westralia Mt. Morgans," at Morgans, and the "Bindah," at Linden. No new finds of any importance were reported. In the Mount Malcolm district there was an increase due to the treatment of large quantities of sands at the Sons of Gwalia mine. The erection of a new crushing plant on this mine has been announced and this will mean an improved output. A number of prospectors, assisted by the Department, were out, but no new finds were reported.

MURCHISON GOLDFIELD.

The output of gold was 36,304 fine ounces, and in the preceding year, 41,257 fine ounces; a decrease of 4,953 fine ounces. In the Meekatharra district there was a falling off consequent on the closing down of the Fenian mine, but for this the position was well maintained.

In the Cue district there was also a decrease, mainly attributable to the closing down of the "Light of Asia." The "Big Bell" was a regular producer, and its operations are largely assisted by the Department.

In the Day Dawn district there was a small increase, but little change from the previous year.

In the Mt. Magnet district there was a small increase, but the position was practically unchanged.

NORTHAMPTON AND YANDANOOKA MINERAL FIELDS.

No minerals were reported from Yandanooka.

In the Northampton field the output of lead ore was 29,602.90 tons, valued at £72,338, and in the preceding year 10,330.43 tons, valued at £25,649; an increase in tonnage of 19,272.47 tons, and in value of £46,689. Consequent on the marked improvement, there was a good deal of activity on the field throughout the year, and several mines were producing. The outlook for this field is good.

NORTH COOLGARDIE GOLDFIELD.

The output of gold was 13,624 fine ounces, and in the preceding year 10,640 fine ounces; an increase of 2,984 fine ounces.

In the Menzies district there was an increase attributable to a larger output from the Menzies Consolidated mine at Yunndaga.

At Comet Vale matters were much quieter, but an improvement is looked for in the New Year. At Mt. Ida there was a small improvement which promises to be maintained. In the Ularring district the Riverina South mine closed down and most of the plant was sold. No new finds were reported, and the district is very quiet.

There was no improvement in the Niagara or Yerilla districts.

NORTH-EAST COOLGARDIE GOLDFIELD.

The output of gold was 4,545 fine ounces, and in the preceding year 4,148 fine ounces; an increase of 397 fine ounces.

There was practically no change in this field, but a good many assisted prospectors are out. It is ex-

pected that boring for deep alluvial, which was discontinued during the year, will be resumed shortly.

PEAK HILL GOLDFIELD.

The output of gold was 2,160 fine ounces, and in the preceding year 1,079 fine ounces; an increase of 1,081 fine ounces.

In addition, 18.11 tons of manganese ore, valued at £142, was produced.

Practically all the work done was in the immediate vicinity of Peak Hill, and there were not any developments of note.

The manganese deposits at Horseshoe will be actively opened up as soon as a satisfactory market is established.

PHILLIPS RIVER GOLDFIELD.

The output of gold was 689 fine ounces, and in the preceding year 866 fine ounces; a decrease of 177 fine ounces.

Copper ore amounting to 31.84 tons, valued at £217, was produced, and in the preceding year 95.34 tons, valued at £1,207; a decrease in tonnage of 63.50 tons, and in value of £990. There was practically no change in this field and most of the mines were under exemption. The low price ruling for copper was a retarding factor.

PILBARA GOLDFIELD.

The output of gold was 3,100 fine ounces, and in the preceding year 2,627 fine ounces; an increase of 473 fine ounces.

Black tin to the amount of 25.35 tons, valued at £2,446, was produced, and in the preceding year 14.50 tons, valued at £1,460; an increase in tonnage of 10.85 tons, and in value of £986.

Also 181.68 tons of asbestos, valued at £7,600, and in the preceding year 235.35 tons, valued at £13,581; a decrease in tonnage of 53.67 tons, and in value of £5,981.

In gold mining the principal production was at Bamboo Creek, where at present the chief producers are located. Lalla Rookh, Marble Bar, Coppin's, Wyman's, Nullagine, and Tambourah also contributed.

In tin mining there was not much activity, the result of a depressed market.

In asbestos mining a few men were engaged in the Marble Bar district, the most work being done in the Nullagine district, where a dressing plant has been erected and a good many men are employed. A decline in the market price during the latter half of the year affected the output. More prospectors have been out than for several years and a promising find was reported by Mr. McLeod from a locality about 15 miles south of the Old North Shaw workings. It is now being actively developed. The outlook for this field is good.

WEST PILBARA GOLDFIELD.

The output of gold was 94 fine ounces, and in the preceding year 67 fine ounces; an increase of 27 fine ounces. Copper ore amounting to 164 tons, valued at £2,481, was produced, and in the preceding year 1,055 tons, valued at £18,955; a decrease in tonnage of 891 tons, and in value of £16,474. Practically the only producer of copper was the Whim Well mine, and this was closed down for the greater part of the year consequent on the low market.

An improvement and active resumption of operations is anticipated in the new year.

The gold produced came from a few claims.

WEST KIMBERLEY GOLDFIELD.

There was no change in this field excepting that boring for oil was in progress throughout the year and results are very encouraging.

Operations have not yet been commenced on the iron leases at Yampi Sound, but it is expected that they will be shortly.

YALGOO GOLDFIELD.

The output of gold was 18,132 fine ounces, and in the preceding year 3,579 fine ounces; an increase of 14,553 fine ounces.

Mining throughout the field showed an improvement.

At Gnow's Nest mine production was maintained throughout the year.

At Payne's Find and Field's Find the position was well maintained. Prospecting in the other centres was active, and the outlook is very encouraging.

YILGARN GOLDFIELD.

The output of gold was 12,794 fine ounces, and in the preceding year 19,241 fine ounces; a decrease of 6,447 fine ounces.

At Southern Cross an effort, assisted by the Government, is being made to re-open the Fraser's Central mine, and success in this effort would mean much to the district. At Nevoria the Great Victoria mine has been purchased by a local syndicate, and it is intended to proceed with a vigorous development policy.

At Forrestonia there has not been any improvement.

At Westonia there has been a big decline and the prospects are not promising.

In the various other centres prospecting has been active, but no discoveries of note have been made.

TABLE 30.

Value of Mining Machinery and Number of Stamps and other Mills erected on the 31st December, 1922, compared with the previous Year.

Goldfield.	District.	Value of Mining Machinery.		Batteries, Number of Stamps.		Mills.															
						1921.								1922.							
		1921.	1922.	1921.	1922.	Prospecting.	Ball.	Griffin.	Huntington.	Puddlers.	Other Crushers.	Flint.	Grinding Pans.	Prospecting.	Ball.	Griffin.	Huntington.	Puddlers.	Other Crushers.	Flint.	Grinding Pans.
		£	£																		
1. Kimberley	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2. West Kimberley	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3. Pilbara	Marble Bar	11,490	**11,360**	48	**48**	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	**1**
	Nullagine	3,752	**3,339**	25	**25**	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	**2**
4. West Pilbara	... ...	2,650	**2,525**	20	**20**	1	...	...	...	...	...	...	...	**1**	...	...	...	...	...	...	...
5. Ashburton	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6. Gascoyne	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7. Peak Hill	... ...	8,575	**9,534**	20	**20**	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	**3**
8. East Murchison ...	Lawlers	13,090	**14,556**	40	**40**	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	**2**
	Wiluna	24,989	**23,829**	65	**65**	...	...	...	...	...	1	1	5	...	...	...	...	...	...	1	**4**
	Black Range	95,333	**95,606**	70	**73**	...	1	...	...	...	...	1	5	...	1	...	...	...	...	1	**3**
9. Murchison	Cue	35,773	**35,359**	65	**68**	...	...	...	...	...	2	...	4	...	...	...	...	...	...	...	**2**
	Meekatharra	67,000	**57,655**	77	**77**	...	...	...	...	...	2	...	14	...	...	...	...	...	5	...	**8**
	Day Dawn	5,200	**6,310**	50	**50**	...	...	...	...	...	3	...	6	...	...	...	...	...	...	3	**6**
	Mt. Magnet	14,105	**15,673**	20	**20**	...	1	...	...	...	...	...	2	1	1	...	...	...	1	...	**2**
10. Yalgoo	... ...	32,732	**32,314**	58	**63**	...	...	...	...	...	1	...	8	1	...	...	...	...	1	...	**7**
11. Mt. Margaret	Mt. Morgans	11,337	**10,505**	45	**45**	...	...	...	...	...	...	...	6	...	...	...	...	...	...	...	**4**
	Mt. Malcolm	234,121	**246,044**	75	**65**	...	...	...	...	...	...	4	13	...	...	...	...	...	...	4	**1**
	Mt. Margaret	33,343	**20,479**	40	**30**	...	6	...	...	...	1	...	14	...	5	...	...	...	1	...	**12**
12. North Coolgardie ...	Menzies	27,752	**23,726**	65	**65**	...	...	...	...	...	...	...	13	...	...	...	...	...	...	...	**12**
	Ularring	26,856	**27,712**	20	**30**	...	...	...	...	...	1	1	4	...	...	...	...	...	1	1	**3**
	Niagara	3,481	**3,436**	15	**15**	...	1	...	...	...	...	...	6	...	1	...	...	...	...	...	**4**
	Yerilla	3,438	**2,663**	20	**20**	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	**1**
13. Broad Arrow	... ...	64,126	**63,420**	45	**35**	...	1	...	2	3	2	...	12	...	1	...	2	3	2	...	**10**
14. North-East Coolgardie	Kanowna	9,135	**6,200**	40	**40**	...	...	...	2	...	...	...	1	...	...	...	2	...	...	...	**2**
	Kurnalpi	180	**150**	5	**5**	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
15. East Coolgardie ...	East Coolgardie ...	1,224,742	**1,108,702**	495	**455**	1	41	13	2	8	43	33	166	1	40	13	2	6	30	30	**155**
	Bulong	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16. Coolgardie	Coolgardie	24,922	**23,584**	78	**63**	...	...	...	1	...	3	...	5	...	...	...	1	...	...	1	**4**
	Kunanalling	7,650	**7,480**	30	**30**	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	**2**
17. Yilgarn	... ...	101,515	**68,652**	155	**145**	...	...	...	2	...	2	2	13	...	...	...	2	...	...	2	**12**
18. Dundas	... ...	29,537	**14,336**	17	**17**	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
19. Phillips River	... ...	10,250	**10,300**	45	**50**	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
State Generally	... ...	30,000	**30,000**	...	...	...	1	...	...	...	1	...	...	...	1	...	...	...	1	...	...
Total, Gold-extracting Machinery		2,157,074	**1,975,449**	1,748	**1,679**	3	52	13	9	11	62	42	309	5	50	13	9	9	44	43	**262**
Total, Machinery, other than Gold-extracting ...		357,308	**343,163**	...	...	...	...	...	2	...	27	4	3	...	...	...	2	...	28	4	**3**
TOTAL, MINING MACHINERY		2,514,382	**2,318,612**	1,748	**1,679**	3	52	13	11	11	89	46	312	5	50	13	11	9	72	47	**265**

PART VIII.—EXISTING LEGISLATION.

At the close of the year the Acts in force relative to mining were:—

1. The Mining Act, 1904.
2. Mining Act Amendment Act, 1919.
3. Mining Act Amendment Act, 1920.
4. Mining Act Amendment Act, 1921.
5. Sluicing and Dredging for Gold Act, 1899.
6. Mines Regulation Act, 1906.
7. Mines Regulation Act Amendment Act, 1915.
8. Coal Mines Regulation Act, 1902.
9. Coal Mines Regulation Act, 1915.
10. Mining Development Act, 1902.
11. Mines and Machinery Inspection Act, 1911.
12. Gold Buyers Act, 1921.

The following alterations, etc., regarding Regulations were gazetted under "The Mining Act, 1904":—

Cancellation of Regulations 120-128, also Forms Nos. 22-30 in the Schedule.

Amendment of Lease Forms Nos. 1, 2, 3, 4, 5, 6, also General Lease Form in the Schedule by the addition thereto of a Covenant relating to mineral oil.

Additional Regulation 160, also Form No. 75 in the Schedule.

Amendment of Form No. 59 in the Schedule.

Amendment of Regulations 90 and 91.

Additional Regulations 90a and 90b.

Under "The Coal Mines Regulation Act, 1902":—

Amendment of Regulation 9—Part I.

Under "The Mines Regulation Act, 1902":—

Amendment of Regulation 15.

PART IX.—INSPECTION OF MACHINERY.

The Chief Inspector of Machinery reports that the number of useful boilers at the end of the year totalled 3,073 as against 2,892 total for the preceding year, showing an increase, after all adjustments, of 181 boilers.

Of the total 3,073 useful boilers 1,442 were out of use at the end of the year; 1,513 thorough and 189 working inspections were made, and 1,537 certificates were issued.

Permanent condemnations totalled 16, and temporary condemnations 89. There were 4 conversions, and 22 boilers were exported.

The total number of machinery plants in use was 4,978 against 7,141 for previous year, showing a decrease of 2,163.

Inspections made total 3,838, and 3,838 certificates were granted.

626 applications for engine-drivers' and boiler attendants' certificates were received and dealt with, and 577 certificates, all classes, were granted as follows:—

Winding Competency (including certificates issued under Regulation 40 and Section 60 of the 1921 Act)	2
First Class Competency (including certificates issued under Regulation 27 and Section 63 of the 1904 Act)	2
First Class Competency (including certificates issued under Regulations 40 and 45, and Sections 60 and 63 of the 1921 Act)	1
Second Class Competency (including certificates issued under Regulation 27 and Section 63 of the 1904 Act)	25
Second Class Competency (including certificates issued under Regulation 40 and Section 60 of the 1921 Act)	14
Third Class Competency (including certificates issued under Section 63 of the 1904 Act)	36
Third Class Competency (including certificates issued under Regulation 45 and Section 63 of the 1921 Act)	4
Locomotive Competency (under the 1904 Act)	5
Locomotive Competency (under the 1921 Act)	2
Traction Competency (under the 1904 Act)	6
Traction Competency (under the 1921 Act)	5
Internal Combustion Competency	3
Internal Combustion Service	166
Crane and Hoist Service	37
Boiler Attendant's Competency	8
Boiler Attendant's Service	135
Interim	8
Copies	4
Transfers	114
Total	577

Total mileage travelled was 46,176 miles, of which 20,764 were by rail, 25,402 by road, and 10 by water.

PART X.—SCHOOL OF MINES.

During this, the nineteenth year of the School's existence, the usual good progress was well maintained.

The number of individual students in attendance was less than in the previous year, due in some measure to the disturbed condition of the mining industry, many families having left the district. Also, possibly, to the obligation to pay class fees imposed at the beginning of the year on students of 21 years of age and over. The Metallurgical Experimental Plant was completed sufficiently to allow of several experiments being carried out by the students and should form a most useful adjunct to the School's equipment. The class work in all sections of the School followed the usual routine. The system of free assays for prospectors was continued, and during the year a total of 658 assays and mineral determinations were made.

CONCLUSION.

In dealing with the operations of the various departments, I have only briefly commented on the principal items. Full and detailed information will be found in the reports of the various officers controlling, published as Divisions II. to VIII. of this Report.

In conclusion, I desire to acknowledge the loyal support received from all officers of the department during the year.

I have, etc.,

M. J. CALANCHINI,
Under Secretary for Mines.

Department of Mines,
Perth, 31st March, 1923.

DIVISION II.

REPORT OF THE STATE MINING ENGINEER FOR THE YEAR 1922.

The Office of the State Mining Engineer,
Perth, 31st January, 1923.

The Under Secretary for Mines, Perth.

Sir,

Annual Report for the year 1922 is submitted for the information of the Hon. the Minister for Mines.

INSPECTION OF MINES UNDER "THE MINES REGULATION ACT, 1906," AND "THE COAL MINES REGULATION ACT, 1902."

During the early part of the year Mr. J. Crabb's regrettable death caused a vacancy in the Southern Cross District, which was filled by Mr. H. P. Rockett being transferred from the Mt. Margaret District to the Southern Cross District, and Mr. A. W. Winzar from the Kalgoorlie District to the Mt. Margaret District. It was decided that no fresh appointment should be made to the Kalgoorlie District but the three Inspectors should carry on the work between them.

ELECTION OF WORKMEN'S INSPECTORS OF MINES.

Elections for Workmen's Inspectors of Mines for the East Coolgardie, Murchison, Mt. Margaret, and Northampton Districts were held in November, resulting in the re-election of Messrs. Crocker and Darcey for the East Coolgardie Goldfield, and Messrs. Byfield and Goggin for the Mt. Margaret and Murchison and Northampton Districts respectively.

REPORTS OF INSPECTORS OF MINES.

Report of Mr. W. M. Deeble, Inspector of Mines, Cue.

I beg to report as follows on the progress of mining in the Peak Hill and Murchison Goldfields, and the Black Range District of the East Murchison Goldfield:—

It is pleasing to have to report that the prospects of the various districts included in the above were brighter at the end of 1922 than at the beginning.

During the year prospectors going out have had to face greater difficulties than usual, owing to the shortage of water supply and the total amount of rain, as recorded at the Cue Post Office, being only 490 points during 20 days of the year, and this of necessity made the radius of their operations limited during the summer months. While there was water obtainable several prospectors were out around Mts. Fraser and Padbury, roughly 40 miles West of Peak Hill, but were compelled to return owing to shortage of water. This has been remedied since by the Mines Department sinking a well at the place where most of the men were engaged. Just before leaving, prospectors Pope and mate brought in 18 tons of ore to the Peak Hill State Mill, and obtained 22ozs. 10 dwts., which is equal to 25dwts. per ton, from the plates, and the sands assayed 2ozs. 6dwts. per ton, making a total of 2ozs. 11dwts per ton. Stokesbury and McNab brought in 12½ tons, which returned 13ozs. 18dwts., equal to 22dwts. per ton. These were only trial parcels, and it must be admitted that mining cannot be carried on successfully with the mill 40 miles distant. Altogether there were twelve men when I visited the place in September last. Two prospectors, Lane and Davis, opened up a reef twelve miles south of Peak Hill and about 1¼ miles east of Murphy's Well. Some years ago some blacks brought in alluvial gold from a place close to this reef. A parcel of 13 tons brought in to the State Mill at Peak Hill returned 18dwts. 2grs. per ton, and the sand assayed 7dwts. 7grs. per ton. A shaft has been sunk on the reef, and a drive is being made along the reef at 30 feet depth.

Peak Hill.—Quite a number of miners working for themselves have been engaged in and around this district, and a ten-head mill has been engaged on the material in the dumps on the old Peak Hill mine, but there is nothing new to report in the immediate vicinity.

Holden's Find.—At this place the Waterloo G.M. has been employing an average of 12 men, and the 5-head mill on the mine has crushed 1,410 tons from which a yield of 690ozs. were obtained from the plates, and the sands are said to contain 4dwts. per ton. All the ore has been obtained from development work. The deepest level is only 150 feet, and a drive on the reef at that depth for 100 feet in length shows it to average 15 feet in width, which the manager reports is of payable value. He also informs me that four winzes sunk from the 80ft. level proved the reef payable for a length of over 260 feet. All the driving has been done on the reef to the north of the shaft, but it is intended to drive south at the bottom level during the coming year.

Norma G.M.—During the early part of the year the developments seemed to indicate that the mine would come to the front again, but later returns were rather disappointing.

Judd's Patch.—This place is situated from 8 to 10 miles west of Holden's Find, and an alluvial rush to that place about twenty years ago only resulted in alluvial ground being worked. Evidence of reefs is shown by quartz on surface in all directions, and occasionally a piece of quartz containing specks of gold is found. The rough ragged gold found by put-

ting the surface material through a dry-blower seems to indicate that the gold has not been moved far, yet no payable reef has been found in the district up to date. There is a large area of this country, but it is only for a short time after rain has fallen that prospectors have a chance of testing it.

During the year Messrs. Holden and Watson, prospecting about four miles off the road from Meekatharra to Wiluna, about 30 miles from the former place, found some rich specimens and pegged out leases, but owing to men coming on to the ground on the pretext that there was alluvial on the ground, proper mining on the reef was not carried out until the end of the year. Some very rich specimen stones were found by the prospectors, and I am satisfied that those who claimed to be looking for alluvial found and took away some rich stone also.

Meekatharra.—The principal mine now in this district is the Ingliston Consols Extended G.M., on which an average of 100 men have been employed during the year. The deepest level is 1,110 feet, and the mine is well developed ahead of the treatment plant. The treatment consists of 15-stamper mill and two Wheeler grinding pans, three Wilfley and nine curvilinear tables. The management reports that, owing to the good results obtained by fine grinding and concentration, the cyanide plant is not necessary, and is not now in use. Two rather important developments were reported during the period under review at the Nos. 9 and 10 levels. The ore body was cut at the No. 9 level 267 feet east of the shaft, and a further 20 feet was driven through the lode. The level 89 feet north and 70 feet south was driven, disclosing an average width of 14 feet of ore for the full distance, with payable values. The crosscut at No. 10 level intersected the ore body at 296 feet in. The lode was driven into for 10 feet with no hanging wall up to date. There were several leaders in this body showing high values.

The manager reports having purchased the whole of the Fenian leases and plant, and these were taken over during November. The Fenian is fitted with air-compressing and rock-drilling plant, and the main shaft is 30 feet deeper than that in the Ingliston Extended. It seems to be advantageous to have these two mines under one management, both for the purpose of working and ventilation purposes.

Ingliston G.M.—During the year an average of 42 men have been engaged in and on this mine. The main shaft is a total depth of 402 feet, and the deepest level (No. 4) equals 387 feet. There is a 10-head Fraser & Chalmers battery on the mine, and during the year 4,367 tons were treated for 3,803 ozs., valued at £14,959. The lode material in this ground is the hardest in the district, which makes it expensive to mine and treat.

Ingliston South G.M.—The company was formed with the main objective of sinking for the continuation of the Western lode that had been worked on the adjoining lease—the Ingliston Extended. In sinking the shaft low values were occasionally found, and at a depth of 180 feet a lode underlying to the east was discovered. At 230 feet a level was opened 22 feet below, being left for a sump, the bottom of which was in all lode matter, assaying (Company's assay) 54s. for a length of 10 feet. At the 230 feet level the lode has been driven on for 80 feet south and 20 feet north. To determine the width of the lode a crosscut was put out west 47 feet and east 12 feet. The company's assays of the major portion of the lode gave an average value of 34s. per ton. One characteristic of the lode is that the main veins ran across the lode, viz., east and west. At the time of my last visit a drive was being carried along one of the veins in the south drive for a length of 24 feet, and the value is reported as 169s. 7d. per ton. I have been informed that it is the intention of the company to resume sinking to a depth of 300 feet, which will coincide with the level at that depth in the Extended Mine. Taken altogether, this is very promising, and the future developments are being watched with great interest by those engaged in mining in the district.

In Meekatharra there are about 40 men working shows for themselves, and the results of crushing put through are published monthly in the State Mill returns.

Cull-Culli.—The Turn of the Tide Mine has been taken up again. A pump has been installed and the shaft sunk to 136 feet depth. A small crushing of seven tons returned 178.90ozs., which shows that the shoot of ore continues downwards, and is still rich at the deepest point where any work has been done.

Reedy's.—There are two shows at this place which may develop into mines. A 5-head mill has been erected on the Emu mine and crushing started. Unfortunately, the water supply eased off to 3,000 gallons daily, which was not sufficient, but it is hoped that a larger inflow will be struck by crosscutting at the bottom level.

Tuckanarra.—A number of prospectors were engaged around this part, but nothing worth recording was found during the year under review.

Cue.—Mining at this centre has been very quiet during the year. One small patch found in lode material under alluvial ground north-east of townsite returned 142.45ozs. from 7 tons.

Around Day Dawn the mining prospects were brighter during the earlier part of the year. One crushing from P.A. 339 D. of 31.5 tons returned 109.24 ozs., and another 5.75 tons for 21.63ozs.

Cuddingwarra.—The Big Bell G.M. has been employing an average of 31 men, 5,900 tons have been treated by amalgamation for a return of £2,031, and 4,340 tons of sand by cyanidation for £1,207. The whole mining is being carried out by the open-cut system, and the total cost of mining and milling is low.

Tuckabianna.—The ground known as the "Nigel," from which 589 tons were taken from above water-level (60 feet) for 2,078.66ozs., has been taken up again, and it is intended to sink a vertical shaft and cut the lode at about 100 feet vertical depth to prove the existence or otherwise of the shoot of rich ore.

Mainland and Lake Austin.—The Mainland Consols has been taken up again, and a pump put into the main shaft to obtain a supply of water for sluicing purposes, which it is thought will pay, and by removing the alluvial surfacing it is thought that some rich leader or lode, similar to those worked around this part years ago, may be disclosed.

Daniels Bros. found rich specimens in the bottom of the shaft up to the time they ceased work, but they were unable to continue further without machinery. Lowering the water in the main shaft will enable the present holders to drive out under the shaft worked by Daniels Bros. and Gordon.

Moyagee.—The Moyagee G.M., situated near the railway siding of that name, brought into Cue State Mill 680 tons, and obtained a return of 654.23 fine ozs. by amalgamation. Some rich gold was found to

the west of this in the early days of this field, and it is well worth the attention of prospectors now.

Lennonville.—Galtee More crushed 666 tons for 303.59 fine ozs. during the year. Many years ago a large lode in this lease was worked by the open-cut system with highly payable result. One peculiar feature in this mine is a bar crossing the lode, on one side of the bar the natural water level is 90 feet deep, and on the opposite side 140 feet.

Mt. Magnet.—There was a slight increase in the number of men engaged in mining in the Magnet district over the previous year. Some very good returns have been obtained, and some noticeable ones are—Lone Hand, 40 tons 328.86ozs.; and Tame Cat 48.75 tons 152.10ozs.

Youanmi.—At this place the Youanmi G.M. having shut down and thrown over 100 men out of employment, caused a considerable blank. Out of these only 20 men have been employed tributing on surface blocks, the remainder having to go elsewhere.

Curran's Find.—The Red, White and Blue mine, taken up by a party of six and assisted by the Mines Department, have sunk their shaft another lift, and are preparing to open out on the reef. It is expected that should the values continue down equal to the first lift worked, the mine will pay well.

Sandstone.—The tonnage treated at this place during the year was 2,242.55 tons for 2,996.66 fine ozs.

A very promising development is what is known as the Oroya East, which during the year produced 764.42ozs. of gold from 60 tons, or 12.74ozs. per ton.

During the latter part of the year the Empire Gold Mining Syndicate took options to purchase the Bounty and Prendergast leases.

Bounty Lease.—At the time of my last visit the ironstone lode formation was being open cut in two places. The manager stated the average assay from it was high.

Prendergast Lease.—A road was being cut into an open cut for the purpose of easy and cheap removal of the ore. The assays in places in this cut are said to be very high.

The Bid Lease.—Three-quarters of a mile north of Bounty, the Bid lease is being worked by an open cut on a lode of ironstone material, and the average assay up to date is said to show the value of the material to be worth one ounce per ton, taken altogether, the prospects are very promising.

Lodes up to date have been very much neglected, and should these lodes come up to promise it will no doubt cause more attention to be paid by prospectors, when prospecting for metals, to other rocks besides quartz reefs.

REPORT OF MR. H. P. ROCKETT, INSPECTOR OF MINES, SOUTHERN CROSS.

Herewith I present to you my Annual Report on the Goldfields and Mining Districts in my District.

Prospecting.—Notwithstanding that an average rainfall, 9 to 10 inches, was recorded the season was abnormally dry from the point of view of the prospector, and was very unfavourable to prospecting in the dry less frequented areas. Grass for horse feed was scarce owing to the rain having fallen too late in the early part of the year and too early in the latter part. It would seem also that the average rainfall per rainy day was less, since many gnamma holes and rock-holes rarely known to be dry have this year been empty for several months past.

In spite of the bad season a considerable number of assisted prospectors have been at work in my districts, the average for the year being about 15. Unfortunately not one prospector has been successful in finding a self-supporting mine.

The districts worked by the prospectors include Ravensthorpe and Kundip, Forrestonia, Parker's Range, Marvel Loch, Southern Cross, Koolyanobbing, Marda, Diemal's Find, Westonia, Wither's Find, Manxman, Bullfinch, Field's Find, Payne's Find, Warriedar, Yalgoo, Warda Warra, Galena, and Twin Peaks, Mt. Singleton and Greenbushes. Some excitement was caused by the discovery of an important looking lode, subsequently named the Retaliation lode, 15 miles west of Mt. Singleton on Ninghan Station. The prospectors, Messrs. Lewis and Carins, applied for reward claims, and several companies were formed, who took up options of purchase. At one time there were three stores and some 50 men on the line of lode. I regret to say that all the financially strong companies have failed to exercise their options of purchase and have withdrawn, and the line is now practically abandoned. In view of the large amount of money and labour expended in testing the lode during the last six months the chances of successful working by a large company do not seem good, but it has not been demonstrated that a working syndicate with a five-head mill would fail to obtain good returns, and it is certain that the lode contains lenses of high grade ore. At the time of my last visit a party of four men was still at work about two miles north of the Retaliation Reward, and obtaining encouraging returns from pan-sampling.

Another find which caused a stir temporarily, but which did not realise expectation, was that at Warda Warra, some 70 miles N.N.E. from Yalgoo. At one time there were 20 or 30 men on the line, but a month ago the number had dwindled to five. I was informed by one of the men on the spot that lease 930 had been taken up by a syndicate.

In December Messrs. E. R. and J. H. Donovan and F. C. H. Dennis applied for a reward claim for tin discovered on Willow Creek, about four miles south of the Bridgetown-Nannup Road. I have not yet had an opportunity of inspecting this find.

Near the close of the year Messrs. Powell and Becket made a discovery of mica on the stock-route four or five miles west of Mt. Hope. At my examination I did not observe any considerable quantity of first class mineral, and considering the present quiet conditions of the mica market it did not appear to me that the claim was likely to prove self-supporting in the near future.

Mining.—In the Yilgarn Goldfield mining has been very quiet. The pioneer camps, Enuin and Golden Valley, have been deserted and the Bullfinch mine has been closed. Wither's Find, six miles east from Bullfinch, gave employment to about 20 men and a small tonnage of high grade ore was raised. The Bullfinch company worked several leases on option of purchase, as did also several other companies, but no purchases were completed. At Manxman Messrs. Barr and party's mine, the Radio, continues to develop well, and promises a very satisfactory yield for 1923. During 1922 107 tons were raised, yielding 490 fine ozs. of gold. There was a revival at Marda, where the Butcher Bird mine was reopened and worked for some months in the early part of the year, but about June work ceased on the lease as the result of several causes, amongst which lack of co-operation among the members of the party may have been one of the most important. Another party is

now working the lease, and it is expected that they will make a success of the venture.

Fraser's Central G.M., at Southern Cross, yielded 174 fine ozs. of gold obtained from 575 tons of ore. This is one of the oldest mines in the State, and possibly one of the best. It has been closed and reopened several times during the last 30 years. There have, of course, been wide variations in the gold yield per ton from time to time, but it does not appear certain that there has been a marked fall in the average grade of ore won during the last 10 years, or that the failure of the mine has been due principally to that cause.

Except for prospectors, Greenmount was idle. Mr. Sam Graham purchased 10 head of the Transvaal battery, which he says he can keep constantly engaged on ore from his Jessie Graham lease. At Kennyville Messrs. Cooper and party raised 32 tons from the Cornishman lease, which yielded 20ozs. Very little work has been done on the May Queen during the year, but the mine continues to look well, and an increased output of high grade ore may be expected during 1923. The ore produced is invariably high grade, 70 ozs. being obtained from 21 tons of ore. The total output for 13 years' operations exceeded 840 tons, containing 4,197 fine ozs.

Marvel Loch is quiet. The Mountain Queen, an important producer of other days, has been occupied by prospectors from time to time without success in finding payable ore. The Firelight crushed 305 tons for 63 fine ozs.; average 4.13 dwts. per ton. The crushing plant consists of a 3ft. 6in. Huntington Mill.

The Firelight lode will average 40 feet wide, and may reach 100 feet wide in places, judging by surface indications. The Huntington Mill is well suited for crushing the class of ore, and it seems likely that an enterprising company using four or five 6ft. Huntington Mills could make the mine pay handsomely. The G.W.S. main reaches the mine, so there would never be any trouble from shortage of water.

The Bohemia Gold Mine continues to open well. The winze from the 150ft. level to the 200ft. level proved the continuation of the pay shoot at least to that level, and it may be expected that this year's output, 237ozs. from 196 tons, will be exceeded next year.

At Nevoria, Mr. C. Burbidge has a couple of men employed, and some cyaniding is being done. The Great Victoria, at Burbidge, was idle for about half the year, and was eventually sold. Fortunately, its prospects of regaining profit-earning status has been improved considerably since the sale. I expect to be able to report next year that the mine has given satisfactory returns. The output was 3,880 tons for 388 fine ozs.

At Parker's Range five or six men were employed on the White Horseshoe, from which 481 tons yielded 443 ozs., and about as many men on the Spring Hill obtained 348ozs. from 537 tons.

Nine miles south from Parker's Range Messrs. Polson Bros. raised a little ore on their own account, and also crushed a few tons for other prospectors at their battery.

The Great Southern battery at *Forrestonia* has been in operation as often as required, and has kept the district alive. A considerable number of crushings of under 20 tons were put through in addition to the ore from the Great Southern Mine, which yielded 31ozs. obtained from 277 tons.

Work on the *Edna May* Group at *Westonia* is confined almost entirely to cyaniding. A few men were employed underground till about the end of June, but since then very little ore has been broken. Near Boddalin Soak four or five parties are at work, but the yield is small. For the year the principal producers were—

Edna May Deeps—5,104ozs. from 4,154 tons.
Tres Trois—62ozs. from 73 tons.
Royal Flush—64ozs. from 66 tons.
Edna May Central—40ozs. from 91 tons.
Edna May Golden Point—21ozs. from 26 tons.

In the *Yalgoo Gold Field* the Gnow's Nest Mine is opening up well. At the 200ft. level the lode was cut as expected, and the grade is said to have been maintained. The flow of water was heavy, and for the last few months work on the mine has been confined to the erecting of a 10in. Cornish lift. At the time of writing the pump is probably in working order, and work will have been resumed underground. In the case of this mine the management is taking the wise course of erecting a pumping plant of double the capacity necessary to control the estimated flow of water.

A small oil engine and pump have been erected on the Golden Monarch, and a couple of men are engaged driving for the pay shoot.

Except for two assisted prospectors and a few men on the Revival G.M., Noongal is deserted.

During the year Mr. Neville erected a wood-gas driven 5-head mill on the Revival, and is now working a fairly hard quartz lode about 36in. wide. A shaft was sunk 60 feet and a drive north-west for 60 feet opened from 26in. to 36in. wide of ore all the way, and Mr. Neville expects to have a successful year. After a trial run, which yielded 27ozs. from 48 tons, the battery is steadily at work and it is expected that, in a short time, there will be at least two years' ore in sight.

At *Warriedar* six or seven men are at work sampling the Highland Chief, now under option to a Melbourne company. The return for the year was said to have been satisfactory. There are four or five men at Rothsay, two of whom are tributing on the Rothsay mine, but the yield for the year has been disappointing.

The sale of Brown's Reward at *Field's Find* was recently completed, and some 20 or so men are at work on the lease. A smithy and tool shop have been erected. Over 300 feet of shaft sinking have been done, and numerous costeens cut across the formation, with very satisfactory assay results, the manager tells me. The lode varies from 3 to 5 feet wide, but the length of the pay shoot has not been determined.

Several other companies have been formed to work leases in the neighbourhood of Brown's Reward, and they are expected to commence operations at an early date.

At Payne's Find about 20 men are engaged, in parties of about two or three each, on a number of small shows.

Messrs. Frend and party are working at about 250 feet deep on a small hard rich vein, from which they obtain profitable results. On the Lake View work is confined to stoping north from the 150ft. level, where the lode is being worked 2ft. wide at a profit.

The Lady Mary has only one man at work about 30 feet below the surface.

High grade ore is being raised by the Orchid.

The Retaliation lode was discovered during the year, and caused considerable excitement and mining activity. At least a mile long and averaging, so far as could be seen, 4 feet wide, the lode looked like a most valuable discovery, but, unfortunately, after six months' work developing it was found that, in most instances, values were disappointing. At one time there were over 50 men on the line. At the time of my last visit there were only five men camping at Christmas Well, and not one man at work on the Retaliation line of lode.

At *Mt. Gibson* Messrs. Morris, Brown, and Phillips raised 100 tons of low-grade ore and treated it at their 5-head battery.

They are now engaged in cyaniding tailings.

About 20 men are employed at the Royal Standard at *Yuin*. During the year considerable driving was done westward at the 100ft. level, and a winze was sunk at 580 feet east from the 200ft. level. The granite intrusion which cut off the lode at 230ft. level in the shaft has been met with at 86 feet in the winze since the end of the year. At the time of my visit it was not yet certain that the probable ore developed between the 200ft. level and the 280ft. level at 580 feet south could be profitably mined, but the management hopes to overcome all difficulties, and place the mine on a profit returning basis during the coming year.

The following list covers the principal crushings in the Yalgoo Goldfield for the year:—

Gnow's Nest	... 10,880	tons for	9,766	fine ozs.
Brown's Reward	... 309	,,	861	,,
Carnation ...	... 366	,,	575	,,
Lake View	... 1,026	,,	1,265	,,
Orchid ...	... 316	,,	467	,,
Golden Harp	... 100	,,	26	,,
Revival ...	... 47	,,	27	,,
Rothsay ...	... 80	,,	82	,,
Highland Chief	... 68	,,	62	,,
Royal Standard	... 6,244	,,	2,719	,,

In common with all the other goldfields, mining was very quiet at *Phillips River*. The Kundip section produced most of the gold, the Gem contributing 265ozs. obtained from 488 tons, and the Hillborough 209ozs. obtained from 154 tons.

Some other producers were the Fair Play, 60ozs. from 201 tons, and the Jim Dunn, 42ozs. from 92 tons. The Jim Dunn battery has been hung up for some months owing to the lack of water resulting from the dry season.

In all 1,033 tons of ore yielded 610ozs. gold.

Copper mining has almost ceased, five mines together raising only 30 tons of ore which were estimated to contain 3½ tons of copper.

In the *Swan District* 10 quarries operated, supplying the metropolis with material for road making, building, brick making, and other uses. The workings appeared to be in good order, due care being taken to ensure the safety of the workmen as far as possible.

The output of tin from Greenbushes was low. For a considerable portion of the year almost no men were employed working for wages, and only a few were at work mining.

In December a new find was reported four miles south from the Bridgetown-Nannup Road, on Willow Creek.

In the *Northampton Mineral Field* mining was very quiet except for the three principal mines, the Narra Tarra, Surprise, and Wheal Ellen.

With the close of the year the Wheal Ellen stopped all mining operations and the Narra Tarra ceased lead production, operations being confined to mining copper ores. It would seem that the past short-sighted policy of neglecting to keep development work ahead of extraction work is the cause of the cessation of lead production on these mines, for it cannot be said the present price of lead (£28 per ton) is low.

The Narra Tarra continues to produce a little copper ore, but the output is less than sufficient to keep the mill running at half its capacity.

The Surprise is working again with the mill at its full capacity, and every prospect of a good year is ahead. In the early part of the past year mechanical defects in the plant caused considerable delay, and later another stoppage was caused by failure of the boiler. A new boiler has been erected, so there should be no recurrence of this trouble in the near future. There is a considerable volume of ore in sight, but if the mine is to continue to keep on producing at a profitable rate for more than another two years more development work is urgently necessary. The production of the field was as under:—

Narra Tarra—12,640 tons ore, containing 1,309 tons metal valued £30,640.
Surprise—11,144 tons ore, containing 1,251 tons metal valued £30,798.
Wheal Ellen—5,635 tons ore, containing 418 tons metal valued £10,364.
Location 7 (Thrings)—445 tons ore, containing 50 tons metal.
Long Lode—38 tons ore, containing 11 tons metal.

Report of Mr. A. W. Winzar, Inspector of Mines, Leonora.

I have the honour to submit my report for the year 1922 on the Mt. Margaret, East Murchison, and North Coolgardie Goldfields.

Mining generally has been very quiet for the period, but an improvement is looked for in the near future. The sons of Gwalia, which has for many years been the chief gold producer, will commence active underground operations about the middle of 1923, when the 25-head mill which is now in course of construction will be working, and the number of employees will be about 300.

The Lancefield Mine is reported to have changed hands, and it is probable that something will be done towards working the property.

A fair amount of prospecting is being done in the various centres, and a good many individuals and parties are receiving assistance from the Prospecting Board and under the Mines Development Act.

Mining stores are still costly and living expenses are very high, making it difficult for men to stand the expense of working without getting the ruling rate of wages even with the assistance granted by the State Prospecting Board. It is found that men assisted make good use of the help afforded them, and work hard under extremely trying circumstances in most cases without reward. The sinking and equipping of wells along the track to the country recently prospected by the State Prospecting Party will be appreciated by prospectors, and should materially help to open up the auriferous belts known to exist east of Laverton, and also north and south of where the party was located. I know of more than one party who has had to turn back for want of water.

A large portion of my time has been taken up with reports on different mines and leases, and dealing with assistance to prospectors who are scattered in different parts of the districts and often take some time to locate.

The number of accidents has been unusually small, and none of a very serious nature.

No prosecutions were found necessary. The managers and men are keen to observe the provisions and Regulations laid down for their protection, and a distinct improvement can be noticed each year in the general safety of the mines. The men employed are alive to the fact that individual care on their own part is the main essential to the prevention of accidents and occupational diseases.

Leonora District.—The Mining Registrar's returns show an increase of 8,369ozs. in the gold production in comparison with 1921, and there should be a big increase in the coming year.

The Leonora State Battery had three runs for the year, and treated 1,132 tons for 1,331.9ozs., showing a small decrease of tonnage but an increase of 531 ozs. of gold.

The Sons of Gwalia have continued the re-treatment of the old residue dumps, showing a monthly profit on material worth somewhere about 7s. a ton extraction value. The running of the mechanical portion of the plant is carefully maintained, and the metallurgical operations are very nicely and scientifically adjusted to avoid excessive use of chemicals and at the same time obtain the maximum extraction of gold.

A system of watering the dumps and surface about the plant with mine water was put in hand. This had the effect of allaying the dust.

There were no new finds of any importance, and practically the same conditions exist as in 1921.

At Diorite Messrs. Dowson and party got a return of 331.5ozs. from 155 tons; the gold occurs in small pipes, and a lot of work is necessary to get out a crushing. Two other parties are working in the vicinity and got 63.8ozs. from 56 tons of ore.

From Lake Darlot 292 tons were crushed for 161 ozs.

The Bannockburn at Doyle's Well had a yield of 238ozs. from 29.5 tons; the gold occurs in small pipes in a lens of ore pitching at a flat angle. Though this mine is very profitable to the owners and they appear to have more good stone to work out, it is not likely on present showing to develop into anything large.

At Mt. Clifford the Victory No. 1 is still producing payable crushing material, 324 tons returning 135 ozs.; expenses are small, the owner is doing nearly all the work himself, and crushes at his own mill on the lease.

There was nothing doing around Wilson's Patch or Mertondale.

Niagara and Yerilla districts show no change from the preceding year. The output from Niagara totalled 189.7ozs. from 398 tons; the individual yields are small and unpayable.

Edjudina returned 168ozs. from 225 tons; this comprised ore from eight holdings.

Yarrie had one fair parcel of 313 tons, from which 200ozs. were obtained.

From the Walbrook 32ozs. were got from 54 tons. This lease looked rather promising on my last visit, and a fair quantity of stone was in sight, said to be of payable value. There seems to be very little prospecting around the two centres away from the old workings.

East Murchison District.—Lawlers showed an increase in yield on 1921 of 1,544.7ozs. and 1,412 tons. The Queen Mine is working continuously, but the operations are difficult owing to hard ground and heavy water; developments at depth are fair.

The Waroonga has been unwatered to No. 6 level and ore broken of fair value. A good output should be forthcoming from this mine in the future. As stoping was commenced towards the end of the year only 1,122 tons were crushed for 255.7ozs. Accumulated sands were treated, 16,490 tons being put through for 887ozs. The methods of handling the sands is rather unique. The material is pulled up in trucks by winch and automatically dumped into the vats, the treated material is taken out in trucks running out of the vat through a doorway cut in the side; the manager claims this to be a cheap and efficient way of handling the sands.

Several P.As. are being worked. On the Great Eastern Messrs. Branson Bros. are treating sands and slimes, left by the old company, for profitable returns.

At Sir Samuel practically nothing is doing, a few areas being held; 189 tons were crushed for 78ozs. There are several promising shows around this centre which may develop well when systematically worked. The old Vanguard is being worked by W. Maund, who has leased the State Battery and intends to give the lease a good trial; his prospects are promising.

The Aster at Kathleen Valley keeps its average. The mine is being worked at 110 feet for 200 feet north with a fair body of stone still in the face; the average width would be 3 feet 6 inches and value about 15dwts.; 396ozs. were obtained from 612 tons by amalgamation; a large dump of sand is awaiting treatment, and the owner intends to use the returns from there to further develop the mine. This mine would be well worth the attention of investors. A little prospecting is being done around the valley, but nothing of much value has been located.

The Wiluna District shows an increase of 1,363ozs. and 845 tons compared with 1921. Most of the Wiluna yield is obtained by tributers working on the Moonlight, Happy Jack, and Gwalia Consols leases; all the ore is treated at the State Mill, which is kept constantly employed.

From the Happy Jack 4,206 tons were treated for 2,651.5ozs., the Gwalia Consols 1,275 tons for 969 ozs., and the Moonlight 1,205 tons for 737ozs.; all the gold came from within 100 feet of the surface; below that the refractory sulphides render operations unprofitable under existing circumstances. The Essex has been partly unwatered, and 309 tons were recovered for 209ozs. The heavy inflow of water makes it an expensive mine to work; according to old assay plans good values exist below the present working level.

From Cole's Find three good crushings were obtained totalling 289 tons for 252ozs. Nothing of any size has been found in the locality; the ore occurs in small pipes.

In the Brilliant, at Diorites, a fair amount of development work was done, the stone opened up was of fair value. The distance from Wiluna retards the development of the mine. There are quite a number

of areas being worked, and the district is being well prospected.

At *Mt. Keith* everything is at a standstill, not one single show is working and no one prospecting. One hundred and thirteen tons crushed yielded 34.4ozs. There is a fair amount of auriferous country in the vicinity, and a good battery, so the place may get another start.

Laverton District has been very quiet for the year. The State battery had two rounds of crushings, and some fair yields were obtained. No companies are now operating in the district, though it is hoped the Lancefield will be starting again. The water level in this mine is rising and will cause serious damage to the filled stopes if allowed to rise much higher.

Much is expected from the country opened up by the State prospecting party.

I have not yet had an opportunity to go through the Erlistoun country east of Laverton.

From Burtville the Nil Desperandum had a good return—112½ tons yielding 782ozs. The gold occurs in fine leaders, and 3in. is considered a big reef in this mine.

The Bond crushed 237 tons for 415ozs. This lease has since been abandoned and the owners have gone prospecting elsewhere.

Mt. Morgans.—The Westralia again started operations about the middle of the year, and crushed 4,740 tons for 1,779ozs. The ore is obtained from the workings above the No. 4 level to the surface, and there appears plenty to keep the mill going for a long period at the present rate. A little prospecting has been done around the centre but with poor results. A few men have also been at the Margaret and are still prospecting around there.

At *Murrin* a few holdings are being worked. Ritchie's P.A. shows some good stone though the shoot is short—74 tons were treated for 137ozs. The Murrin Queen ceased operations during the year.

At *Eulaminna* the Pyrites Mine ceased operations after setting an additional Cornish boiler and preparing to sink the main shaft another lift. Enough ore was proved below the bottom level to warrant the sinking. As everything is in order it will not be a difficult undertaking to re-open the mine at any time when conditions improve.

At *Yundamindera* the Big Stone worked continuously, and treated 663 tons for 357ozs. A few prospectors working around got poor results for the year.

At *Linden* the Bindah put through 9,660 tons for 4,486ozs. This mine ceased operations towards the end of the year; the owners are now endeavouring to get capital into the mine to sink and develop it at lower levels.

The Devon company treated 250 tons for 69ozs. and did a fair amount of development.

The Democrat had a small tonnage—35 tons returning 196ozs.

The Green Hills leases have been acquired by a syndicate who are endeavouring to pick up the old reef below the 100ft. level.

Report of Mr. W. F. Greenard, Inspector of Mines, Kalgoorlie.

I have the honour to submit my Annual Report, for the information of the Hon. the Minister for Mines, on the working and administration of Mines Regulation Act and Amendments, 1906, in the East Coolgardie, North-East Coolgardie, Coolgardie, Dundas, North Coolgardie, and Broad Arrow Goldfields.

A systematic routine inspection of all mines in the above Goldfields has been maintained throughout the year.

The safety gear on cages in shafts is regularly tested every 14 days, and specially examined each day; safety hook rivets are renewed monthly, and ropes cut and re-shod every six months.

The storage of dynamite and detonators, and the handling of same in workings have been constantly under supervision.

Change rooms have been carefully examined and kept in good order. Sanitation underground and on the surface has been maintained in good order.

The filling of stopes and securing of shafts, levels and stopes have been very carefully watched. Several snaps of solid pillars in the various mines have occurred, but no extensive damage has resulted.

A good deal of tributing is being done in several mines. This increases the work of inspectors, as in many cases it means what may be termed "salvaging a mine," and great care has to be taken that tributers do not endanger the lives of adjoining tribute parties.

The dust arising in underground workings has been constantly under supervision, and damping insisted on. The consistent pressure by inspectors has made almost a perfect system of continual damping, and there is now no difficulty about it. Both managers and men realise the importance of suppressing dust. The dust in dry treatment plant is, of course, a very difficult problem, and changes in temperature and atmospheric disturbances cause trouble in treatment plants, but the managers have shown a readiness to instal exhaust fans and damping appliances wherever necessary, so that it can be said that dust is reduced to a minimum.

The ventilation has been carefully measured, recorded, and supplied to Head Office regularly. The temperatures have also been taken in every working place.

Monthly returns of all accidents have been forwarded to Head Office regularly.

Mining development during the year 1922 in the Boulder belt has unquestionably shown that there are large lodes of high grade ore to be found with development.

The Ivanhoe shaft is down 3,600 feet; the Golden Horseshoe 3,200; the Great Boulder Proprietary 2,800 feet. Several other mines are down 2,000 feet; one or two of these mines will, during the year, undertake further sinking.

The Great Boulder Proprietary have done considerable boring during the year, and have located one or two promising ore bodies, which require opening up. This will have to be done before it can be definitely stated that the life of the mine has been lengthened.

The Ivanhoe Gold Corporation have been quietly developing between 2,500 and 3,000 feet levels, and there are good reasons for believing that the life of the mine has been considerably lengthened. Values are the all-important factor. Developments on the Ivanhoe have undoubtedly had a good influence on the Golden Horseshoe No. 2 and No. 3 Lodes, and the work on No. 4 Lode (the Boulder Proprietary Lode) towards the south, near the Chaffers boundary, are said to be good at 3,000 and 3,200.

The Perseverance Mine is worked by about 50 tribute parties. This is a shrink stope mine, and the question arises: how long will a mine stand salvaging. So far as it is possible to see, this mine is no nearer

finishing as a large gold producer than it was two years ago.

The Lake View and Star, Limited, have sunk their main shaft to 2,300 feet, and have done a good deal of development at several levels. They are busy reorganising their reduction plant; the old wet plant has to give place to a dry roasting process.

The Associated Mines have been working on a restricted output. This is a shrink-stope mine. The important development in South Kalgurli Mine should have an important effect in the future development of this mine.

The South Kalgurli, Limited, have continued to open a large ore shoot at 15 and 16 levels, and the 17 and 18 levels are being rapidly developed. These important shoots of high grade ore have a very important bearing on the adjoining mines, the Associated and Perseverance.

The Oroya Links and Kalgurli Mines have been worked by tributers, and the Kalgurli treatment plant, where all the ore from Oroya Links and Kalgurli Leases is treated, has been reorganised on a basis of about two to three thousand tons per month.

The Associated Northern, Paringa, Brown Hill, and many other leases are being worked by tributers.

At Williamstown Mr. G. Mayman has erected, with departmental assistance, a Huntington mill and cyanide plant, and is working a large lode at 150 feet for payable returns.

The Hannans North Mine, owned by Mr. Raven, has been equipped with winding engine, boiler, and compressor plant, and is now busy bailing water from the underground workings.

A large number of prospectors have been working various leases in the north end, but nothing of a sensational character has been disclosed.

Hannans Reward is being worked by Hunt Bros.; a 5-head mill runs continually on low grade ore which, I am informed, is just payable.

At Broad Arrow there has been a fair number of prospectors during the year. Messrs. Borland and Rudd have had two or three good crushings from the Oversight Mine. A little development has been done on the Tara Mine. The Oversight South Syndicate has done a lot of driving at 50 feet level, where one or two contacts were met, but the deposit was only a few ounces. The Determination shoot did not live down, and is practically abandoned.

At Bardoc and Vettesburg several parties have been trying the old mines, looking for patches of ore.

At Canegrass McAuley has done good development work with some assistance under the Mines Development Act, and has taken out two crushings from a large felsite dyke.

At Goongarrie Mr. Cavalier is cyaniding the tailings at the Boddington Mine, and there are a few prospectors, some dryblowing, and others driving for contacts in the various reefs of the district.

At Comet Vale the Gladsome and Sand Queen Mines endeavoured to unwater their shafts, but failed through running sand and other obstructions. Mr. P. Maher continued to get small crushings from the Lake View Lease. There are several other prospectors in the district testing leaders and reefs.

At Yunndaga the Menzies Consolidated Mines have been doing good development at 2,000 feet; the increased working cost is trying the economic life of this proposition almost to breaking point.

At Menzies mining is very dull. Allen and Party, with assistance from Mining Development Act, endeavoured to locate a shoot of high grade ore beyond the cross-course in the Lady Sherry Mine, but through the hard nature of the rock and other difficulties they have had to give up without finding the ore. The Sawyer Bros. have worked their five-head battery and cyanide plant in conjunction with the Warrior Mine for very fair returns.

The Shenton, Florence, Q.M., and Alpha Mines are practically idle; all these propositions had splendid high grade shoots of values, which became displaced between 400 and 500 feet levels. The possibility of refinding these lost shoots by boring is worthy of consideration.

At Mt. Ida Mr. J. Errington persevered with the Forest Belle Mine, and won two or three good crushings. At the south end Messrs. Balmer and Party have re-erected the five-head battery on the Unexpected South Mine, from which some good ore has been worked, and the outlook for this mine is much better. There are few prospectors testing the various mines in the district.

At Mulline the public battery is leased by Mr. Taylor. The Young Australia Mine has a ten-head battery, but requires a larger water supply and some financial help to develop the mine further. The Lady Gladys Mine is still being worked. There are several other prospectors working the many small mines in the district.

At Mulwarrie and Davyhurst mining is very quiet.

At Siberia, Mexico, and Christmas Flat there are a number prospecting for deep alluvial, and testing the reefs of the district.

At Ora Banda the Associated Northern Blocks (the Gimlet Lease) has been intermittently worked by tributers for payable returns. The company is doing some development below the 400 feet level. No work is being done on the Victorious Leases.

The Orinda Lease, found by Mr. Leon Morris, has had several crushings of 2oz. ore. This is a large lode with a very promising future, but requires to be developed on sound lines. There are also other large propositions in this locality, which have many large soft lode formations of the Boulder type.

The Lady Evelyn, worked by Murphy, Conley and Party, has continued to develop well down to 400 feet. This mine is equipped with a five-head mill, boiler, and winding engine, and has given good monthly payable returns throughout the year.

At Coolgardie a good deal of prospecting has been done during the year; Bayley's Reward Leases are now held by two or three parties.

Messrs. Nioa and Party located, at a depth between 50 and 60 feet, a small leader of arsenical ore carrying very rich gold. Some of the gold was worth upwards of 1,000 ounces per ton.

Mr. C. Sparks is engaged looking for an extension of Nioa's leaders in an adjoining claim, and is being assisted by the Department.

The Lady Carmen Mine is owned by Messrs. Pascoe, Gattley, and Party, and they have mined 200 tons of sulphide ore, but battery treatment has not been entirely successful. The concentration of pyrites and the sale in Kalgoorlie to Allsop and Don is too expensive, and does not pay. If the ore could be crushed and cyanided direct, and there was only an 80 per cent. extraction from the sands, this mine

should pay, as it contains a fair length and width of ore worth 25 dwts. per ton.

There are also several other sulphide propositions in Coolgardie that are well worth investigation.

At Widgiemooltha a good deal of prospecting is being done.

At Cave Hill one or two parties are sinking shafts on large soft lode formations.

At Higginsville one or two parties are prospecting promising propositions.

At Norseman a good deal of prospecting is being done. The O.K. Mine has about 40 men employed. The ore is sent by rail to the Great Boulder Proprietary for treatment.

At St. Ives, development has been carried on at the Ives Reward, Ives Proprietary (McCahons), and Ives Junction; some excellent crushings from these leases at the public battery have been cleaned up. These properties have disclosed two or three parallel large lode formations, carrying 10 to 15 dwt. ore for good lengths and widths. More capital for development is absolutely essential.

Brennan's Idough Mine has a large lode carrying low grade values; rich contacts make in the lode.

At the North end of St. Ives the Victory Group is being developed, and it is proposed by Prosser and Party to try during 1923 to erect a treatment and pumping plant.

At Hampton Plains the Celebration, Golden Hope, and White Hope Mines have continued to work. The Celebration and White Hope Mines have a ten-head battery continually working, and the Golden Hope is busy erecting a ten-head battery and compressor plant. They have recently struck the lode at 200 feet. At Block 45, the Carmen Mine was taken over by Hampton Areas, and a ten-head battery has been erected, together with pumping and compressor plant. This mine has developed well down to 200 feet.

At Kanowna the Kanowna Consols owners have erected a ten-head battery and additional plant, and are now busy unwatering the mine with the view of further developing it at 300 and 400 feet levels.

The Red Hill has been very successfully worked by tributers, and is now being worked by the company.

The White Feather Reward North has opened up a good length of pay ore at 200 feet. This is a promising development.

At Kurnalpi there are still about 20 or 30 dry-blowers, mostly old age pensioners. They still find a little gold.

At Mulgabbie two or three parties are still prospecting for patches along the line of reef. A little gold has been got, but nothing sensational.

Report of Mr. E. J. Gourley, Inspector of Mines, Kalgoorlie.

I have the honour to submit to you my Annual Report for 1922:—

Kalgoorlie Mines.—During the year I have made complete inspections of the following mines and districts:—

Mines.—Perseverance 8, Horseshoe 4, Ivanhoe 7, Boulder 6, Lake View and Star, Chaffers 6, Associated 5, South Kalgurli 6, Kalgurli 4, Oroya North Blocks 4, Paringa and North Kalgurli 3, Brown Hill 3, Dry Mills 5, Associated Northern 3, North End Mines 2, Mayman's 2. Districts and Mines:—Bulong 6, St. Ives 1, Kunanalling 5, Coolgardie 8, Gibraltar 3, Norseman 4, Hampton Plains 2, Widgiemooltha 4, Gordons and Mulgarrie 1, Broad Arrow and Ora Banda 7, Burbanks and Grosmont 2, Boorara and Golden Ridge 2, Carbine 4, Bulla Bulling 2, Menzies 2, Binduli 2, Gindalbie, Kalpini 1.

The Perseverance Mine is still in the hands of tributers; between 60 and 70 parties ranging from two to ten men, and these parties are distributed through the mine from the surface down to the 1,900 ft. level, and there would be two or three on the 2,050 if the water coming in from the adjoining mines could be kept out. The tributers in the majority of blocks are underhand stoping, and do not do much development work. Nearly all of them are making more than wages, and others are doing particularly well.

The Horseshoe has not done very much development during the past year, but a payable ore body is now being driven upon in the bottom level.

The Ivanhoe has done a good deal of development from their 2,570 level by winzing, and have followed payable values. They are now driving the 3,020 level to open up into these winzes.

South Kalgurli.—This mine has been developing from their main shaft at 1,500ft., 1,600ft., 1,700ft. levels, and has opened up large bodies of high grade ore, chiefly south of the shaft, and has very rich ore in the face close to the Associated Mine boundary, and it should pass into the latter mine.

The Associated have also been developing steadily through the year, but unfortunately, while obtaining payable values in several places from the 1,600ft. level upwards, they have proved of no great extent, and they could do with a good stope to sweeten the ore being broken in the stopes, which is rather low in values to show much profit.

The Great Boulder have done some development work from the surface north of the main shaft, but the ore bodies are small and values low from Lane's shaft end. They are opening up some payable ore which appears to dip into the Chaffers Mine.

The Lake View.—The stamp mill was closed down about the middle of the year, but development work has been carried on, chiefly driving on the two lodes at the 2,300ft. level, which I understand are opening up satisfactorily. In the meantime, the mill is being run at intervals on tributers' ore. Some of the parties at work are obtaining good returns. A new dry mill is being erected on the Chaffers Mine.

The Kalgurli Mine.—This has been re-opened, and tributes have been let from the surface down to the 1,700ft. level; a few good parcels have been taken out, and two parties from the 100ft. level up are mining good pay ore. Judging from the distance between these two parties, both being on the same lode, a large tonnage will be taken out this year. A party below the 1,700ft. level are also developing a fine looking lode, and I am of the opinion that during 1923 this mine will turn out well. The mill has been put in order, and is kept going on tributers' ore drawn from the Kalgurli, Oroya North Blocks, Brown Hill, Associated Northern, North Kalgurli, Paringa, and parcels sent by rail from outlying districts, and it appears to give general satisfaction.

The North Kalgurli.—Kellock and party are following a payable shoot of ore near Hainault boundary, and two other parties are on pay ore near the Paringa boundary, but no machinery is in motion on the mine.

The Brown Hill and Associated Northern are in the hands of tributers, and some very rich returns are

being obtained from small parcels chiefly from pillars and rich telluride veins in the footwall of the rich ore pipe, also some good returns are being won from the walls of what is known as "Hinchcliffe's tribute."

The Eclipse Mine is being unwatered to further explore the bottom level, which is 1,000 feet in depth.

Mayman and party have erected a Huntington Mill on their lease, known as the Central, south of the Hidden Secret, and are milling ore which is just payable from the 150ft. and 100ft. levels. The ore body is wide and easily mined.

Raven and party are erecting machinery preparing to unwater the Hannans North Mine, and they should make a start very shortly.

The Lone Hand Mine.—Hartigan has not done any work on this lease, but the Huntington Mill has been employed for the last few months crushing ore from what is known as Beal and Powell's lease near the Kanowna line of lode Claim 353E, and the returns appear to be payable.

There are a number of miners prospecting in different places on the north end of the field, but nothing of any importance has been discovered.

Water in Mines.

The Oroya Brown Hill Company are still bailing at the rate of 30,000 gallons a day from the Oroya North Blocks shaft. This keeps the water down, and prevents the flooding of the mines on the east side of the belt, but the water is still flowing from the North Kalgurli and Brookman's Boulder through the Kalgurli and South Kalgurli into the Perseverance, where it is being bailed from 2,050ft. level. However, I have been informed by Mr. Cleland, manager of the Perseverance Mine, that he intends to put in a concrete plug in the winze, which connects the Perseverance 1,750 level with the 1,800 level South Kalgurli, and will eventually flood the 1,700ft. level in the Kalgurli Mine.

However, within the last few days a proposal has been sent to the North Kalgurli Company that the Kalgurli and South Kalgurli Companies are willing to put the plant in order on the North Kalgurli if they are willing to bear a third of the cost of handling the water. I hope this will be carried into effect.

Prospectors assisted by the Department.

The Advisory Board having submitted their Annual Report, I do not think it is necessary to deal with these operations any further, with the exception that since that report was written a parcel of 245 tons has been cleaned up from the Orinda Mine at Ora Banda which yielded 351ozs. 15dwts., and options of purchase have been taken over the Sweet Nell Leases at Bulong and the Surprise Mine at Bulla Bulling, all of which have been discovered under the Prospecting Board's assistance.

Norseman.—With the exception of the O.K. Mine, no wages men are employed in this centre. This mine is sending in regular shipments of ore to the Great Boulder Mine for treatment for payable returns, but two winzes below the 208ft. level, while being in good values for a depth of about 80 feet, have gone poor in the bottom.

Mathieson Bros. have discovered a new quartz reef about six miles south of the townsite, and have had a good return from it, but on my last visit values were unpayable in the bottom at 60 feet, and it does not appear to me to be the makings of a mine.

The Viking and Mararoa Mines, now being worked by parties of working miners, have been yielding good returns, chiefly from cleaning up levels, and from pillars left in the old stopes, but at No. 4 in the Mararoa and No. 6 in the Viking good faces of quartz are showing in the ends of the levels, but the ground is too hard for hand labour, therefore the owners are not doing much development work. It is hard to understand why these mines were abandoned by the companies and the plants sold off. The Red, White and Blue Mine is still taking out regular crushings, but are picking the ore now. A number of parties are at work and are obtaining regular crushings, which, judging from the State Battery returns, are payable. A number of leases have been applied for at Buldania, but up to date no mining work could be done on account of the shortage of water.

Higginsville.—The Sugar Gum Mine owned by J. Davey did not prove payable when the battery got going on it, so work has been stopped.

Widgiemooltha.—With the exception of Hall and Bryant's Mine, which gives payable returns from small parcels, mining is very quiet in this centre.

Coolgardie.—Nioa and Lathrope, who have a lease on Bayley's line of reef, have obtained some very rich returns from an arsenical pyritic leader at 120 feet in depth, and they have erected a small furnace and crusher to treat this ore, but otherwise mining has been very quiet in Coolgardie.

Gibraltar.—The Lloyd George Mine has opened up very well, and regular crushings with their own plant have been put through from above the 100ft. level. The main shaft was sunk a further depth of 40 feet when water was struck, and not being in a position to handle this, shaft sinking has been stopped for the time being.

Carlton.—Messrs. Clayton and Young have done a large amount of development work, sinking shafts and crosscutting, and a nice body of ore has been struck at 100 feet in their old workings in a crosscut, and a new shaft is being sunk to cut this at a depth of 200 feet.

Kunanalling.—Small veins with rich values have been mined by Pearce Bros., Dwyer and Keele, and Bray and party, and what looks like a continuation of the old Premier Lode has been picked up at 150 feet by Hunting and party, which is crushing well over a width of 3 feet.

Cox and party, who have a Bligh Dry Dredger at work in the Premier Gully, are obtaining about 4dwts. to the yard, and are making good wages out of it.

Carbine.—Messrs. Crawford and Pimley have had some very good returns from the new make of ore discovered below the 500ft. level, and the 10-stamp mill is kept going one shift from this level, and from the intermediate workings between the 400 and 500 levels.

Waverley.—Some time ago two parties of assisted prospectors started work on the old Noah's Ark Lead and have been successful in discovering gold, but unfortunately the gold bearing wash up to date is scattered over a big width, and is not rich enough to give anything more than tucker; however, there are several parties still trying their luck, and I am in hopes that something good will be found.

J. Correll has two wages men at work in the Siberia Consols Mine on payable ore, but the veins are small and difficult to follow.

Broad Arrow.—Borland and Rudd, employing one wages man on the Oversight Mine, have had a very good year, stoping out the contact veins they discover in the course of development work done on the indicator. Mr. McKeown has bought the Tara Mine adjoining on the north, and has two men employed. They appear to have struck a new indicator vein east of the old workings, but up to date, although payable, it is not as rich as the one previously worked.

Mulgarrie.—Mr. Barratt is working the Palm Mine, and he crushes the ore from above the 150ft. level in his own mill, but the leaders being small it takes some time to get out a parcel. He is satisfied with his returns for this year.

Kanowna.—The Red Hill Leases have been on tribute for the greater part of the year, and have had some very good returns; at the present time it is being worked on wages, and the stone being broken when I last visited the mine was showing gold freely. Otherwise mining is very quiet at this place.

In conclusion, the outlook for the Kalgoorlie centre appears to be much better according to the latest developments, but while quite a number of rich squibs or patches are being found in the outlying districts, no mines are being opened up.

Report of Mr. W. Phoenix, Inspector of Mines, Kalgoorlie.

I have the honour to submit my Annual Report for the year ending 31st December, 1922.

Ventilation.—During the past year constant attention has been given to the direction of the air currents, air volume, and temperatures. There is still necessity for constant attention to the sectional area of the return airways.

The results show that the amount of air circulating in these mines, taken at different periods, proves that the ventilation can be considered fairly good. Good air is being carried to the bottom of the workings and distributed fairly to the respective working faces. The principle of diverting the air currents to different districts depends largely on the local conditions in each particular mine.

The mines where stopes are being depleted, and near the level timbers, are experiencing more difficulty in directing the same volume into the stope. Men are gradually realising the advantage of air motion in the return and warmer portion of the mines.

Sanitation.—This subject has also been given close attention, and the underground pan system, with suitable disinfectants, are receiving attention. In dealing with waste crib, receptacles are being provided in all cases. Complaints arise occasionally and are attended to immediately.

Good drinking water is also being provided, and suitable cans to convey it to the working districts.

Explosives.—Explosives are of fair quality, and provision is made to safeguard the men. No fatal accidents from gases have occurred.

General.

St. Ives' District.—New Victory.—This syndicate are now sinking a main shaft to 100ft. level, and at this depth they intend to crosscut to intersect two parallel lodes.

Venture Lease.—Work is in progress to further develop this lode, which is of low grade value, and the shaft is down to 60ft. level. They intend connecting up with South shaft working before resuming sinking to 100ft. level.

Idough Lease.—This syndicate have been stoping above the 60ft. and 30ft. levels, and have had encouraging results. They are now sinking a shaft on what is known as a contact of two veins about two chains further east from their present working.

Cooee Lease.—Very little developing has been done on this lease during the past year. They have been trying to locate other makes of ore by trenching and loaming.

Ives' Reward Junction.—This company has, during the past year, been stoping above the 90ft. level, also extracting ore from the open-cut, which has proved of fair value, and I am informed they purpose connecting up the two shafts at the 90ft. level in order to further develop values met with at this level.

McCahon and Party.—This party have sunk their shaft to about 90ft. level, and have commenced developing at this point.

Ives' Reward Mine.—Considerable development has been done in this mine during the past year on the Main and Blue Lodes, and values are maintained to a depth of 150 feet in the south winze. Width and extent of values have to be proved by further developing by crosscut and driving at the 200ft. level.

The lode has been exposed on the Blue Lode at the 104ft. level, and shows a defined body of ore which, I am informed, will be further developed north and south from shaft in the near future.

Alluvial Deposit.—Several parties have obtained alluvial gold in a locality west from the Cooee lease. Nothing of a payable nature has yet been found. There are other prospectors in this district trying to locate new makes and developing already-known reefs.

Hampton Plains.—Celebration Mine.—Work in this mine has been confined to stoping above the 100ft. level, and development work has been retarded owing to the shortage of battery water.

Golden Hope.—The main shaft has been sunk to the 200ft. level and the lode intersected at this point. A 10-head battery and treatment plant is in course of erection.

White Hope.—This company have erected a 10-head mill and treatment plant, and have been stoping above the 100ft. level and from the open-cut south. No development work has been done.

Hampton Properties, Block 45.—A 10-head battery and treatment plant is almost complete, and will be crushing early in the new year. The lode has been developed for a considerable length on the 100ft. level; work is in progress at the 200ft. level; and the lode exposed here for a length of 100 feet with encouraging results.

Very little prospecting has been done on Hampton Plains during the past year. The Mutooroo Company have abandoned further developing of their lease in this locality.

Menzies Consolidated G.M.—Considerable development has been done in this mine during the past year in sinking winzes and driving intermediate levels below the bottom shaft level.

The development has opened out a considerable quantity of stone. The management are hopeful that in the near future the cost will reach something approaching normal, which may enable them to do further development.

Mount Monger.—Mt. Monger Proprietary.—This company have sunk the West shaft to a depth of 250 feet, and crosscutted east to intersect two known lodes

which existed at the shallow levels. They have not been successful in picking up payable values, and have, for the present, discontinued operations.

The Great Hope.—The syndicate have sunk a main shaft to 200ft. level, and have opened up the lode at this point for a distance of about 70 feet and connected to level above. They are now stoping above this level. They purpose sinking on values to a further depth.

Several prospectors north and south of the above leases are obtaining a little gold from isolated ore lenses, otherwise this district is quiet.

I had paid several visits to the alluvial digging at the 37-Mile Peg, Trans. Line. Several dryblowers were at work, but no payable alluvial was obtained.

In conclusion, I might state that other districts have been visited by me, but I understand they have been reported on by the other inspectors. With regard to the ventilation of the outside districts, attention is being given to this matter in all districts visited.

REPORT OF MR. J. McVEE, INSPECTOR OF MINES, COLLIE.

I beg to submit my Annual Report on the Collie Coal Field for the year 1922.

Five mines were in operation during the year, viz., Proprietary, Co-operative, Westralian, Cardiff and Premier.

The total amount of coal produced was 438,442.78 tons, valued at £381,549.99, and the average number of men employed was 756.

The amount produced in 1921 was 468,816.65 tons, valued at £407,118.82, and number of men employed was 857.

The Government Railways took—

235,194 tons of large coal.
6,727 tons of nuts.
1,362.84 tons of smalls.

A total of 243,283.84 tons.

The balance went to Government Tramways, shipping, and private trade.

During the year the afternoon shift was abolished at all the collieries, with the exception of the Premier; this meant a considerable reduction in the number employed.

Trade has been very slack or the output would be nearly double what it is, as the mines are now in a position to put large tonnages out on the one shift, from 5 to 700 tons per shift being about their output.

Colliery.	Production in tons.		Employees, 1921.		Employees, 1922.	
	1921.	1922.	Surface.	Underground.	Surface.	Underground.
Proprietary	133,571·46	126,290·59	32	167	45	150
Co-operative	91,491·99	106,613·36	55	132	42	125
Cardiff	109,210·51	82,112·91	39	145	30	130
Westralian	91,648·95	79,113·93	50	167	38	126
Premier	42,893·74	44,311·99	20	50	20	50
Totals	468,816·65	438,442·78	196	661	175	581

The output per person employed being 579.95 tons as against 547.04 tons for the previous year.

Sunday Work.

There have been no permits granted for Sunday work owing to the broken time worked, and every alternate Saturday being a holiday, there is no necessity for Sunday work, which has to be paid for at higher rates.

General Progress.

The coal industry has been very satisfactory during the year, no labour troubles having occurred to stop work.

There have been a good many disputes, but these have been settled by local arbitration, and both sides have abided loyally by the decisions given.

All the mines are opening out well, and the fact of them being on one shift has improved the conditions underground. The miners, having no crossmates, look after their places better, and there is more time for repair work.

REPORT OF MR. R. C. WILSON, ASSISTANT STATE MINING ENGINEER.

I beg to submit my annual report for the year ending December 31st, 1922.

During the months of January and February I filled the position of Field Geologist, and in that capacity visited and reported upon Messrs. Smith and Thompson's Mineral Claim 17H for gypsum.

On March 1st I took over the duties of the Assistant State Mining Engineer, and occupied this position for the remainder of the year.

Early in March the Department made a loan of £5,000 to the Surprise Lead Mining Syndicate to unwater and re-open the mine, and it was decided that the affairs of the mine should be under the direction of a Board of Control. Mr. A. E. Fordham was appointed as representative of the Syndicate on the Board, and I was appointed as representative of the Mines Department, and since its formation we have issued all instructions to the manager, and one way and another I have devoted a considerable amount of time to the affairs of this mine. Somewhat protracted negotiations were carried on with interested business firms before we finally signed an agreement with Messrs. O. T. Lempriere & Co. for the purchase of the whole output of lead concentrates on very much more favourable terms than were obtainable from the Fremantle Trading Co.

During the year a number of mines and mineral deposits were inspected, the most important being the following:—

In April last I visited and reported upon the mica deposits near Morrissey Hill on Mineral Claims 19H and 20H, known respectively as the Mica King and

the Mica Queen. A copy of this report is appended. (Appendix No. 2.)

In May I was instructed to visit the Big Bell G.M., which at the time had closed down, and to thoroughly inspect, sample, and report upon the mine, machinery, and plant; also to advise as to whether operations should be recommenced, and, if so, the best methods to be adopted.

After a careful examination I formed the opinion that the mine was too good to abandon, and after consultation between the Department and the W.A. Bank it was decided to restart the mine under new management.

In June arrangements were made with the W.A. Oil Exploration Co. that I inspect and report (Appendix No. 3) upon their oil areas No. 9H and 10H in the extreme south-west corner of the State. At the request of this company I also visited Martin's Well at Pingelly, where an oil seepage had been reported (Appendix No. 4).

In August I was instructed by the Hon. the Minister for Mines to visit Kalgoorlie, St. Ives, Mt. Monger, and Ora Banda; to investigate and report how assistance could be best given to develop these fields, and at the same time absorb some of the unemployed in Kalgoorlie.

As a result of this visit assistance was given to a number of parties to carry out approved development work under the Mining Development Act.

On September 11th I visited and reported upon an occurrence at Goomalling of a variety of asbestos known as anthophyllite. (Appendix No. 5.)

Later in the same month I visited Coolgardie, and reported upon a magnesite deposit near the Camel Paddock (Appendix No. 6), and from there proceeded to Norseman to investigate the correctness or otherwise of a sensational report by Dr. Milsom, an American geologist, on the Red, White and Blue mine (Appendix No. 7). Dr. Milsom estimated the lease to contain 5,808,000 tons of gold-bearing formation, worth about £14,520,000, on which a profit of £10,604,600 could be made. My investigations showed no evidence in support of Dr. Milsom's supposition that gold-bearing formation averaging 12 dwts. per ton occurred all over the lease to a depth of 400 feet. The deposit appears to consist of a flat ironstone formation carrying fair values in certain areas. A large quantity of ironstone formation similar in appearance to that already mined is easily obtainable, but my sampling results showed that most of it was too poor to be profitably worked. At the time of sampling very little payable ore could be said to be in sight.

In October I visited the Mt. Zion mine, made a compass survey of the bottom level, and submitted a plan and a report upon the work done under Government assistance, and indicating the probable relationship between the lodes and the fault.

In November, while on a periodic visit to the Surprise lead mine I took occasion to visit Mr. H. G. Leeder's Prospecting Area for Copper No. 24, and furnished a short report on it (Appendix No. 8).

In December I visited and reported upon Iles' felspar deposit near Jacobs Well (Appendix No. 9).

When not in the field I have assisted the State Mining Engineer with the general work of the office.

MINING ACCIDENTS.

The table hereunder gives the number of fatal accidents recorded as having occurred on mines, whether to persons employed on the mines or not, for the last five years:—

——	1918.	1919.	1920.	1921.	1922.
Total fatal accidents on mines reported	28	27	25	18	10
Less accidents to persons not engaged in mining, deaths in mines due to natural causes, and accidents to persons which were not due to their occupation as miners	3	1	4	1	1
Fatal accidents to men engaged in mining	25	26	21	17	9
Total men engaged in mining (average)	9,265	8,346	8,496	7,084	6,776
Accident death rate per 1,000 men engaged in mining ...	2·70	3·12	2·47	2·40	1·33
Total fatal accidents on quarries reported	...	...	...	1	1
Total men engaged in quarrying	200	245	195	203	267
Accident death rate per 1,000 men engaged in quarrying ...	...	...	...	4·93	3·75

In Tables 26, 27, 28, and 29 the mining accidents for the year 1922 are classified, the previous year's figures being given for comparison, and are forwarded herewith for inclusion in your annual report, together with diagram of the fatal accidents year by year, and their causes (see report of the Under Secretary for Mines).

In Table 26 the accidents are classified according to causes. It will be noted that during 1922 10 persons were killed, and 336 persons seriously injured, as compared with 18 killed and 345 seriously injured during the previous year. The diagram shows graphically the totals of fatal accidents year by year since 1891.

The death rate per 1,000 persons employed on surface and underground in gold, coal, and other mines, is shown in Table 27, the general average rate for 1922 being 1.33 as against 2.40 for 1921. The rates per 1,000 are based upon the figures in Table No. 21 (Annual Report, Under Secretary for Mines, 1922) which shows a grand total for 1922 of 6,776 men employed at mines above and underground, inclusive of alluvial workers.

Table 28 shows the average number of men employed at quarries, and the death rate per 1,000 persons employed therein. The total number of men employed during 1922 was 267 as against 203 for 1921, the death rate for 1922 being 3.75 as against 4.93 for 1921.

Table 29 summarises all the fatal accidents for 1922 above and below ground in gold mines only, with rates per 1,000 men employed and per 1,000 tons of ore raised, similar figures for 1921 being given for comparison. The number of men on which these rates are based is taken from Table 23 (Annual

Report, Under Secretary for Mines, 1922), and does not include alluvial workers.

The following table comprises all the fatal and serious accidents reported to this office which occurred during 1922; the accidents are classified according to the gold or mineral field in which they happened, and also as to causes, the totals from each cause for 1921 being shown for comparison.

—	Explosives.		Falls of Ground.		In Shafts.		Miscellaneous Underground.		Surface.		Machinery.		Total.	
	F.	S.	F.	S.	F.	S.	F.	S.	F.	S.	F.	S.	F.	S.
1.—East Coolgardie	...	1	3	22	...	12	...	147	*1	55	...	3	4	240
2.—Mt. Margaret ...	...	...	...	...	...	...	...	...	...	2	...	3	...	5
3.—Murchison ...	...	...	...	3	...	...	...	11	...	5	...	...	...	19
4.—East Murchison	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5.—Coolgardie ...	...	...	1	...	...	...	...	1	...	...	...	...	1	1
6.—Yilgarn ...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
7.—N. Coolgardie ...	...	1	...	1	...	...	...	1	...	...	...	...	...	3
8.—N.E. Coolgardie	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9.—Broad Arrow ...	...	...	...	...	...	...	...	1	...	...	...	...	...	1
10.—Dundas ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11.—Pilbara ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12.—Peak Hill ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13.—Yalgoo ...	...	...	1	1	1	...	...	1	...	...	...	...	2	2
14.—Phillips River...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15.—Collie	...	...	...	14	...	...	1	37	...	12	...	...	1	63
16.—Greenbushes ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17.—Northampton ...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
18.—W. Pilbara ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19.—Swan	...	...	...	...	...	...	...	...	1	1	...	...	1	1
20.—Ashburton ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21.—Roelands ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22.—Kendenup ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23.—State generally	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Total for 1922 ...	...	2	6	41	1	13	2	199	2	75	...	6	11	336
Totals for 1921 ...	...	7	7	30	7	13	1	204	3	†79	1	12	19	345

* Not a true mining accident. † Figure amended to include one surface accident at Collie, classified as "Minor" in 1921, but having "Serious" consequences in 1922.

Fatal Accidents.

Brief particulars of each fatal accident occurring during the year 1922 are given hereunder:—

Falls of Ground.

At the Ivanhoe Gold Mine, East Coolgardie Goldfield, a man was examining the back of a stope to see if it was safe to fire some charges when a piece of stone fell and struck him on the head, inflicting injuries to which he succumbed 10 days later. At the Coroner's inquest the jury brought in a verdict of accidental death. (950/22.)

A fatal accident occurred at Gnow's Nest G.M., Yalgoo Goldfield. On the day of the accident a shot had been fired in a stope to bring down a portion of the hanging wall—which is in large slabs and inclined to be greasy—and deceased was barring down the baulked ground left from the shot when about a ton of rock fell on him, inflicting fatal injuries. At the inquest the Coroner's jury returned a verdict of accidental death, no blame being attributable to anyone. (673/22.)

At the Surprise Lead Mine, Northampton Mineral Field, a man was killed through a very heavy fall of ground from an unsuspected greasy head 9 feet above the roof of a drive. In falling the ground displaced the caps of 3 sets and crashed through the overhead laths pinning deceased to the floor and crushing him to death. The body was not recovered till 2½ hours after the accident. The Coroner's jury gave a verdict of accidental death. (1253/22.)

At the Hidden Secret North G.M., East Coolgardie Goldfield, a man met his death while working in an open cut through a quantity of earth falling on him. The ground which fell was very powdery and had no tenacity, but before the accident appeared safe. The Coroner's jury returned a verdict of accidental death. (1254/22.)

A heavy fall of ground occurring in a stope of the Great Boulder Proprietary G.M., East Coolgardie Goldfield, while a machine drill was being dismantled, caused the death of one man and inflicted slight injuries on another man. Reasonable precautions appear to have been taken, and there were no grounds for suspecting the back was insecure. The Coroner's jury brought in a verdict of accidental death. (1231/22.)

A man was killed by a heavy fall of ground while driving a level at 75 feet on P.A. 478S, Coolgardie Goldfield. The Inspector of Mines reported that the ground was very treacherous, and the level was not timbered securely. A further fall occurred while he was inspecting the scene of the accident, and he issued instructions to timber the level securely. The Coroner's jury returned a verdict of accidental death through a fall of earth. (2285/22.)

Surface.

At the Darling Range Quarry, Swan Mining District, a man was standing on a ledge barring down the face after firing, when he overbalanced and fell a distance of about 80 feet, and was killed. Deceased

contributed to his own death through neglecting to use the rope provided to steady himself. The Coroner's jury brought in a verdict of accidental death with contributory negligence on deceased's part. (1392/22.)

Miscellaneous Underground.

A man working at the Westralian Colliery, Collie Coalfield, ran a wire into his finger; he continued working for a few days when septic poisoning set in and death supervened. (942/22.)

At the Paisley Mica Mine, near Esperance, a man was pulling a large rock over when it broke, and the man fell heavily backwards; as the only apparent injury was a scratched arm he continued working for a couple of days. On the third day, however, he was too ill to leave his bed; the arm had become septic, and he had developed influenza which turned to pneumonia, and he died four days later. An inquest was not considered necessary. As there was some doubt as to this being correctly classed as a mining accident, the case was referred to the Medical Department. After reviewing the evidence, the Principal Medical Officer considered that the accident was the cause of the death. The R.M. at Esperance considered the death due to, primarily, influenza, and, secondly, sepsis supervening on a scratched arm. (2329/22.)

In Shafts.

A man was killed in the shaft of P.A. 1, Yalgoo Goldfield, through a slab of rock falling out of the side while he was employed filling the hauling bucket with water. The Coroner's jury brought in a verdict of accidental death, with no blame attachable to anyone. (733/22.)

Other Accidents.

In addition to the above the following accident was reported, but not classified as a mining accident:—

A little girl was carrying lunch to her father, who worked on the Great Boulder Proprietary G.M., East Coolgardie Goldfield, and evidently took the wrong track as she walked into a hot ash pit and received terrible injuries, from which she succumbed a few days later. The Coroner's jury brought in a verdict of death from injuries received by burning, and added that a notice should be posted at the entrance to ash pit to prevent any further occurrence of a similar nature. The Inspector of Mines reported that this had been done. (951/22.)

SERIOUS ACCIDENTS.

All accidents classified as "serious" are such as incapacitate the injured person from attending to his usual work for 14 days or more.

240 of the 336 accidents during 1922 were reported from the East Coolgardie Goldfield, but only 16 cases were breakages of the larger bones, permanent injury to limbs, or injuries likely to have lasting disabling effects. The balance of injuries were of a less serious nature such as bruises, cuts, strains, scalds, poisoned cuts, smaller dislocations, wrenches, jars, etc., etc., but of a sufficiently serious nature to cause the injured person to be absent from his work for 14 days or more.

Explosions and Explosives.

Only two accidents were reported under the above classification. In one case a man was carrying gelignite in his trousers pocket when it ignited and burnt his knee, while in the other case a man received burns to his neck, face, and arm through an explosion of inflammable gas.

Falls of Ground.

41 accidents were due to falling ground. In six cases the injuries were sustained while men were engaged in the dangerous but necessary work of pulling down loose ground after firing. In the remaining 35 cases the injuries were due to ground falling on men, or their being struck by falling pieces of stone or coal in the workings of the mines.

In Shafts.

13 serious accidents were classified under above heading during 1922.

Five men received injuries from rolling stones, stones falling down shafts, and from buckets and skips; one man was struck by the bridle of a cage, and one man's clothing caught in a bucket, and he was hauled up feet first till the clothing gave way, and he fell to the bottom of shaft. In one instance the cage hung up; in another a man's hand was jammed against a cage; while two men fell from ladders, and two received serious injuries while handling timber in shafts.

Miscellaneous Underground.

199 serious accidents were reported as miscellaneous underground during 1922.

In 65 cases the injuries were sustained while handling and loading trucks and skips, through fingers and bodies being jammed against chutes and other trucks, toes and feet run over, bodies struck by upsetting of trucks, men slipping and straining themselves while trucking, or lifting derailed trucks or material into trucks, and so on, the injuries being mostly wrenches, sprains, bruises, jars, fracture of fingers and toes and cuts.

In 30 cases the injuries were due to falling and rolling loose rocks and stones, such as runs of ore and mullock, while shovelling, or stones running down rills and ore chutes; and 14 men received severe cuts and bruises while handling sharp stones; 23 men were injured handling rock drills, coal cutting machines, and parts of same. Other falls in the workings from stages and ladders, in rills, passes, and so on caused injury to 18 persons, and 10 were hurt by falling tools and pieces of machinery. Flying splinters of stone and steel were responsible for 10 men being injured, and 15 were hurt while handling timber. The remaining 14 cases were due to various accidental causes, jarring of hands and feet, blows from tools, strains, poisoned cuts, kicks from horses, and so on.

Surface (including Machinery).

81 persons received serious injury while working on the surface. 3 men were burnt in various ways, 7 sustained injuries from falls in the course of their work, 8 were hurt by trucks and skips, being jammed or struck by them, by them capsizing, or by men sustaining strains while working them. Flying splinters injured 2 men; falls of timber and pieces of machinery accounted for 30 cases of injury; 12 cases were caused by machinery in motion, 5 of these being caused by handling belts in motion; 2 men were hurt by being struck by stones or coal; and 4 were struck by tools they were using falling or slipping. Other causes of 13 accidents were strains and sprains from heavy weights falling on them, or from their lifting heavy weights, jarred and jammed hands, poisoned cuts, and so on.

WINDING MACHINERY ACCIDENTS.

(*Without serious injury to persons.*)

During the year 1922 there were only two accidents reported under the above classification, brief particulars are as follows:—

While an engine-driver was lowering an empty cage at the No. 3 shaft of the Golden Horseshoe G.M., a pin flew out and allowed the weights to drop off the brake, with the result that the tank ran down the shaft to the 2,000 feet level. No damage was done to the shaft or machinery. (460/22.)

Another accident occurred at the Golden Horseshoe G.M. Owing to the engine-drivers on the west crab winch and east winch mistaking a signal, they both hauled at the same time, causing the derrick pole carrying one of the new pulleys to break. No other damage resulted. (1001/22.)

PROSECUTIONS FOR BREACHES OF THE MINES REGULATION ACTS AND REGULATIONS.

There were no prosecutions during the year 1922.

EXEMPTIONS FROM SECTION 31 SUB-SECTION 4 OF "THE MINES REGULATION ACT, 1906."

22 persons were granted exemption certificates, 16 being for mines in the East Coolgardie Goldfield, one in the Coolgardie Goldfield, one in the Dundas Goldfield, one in the Yilgarn Goldfield, one in the Murchison Goldfield, and one in the East Murchison Goldfield, one in the North Coolgardie Goldfield.

Before any of these permits were issued the Inspector of Mines for the District examined the driver on the particular machinery for which exempton was applied, and satisfied himself that the applicant was capable of handling it, and that it was not reasonable in the circumstances of the case to insist on employment of a certificated driver.

SUNDAY LABOUR ON MINES.

The Great Boulder Proprietary Gold Mines were granted permission to employ 30 men on two consecutive Sundays for the purpose of overhauling and repairing the main and Edwards shafts at the 800 feet and 2,500 feet respectively.

AMENDMENTS AND ADDITIONS DURING 1922 TO THE REGULATIONS UNDER "THE MINES REGULATION ACT, 1906," "THE MINES REGULATION AMENDMENT ACT, 1915," "THE COAL MINES REGULATION ACTS, 1902 & 1915," AND "THE MINING DEVELOPMENT ACT, 1902."

Mines Regulation Act, 1906.—Amendment of boundaries of Workmen's Inspector of Mines, Cue, district to include the Northampton Mineral Field. (Gazetted 26th January, 1922.)

Amendment of Workmen's Inspectors of Mines centres and boundaries. (Gazetted 29th September, 1922.)

SHIPMENT OF ORES TO ENGLAND.

Permission was obtained from the Metal Exchange, Melbourne, to ship the following parcels to England for various owners:

One parcel of scrap metal, 7 parcels of asbestos, one of felspar, and one of copper ore (for experimental purposes).

Also one parcel of fibrolite to Singapore for exhibition purposes.

BORING FOR COAL.

At Wilga the Wilga Proprietary Coal Prospecting Company, Limited, started a Calyx deep bore 60 chains north-west of No. 3 deep bore, and sunk it to a depth of 500 feet at their own expense. They then applied for Government assistance, and were allowed £1 for £1 on the remaining 191 feet, making the bore a total depth of 691 feet. The following seams of coal were met with:—

Depth.			Thickness of Coal.	
ft.	in.		ft.	in.
391	6	... ...	0	6
443	2	... ...	0	6
445	10	... ...	0	7
500	3	... ...	10	6
537	0	... ...	4	0
563	0	... ...	7	0
573	2	... ...	5	0
591	0	... ...	9	1
627	0	... ...	1	0
643	8	... ...	8	7
660	0	... ...	3	9
		Total Coal	50	6

Details of this bore and of the hand-boring carried out by the syndicate will be reserved for a later report, as the assay results are not yet available.

BORING FOR GOLD.

Diamond drilling operations were carried out on Lease 5,177E, at the south end of the Boulder Belt, on the basis of equal expenditure by the Government and the persons interested. Two inclined bores, No. 4 and No. 5, were put down so as to cut across the foliation of the country, with the following result:—

No. 4 bore was bored to a depth of 482ft. 2in., and the cores examined by the Government Petrologist, Mr. R. A. Farquharson, showed that the country rock passed through was epidiorite or quartz dolerite similar to that at the Warden's house for the whole distance bored. The core showed little or no shearing, and no portion of it was sufficiently mineralised to warrant assays being made.

No. 5 bore was bored to a total depth of 438 feet. The cores from this bore were examined by the Acting Petrologist, Dr. C. O. G. Larcombe. The following information relating to it is extracted from his report:—

The core contains three rock types, distinguishable as—

(1) Quartz dolerite amphibolite.
(2) Quartz dolerite greenstone.
(3) Keratophyre (Albite porphyry).

The bore commenced in the quartz dolerite amphibolite, which forms the country rock surrounding the Golden Mile on three sides. At 292 feet the bore entered a favourable zone of quartz dolerite greenstone (originally quartz dolerite amphibolite) which continued for 74 feet till it entered the keratophyre dyke at 366 feet. There is evidently here a zone of rock which bears a remarkable resemblance to the country rock of the Golden Mile, and which forms a highly altered contact zone along the western wall

of the dyke. The following assays of the favourable rock were made:—

	Assay Result.
293ft. 6in. to 295ft	*Nil*
316ft. 0in. to 316ft. 9in.	*Nil*
328ft. 0in.	traces of gold.
339ft. 0in. to 340ft.	3 grs of gold per ton.

The bore is inclined at an angle of 55deg. from the horizontal, and all figures refer to the depths on the incline, not vertical depths.

The Keratophyre (Albite porphyry) forms a dyke not more than 28 feet wide, and it may be classed in the same class as the dykes in the Golden Mile.

CHECKING BORES BY DEFLECTION METHOD.

In the beginning of the year it became necessary to check the results reported to have been obtained in Nos. 1 and 2 bores of the Golden Mile Ore Channel Extended Ltd., which were alleged to have cut valuable lodes. The work was carried out with much ingenuity and complete success by the Goldfields Diamond Drilling Company, who fixed a long wedge in each bore a short distance above the points where the lode was reported to have been cut, and then bored with a smaller bit in such a way as to cut a new core alongside the original core to a depth considerably below the points at which the lodes should have been met with. The cores so obtained were entirely the country porphyrite and did not confirm the reported occurrence of valuable lodes in these bores.

This method checking bore results might often be used with much advantage in obtaining second and third samples from lodes cut by bores.

ADVANCES ON ORES.

As in previous years advances were made to owners of ores suitable for shipment outside the State to enable them to carry on their operations.

The following table shows the minerals on which these advances were made, the amounts advanced, and results obtained:—

ADVANCES ON ORES.

Statement of Transactions for Year 1922.

Miscellaneous Minerals.

Mineral.	File.	Tonnage.	Amount Advanced.	Expenses in Shipping.	Balance of proceeds remitted to Owners.	Total Amount realised during year.	Remarks.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Asbestos	193/22	2,666	67 10 0	17 2 3	37 4 2	121 16 5	
Do.	1261/22	2·05	102 10 0*	2 12 10	...	...	Proceeds not to hand.
Do.	1916/22	20·00	1,000 0 0†	...	...	...	do.
Do.	2050/22	21·00	‡ 1,050 0 0	...	...	...	do.
Do.	2254/22	24·00	§ 1,200 0 0	...	...	...	do.
Lead (concentrates)	1337/22	1749·50	14,200 0 0	...	...	8,655 14 2¶	Advances made from time to time as required on security of Lead Concentrates raised from mine. Proceeds of Lead received directly from Smelters and credited to Account.

* Since 31st December, 1922, received final proceeds—£206 12s. 5d. † Since 31st December, 1922, received part proceeds—£861 15s. 7d. ‡ Since 31st December, 1922, received part proceeds—£83 17s. 3d.
§ Since 31st December, 1922, received part proceeds—£221 14s. 6d. ¶ Further proceeds to come.

LOANS AND SUBSIDIES UNDER "THE MINING DEVELOPMENT ACT, 1902," AND FROM THE MINING DEVELOPMENT VOTE.

(Appendix No. 1 to this report shows the transactions in tabulated form under the above heading.)

FIELD WORK.

The constantly increasing pressure of administrative and other office work has allowed me very little time for field work during 1922, and this section of the duties of this office has been carried out mostly by Mr. R. C. Wilson, B.E., B.Sc., Assistant State Mining Engineer, whose report has been already quoted. A number of the reports by Mr. Wilson on various places visited are appended hereto.

My own visits to the fields were all to Kalgoorlie in relation to Bligh's Dry Dredges at Kunanalling, and elsewhere, provision of work for unemployed miners in and around Kalgoorile and on the fields generally. Boring at the south end of the Kalgoorlie field, prospecting operations, and various departmental matters. It was necessary to visit Melbourne in connection with the Appeal to the High Court in the case of McNeil and de Bernales *v.* the Crown, concerning the Ravensthorpe Smelting Works.

MINERS' PHTHISIS.

In June, 1922, a Bulletin was issued by authority of the Hon. the Minister for Mines, from this office, for public information, containing the report of the Hon. James Cornell, M.L.C. on Miners' Phthisis in South Africa with notes by myself. This affords a convenient summary of the experience in the Transvaal Mines in their efforts to prevent and allay dust in mines and alleviate the sufferings of men affected by dust diseases incidental to mining.

I have, etc.,

A. MONTGOMERY,
State Mining Engineer.

APPENDIX No. 1.

Summary of Expenditure from Mines Development Vote from 1st January to 31st December, 1922.

Advances in aid of Mining Work and Equipment—	Amount. £ s. d.	£ s. d.
Lalla Rookh G.M., Marble Bar ...	220 0 0	
C. Grant, Mt. Iron G.M., Kundip ...	6 0 0	
Grant and Edwards, Flag G.M. ...	72 10 0	
Grant & Edwards, Phillips River	148 16 10	
Bryan and Party, "Ard Patrick," Phillips River	46 16 2	
Falkiner & Lavery, Yilgarn ...	14 16 6	
F. Sonnenschein, Black Range ...	160 15 0	
W. F. Black, Kalgoorlie	0 10 0	
Pascoe & Party, Coolgardie ...	260 0 0	
Parkinson & Dunn, Phillips River	46 0 0	
Parkinson & Dunn, Phillips River	99 19 1	
A. Thorn, Kalgoorlie	20 0 0	
Bannister and partners, St. Ives ...	33 0 0	
F. B. Cumpston, Kalgoorlie ...	16 5 0	
North, Hartley, & Borwick, Holden's Find	51 5 0	
C. Hill, Kalgoorlie	46 10 0	
E. A. Cox, Yilgarn	2 14 0	
Sugrue and Party, Cue	100 0 0	
Sugrue and Party, Cue	340 4 8	
Snelgrove & Mendis, Widgiemooltha	50 8 0	
Meekatharra Prospecting Syndicate, Nannine	41 10 3	
Hobby and Party, Paynesville ...	0 4 0	
Geo. Mayman, Kalgoorlie	362 0 0	
W. M. Hodges and Party, Forrestonia	94 10 0	
Hodges and Party, Erection of Plant, Forrestonia	96 0 0	
W. J. Lynas, Marble Bar	150 0 0	
Allen & Beaton, Menzies	162 4 10	
Allen & Beaton, Menzies ...	99 17 6	
J. A. Deerness, Leonora	4 5 0	
St. George Prospecting Syndicate, Albany	10 0 0	
Holzman and Party, Mt. Zion Syndicate, Boulder	[illegible]	
Holzman and Party, Mt. Zion Syndicate, Boulder	[illegible]	
Good Luck G.M., Roebourne ...	[illegible]	
Faraday and Tasker, Southern Cross	[illegible]	
Daley & McDonald, Meekatharra	[illegible]	
Dupuy, Kemp, & Hughes, Kalgoorlie	[illegible]	
Mooney & Osborne, Yilgarn ...	[illegible]	
Dismantling and purchasing Battleville Battery, Yundamindera ...	[illegible]	
Stevens and Party, Red, White, and Blue G.M., Curran's Find ...	[illegible]	
A. Pinder, Kalgoorlie	[illegible]	
Hayhow & Addicott, Kalgoorlie ...	[illegible]	
J. Gibbs, Kalgoorlie	[illegible]	
Flynn & Ide, Kalgoorlie	[illegible]	
Ives Reward G.M., N L, St. Ives ...	[illegible]	
Bennington & Walsh, St. Ives ...	[illegible]	
T. Hansen, Roebourne	[illegible]	
Imlah & Derrick, Coolgardie ...	112 [illegible]	
Noonan & Langlands, Kalgoorlie...	25 0 [illegible]	
Green Hills G.M. Co., Linden ...	144 14 8	
Mt. Monger Prospecting Co., Mt. Monger	196 10 0	
Yews, Bennetts & Carlisle, Kalgoorlie	150 0 0	
Humphries & Reis, Kalgoorlie ...	100 0 0	
Elizabeth Griffiths, Coolgardie ...	150 0 0	
J. H. Green, Yilgarn	59 10 0	
F. C. Greenhill, St. Ives	48 14 11	
H. H. Bean, St. Ives	70 6 0	
J. M. Christie	100 0 0	
Croesus Venture Syndicate, Kalgoorlie	145 9 11	
		9,191 0 6
Boring—		
Boring for Coal, Irwin River ...	10 12 5	
Boring for Coal, Wilga	301 15 9	
Golden Mile Ore Channel Ext., Kalgoorlie	1,260 3 10	
A. H. Williams, Lady of the Lake G.M., Kalgoorlie	182 13 10	
E. B. Laver, Kalgoorlie	325 7 9	
		2,080 13 7

Advances in aid of Mining Work and Equipment—continued	Amount. £ s. d.	£ s. d.
Purchase of Calyx Boring Plant ...	...	242 0 7
Providing Transport and Equipment for Prospectors—		
Prospecting, etc.	6,733 1 4	
State Prospecting Party	1,697 9 1	
		8,430 10 5
Miscellaneous Expenditure—		
Investigation, Mineral Industry ...	0 11 3	
Maintenance of Securities	43 4 3	
Preliminary Investigations, Sampling Mines, etc.	891 16 6	
Rebates, Water Supplies	20 12 6	
Sinking at Mt. McMahon	0 19 0	
Subsidy and transport of Mica ...	46 4 7	
Payment to Department of Water Supply—Water for Lloyd George Gold Mine	936 8 7	
Payment to Kalgoorlie Foundry for scrap iron taken from the Day Dawn Gold Mine	62 10 0	
Experimental Treatment Alunite ...	2,105 13 0	
Amount required for advances on Ores other than State Smelter ...	6,000 0 0	
Amount required to adjust other Ores Advances Suspense Account ...	51 9 4	
Investigating Collie Coal	52 10 0	
Edna May Central, Unwatering Mine	58 6 9	
		10,270 5 9
Mt. Monger Water Supply—		
Construction of Water Supply Battery	258 2 5	
Domestic and Boiler Water ...	630 14 6	
Investigations, Surveys, Water for [illegible]	193 6 9	
St. Ives Water Supply—		
Construction of Tank and Enlargement of Existing Tank	1,406 7 4	
Curran's Find Water Supply ...	339 16 0	
Tuckanarra Water Supply ...	122 0 7	
Wanda Wanda Water Supply ...	53 17 5	
Mt. Gould Sinking Wells	2 0 0	
		3,008 5 0
Rebates to Prospectors Crushing at War Rates		789 12 4
Subsidies Development Work—		
H. N. Dawkins, Sandstone ...	25 12 0	
J. Duggan, Youanmi	18 10 0	
J. Griffiths, Coolgardie	18 7 10	
		62 9 10
Subsidies to Batteries Crushing for the Public—		
W. R. Grant, 57 tons, Westonia ...	8 11 0	
Lalla Rookh G.M., 23 tons, Marble Bar	2 17 6	
W.A. Patterson, 276 tons, Parker's Range	27 12 0	
G. H. Howlett, 1,212 tons, Marvel Loch	90 18 0	
Branson Bros. & Co., 75 tons, Lawlers	9 7 6	
Branson Bros. & Co., 148 tons, Lawlers	18 10 0	
G. H. Howlett, 434 tons, Marvel Loch	32 11 0	
W. M. Hodges, 262 tons, Forrestonia	52 8 0	
Branson Bros. & Co., 31 tons, Lawlers	3 17 6	
S. C. Lang, 234½ tons, Bullfinch ...	29 6 3	
W. R. Grant, 175 tons, Westonia ...	26 5 0	
		302 3 9

APPENDIX No. 4—*continued.*

Miscellaneous Expenditure—continued.

	Amount. £ s. d.	£ s. d.
Subsidies Carting Long Distances to Batteries—		
Morrison & Andrew, Mt. Ida ...	15 15 0	
A. J. Page, Yalgoo	2 3 2	
Morrison and Andrew, Mt. Ida ...	21 15 0	
W. Gaston, Burtville	141 15 0	
W. Gaston, Burtville	15 0 0	
R. Herbert, Burtville	12 0 0	
Smith & Probert	14 12 6	
F. J. Mann, Bullfinch	11 8 0	
K. McLean, Bullfinch	9 0 0	
R. H. Wakefield, Coolgardie ...	18 16 3	
D. Brewer. Edjudina	3 19 6	
E. Molonga, Edjudina	1 19 9	
J. Thomas, Edjudina	3 7 6	
J. Stoppani, Edjudina	1 1 9	
Pascoe, Clegg, & Gatley, Coolgardie	16 1 5	
J. Dance, Yarri	8 8 9	
J. Blythe, Wallbrook	2 9 6	
Blythe & Selborne	1 11 6	
J. Clayton, Burtville	5 5 0	
J. Clayton, Burtville	36 7 6	
H. Richards, Burtville	7 10 0	
W. Gaston, Burtville	20 5 0	
		370 12 1
Total (according to net Treasury figures for year)		£34,747 13 10
Advances Refunded—		
Emu Gold Mining Syndicate ...	4 10 8	
Falkiner & Lavery	0 6 0	
"Glideaway" Gold Mine	9 19 5	
Grant and Edwards	7 6 9	
Hansen, T.	1 15 0	
Howlett, G. H.	57 4 7	
Ives Reward	55 12 4	
Johnston & Taylor	0 17 3	
Lady Carmen	5 0 0	
Lady Evelyn	65 1 5	
Lalla Rookh	153 19 10	

Advances refunded—continued.

	Amount. £ s. d.	£ s. d.
Main, A. M.	24 8 6	
Mills & Barnes	4 4 1	
Murrin Proprietary	45 2 0	
Mooney & Osborn	0 5 0	
Murphy & Gray	12 18 4	
North, Hartley, & Borwick ...	27 17 0	
Patterson, W. A.	67 0 2	
Pearce, W. H.	277 18 8	
Pinder, A.	2 2 0	
Premier Coal Mining Co.	14 15 6	
Reynolds & Scott	40 10 0	
Thring & Green	192 1 0	
Unexpected South	3 10 4	
		1,074 5 10
Recovered from Sale of Securities—		
Augusta Gold Mine	146 7 0	
Chunderloo Gold Mine	8 0 0	
Edna May Battler Co.	8 6 8	
Ironclad	4 0 0	
Lake View	3 0 0	
Maori Lass	157 15 4	
Mary Springs	30 0 0	
Mott & Matthews	12 0 0	
South Cornwall	60 0 0	
Tobin, P.	99 19 0	
		529 8 0
Miscellaneous Refunds		138 4 1
Prospecting		127 0 1
		£1,868 18 0

THE MINING DEVELOPMENT ACT, 1902—ADVANCES WRITTEN OFF TO 31ST DECEMBER, 1922.

	£ s. d.	£ s. d.
Previously reported	... 31,834 10 3	
Year 1922	... 1,021 5 6	
		32,855 15 9

MINING DEVELOPMENT EXPENDITURE.

Advances Outstanding, 31st December, 1922.

Name of Lease, Mine, or Borrower.	No. of Lease.	District.	Amount authorised.	Principal Moneys advanced		Principal Moneys		Interest		Total Principal and Interest outstanding at 31st December, 1922.
				Previously to 1922.	During 1922.	Repaid, including Sale of Securities, etc.	Balance outstanding.	Paid.	Outstanding.	
A.—PIONEER MINING AND PROSPECTING.			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Alicia	254F	Mt. Morgans	245 0 0	195 0 0	...	...	195 0 0	4 2 6	54 14 8	249 14 8
Ard Patrick	197	Phillips River	1,331 16 4	1,285 0 2	46 16 2	...	1,331 16 4	...	105 11 11	1,437 8 3
Ard Patrick	197	Phillips River	270 0 0	268 8 8	...	...	268 8 8	...	32 4 9	300 13 5
Allen & Beaton	P.A. 1054Z	Menzies	250 0 0	87 15 2	162 4 10	...	250 0 0	5 5 7	7 1 3	257 1 3
Allen & Beaton	P.A. 1054Z	Menzies	100 0 0	...	99 17 6	...	99 17 6	...	0 19 3	100 16 9
Bulletin	795	Marble Bar	600 0 0	427 19 5	...	25 8 10	402 10 7	29 15 2	76 12 5	479 3 0
Baneygo North	2113T	Laverton	...	200 0 0	...	...	200 0 0	14 5 3	6 6 0	206 6 0
Brittania	953M	Mt. Magnet	150 0 0	114 12 6	...	43 10 0	71 2 6	...	9 4 6	80 7 0
Bickerton	378	Phillips River	150 0 0	148 12 6	...	...	148 12 6	...	14 18 2	163 10 8
Black Princess	5166E, 5247E	Kalgoorlie	150 0 0	147 14 8	0 10 0	...	148 4 8	...	12 3 4	160 8 0
Bull Oak	1179Y	Bulong	60 0 0	27 2 6	...	...	27 2 6	...	2 1 7	29 4 1
British Flag	5310E, 5316E, 5324E	Kalgoorlie	500 0 0	...	325 7 9	...	325 7 9	...	3 13 1	329 0 10
Champion, South	817N, 1039N	Nannine	400 0 0	400 0 0	...	353 0 0	47 0 0	29 11 8	19 19 8	66 19 8
Clarkson & Son	...	Ravensthorpe	150 0 0	119 7 6	...	...	119 7 6	...	16 19 8	136 7 2
Clifford & Richards	P.A. 1182	Yilgarn	30 0 0	25 18 6	...	...	25 18 6	...	0 11 6	26 10 0
Cumpston, T. B.	P.A. 1564E	Kalgoorlie	39 0 0	22 15 0	16 5 0	...	39 0 0	...	1 9 3	40 9 3
Curtis, R.	P.A. 456G	Niagara	50 0 0	30 18 9	...	...	30 18 9	...	0 9 5	31 8 2
Chrysotile, Nos. 1 and 2	274/275	Pilbara	250 0 0	100 0 0	150 0 0	...	250 0 0	7 16 5	7 17 7	257 17 7
Coolgardie Redemption	5135	Coolgardie	500 0 0	500 0 0	...	...	500 0 0	...	32 7 2	532 7 2
Central	5251E	Kalgoorlie	1,000 0 0	638 0 0	362 0 0	...	1,000 0 0	26 10 7	27 11 4	1,027 11 4
Clan McLeod	283	Pilbara	150 0 0	55 0 0	...	...	55 0 0	0 7 2	3 8 9	58 8 9
Christie, J. M.	Dry Dredging Area 1W	Waverley	100 0 0	...	100 0 0	...	100 0 0	...	0 8 7	100 8 7
Croesus Venture Syndicate	P.A. 1730E	Kalgoorlie	300 0 0	...	145 9 11	...	145 9 11	...	0 5 8	145 15 7
Dawn of Hope	1504C	Leonora	100 0 0	95 15 0	4 5 0	...	100 0 0	0 3 11	...	100 0 0
Daley & McDonald	P.A. 1051	Nannine	100 0 0	...	57 5 0	...	57 5 0	0 3 11	...	57 5 0
Dupuy, Kemp & Hughes	P.A. 1628E, 1647E	Kalgoorlie	75 0 0	...	75 0 0	...	75 0 0	0 1 8	...	75 0 0
Emily	1510	Cue	400 0 0	372 1 9	...	...	372 1 9	...	44 7 10	416 9 7
Elverdton	M.L. 95	Ravensthorpe	3,500 0 0	3,498 17 10	...	3,341 4 10	157 13 0	462 15 3	18 19 6	176 12 6
Edna May Consolidated Extended, N.L.	3081	Westonia	750 0 0	353 0 0	...	...	353 0 0	...	19 12 11	372 12 11
Edna May Battler G.M. Co., N.L.	911, 3170, 3171	Westonia	3,000 0 0	2,253 2 9	...	8 6 8	2,244 16 1	86 18 9	240 14 0	2,485 10 1
Eclipse	1047X	Gindalbie	498 19 1	498 19 1	...	267 5 0	231 14 1	62 8 11	...	231 14 1
East Collie Coal Mining Briquetting and By-Products Co.	Coal Leases 294/299, 300/303	Collie	1,000 0 0	790 5 2	...	...	790 5 2	71 11 11	74 5 8	864 10 10
Emu G.M.	1977	Cue	850 0 0	150 0 0	690 4 8	4 10 8	835 14 0	6 19 6	35 10 2	871 4 2
Falkiner & Lavery	P.A. 1150	Yilgarn	150 0 0	107 7 9	15 2 6	0 6 0	122 4 3	3 14 11	...	122 4 3
Firelight & Undaunted	3217, 3222	Yilgarn	414 11 0	300 9 5	34 1 7	0 5 0	334 6 0	18 15 7	19 18 1	354 4 1
Fields Find Extended	902	Yilgarn	361 2 3	361 2 3	...	99 19 0	261 3 3	22 8 3	25 10 2	286 13 5
Flag Leases	136, 137, 138	Phillips River	3,500 0 0	3,080 18 9	...	0 15 0	3,080 3 9	...	177 9 6	3,257 13 3
Flynn & Ide	P.A. 1743E	Kalgoorlie	16 0 0	...	16 0 0	...	16 0 0	...	0 5 4	16 5 4
Globe	912N	Nannine	500 0 0	444 12 9	...	147 18 2	296 14 7	77 17 10	15 8 1	312 2 8
Gallagher, H. J.	M.L. 145	Northampton	50 0 0	25 0 0	...	...	25 0 0	5 3 3	0 15 9	25 15 9
Gem	G.M.L. 184	Phillips River	500 0 0	500 0 0	...	40 10 0	459 10 0	68 0 6	14 13 2	474 3 2
Gem Consolidated	151, 156	Phillips River	1,000 0 0	954 0 0	46 0 0	...	1,000 0 0	0 18 8	141 4 2	1,141 4 2
			150 0 0	...	99 19 1	...	99 19 1	...	2 6 10	102 5 11
Grant & Edwards (Flag Tribute)	...	Phillips River	450 0 0	377 10 0	72 10 0	0 13 1	449 6 11	12 7 1	41 14 0	491 0 11
			150 0 0	...	148 16 10	7 6 9	141 10 1	1 2 9	4 7 6	145 17 7
Golden Lizard	P.A. 717R	Edjudina	400 0 0	400 0 0	...	33 12 8	366 7 4	17 17 9	34 11 3	400 18 7
Great Southern	2909	Yilgarn	630 0 0	630 0 0	...	...	630 0 0	12 17 1	132 14 2	762 14 2
			500 0 0	280 0 0	94 10 0	...	374 10 0	...	22 2 3	396 12 3
Golden Mile Ore Channel Extended, Ltd.	5128E	Kalgoorlie	5,000 0 0	1,628 10 0	1,260 3 10	...	2,888 13 10	...	202 2 7	3,090 16 5
Griffin Syndicate	Leases 306/13	Collie	348 0 7	348 0 7	...	...	348 0 7	...	11 8 1	359 8 8
Gibbs, J.	P.A. 1688E	Kalgoorlie	30 0 0	...	15 0 0	...	15 0 0	...	0 3 1	15 3 1
Greenhills G.M. Co. N.L.	383F	Linden	350 0 0	...	144 14 8	...	144 14 8	...	1 10 1	146 4 9
Golden Promise	P.A. 2053	Coolgardie	300 0 0	...	150 0 0	...	150 0 0	...	1 11 0	151 11 0
Griffiths, Elizabeth	4567	Coolgardie	150 0 0	...	150 0 0	...	150 0 0	...	1 2 9	151 2 9
Garden Gully	5147, 5148	Coolgardie	300 0 0	...	112 10 0	...	112 10 0	...	1 19 3	114 9 3
Havilah	345B	Black Range	600 0 0	553 2 1	...	424 18 1	128 4 0	163 14 6	3 4 8	131 8 8
			500 0 0	119 2 6	160 15 0	...	279 17 6	8 13 4	7 13 11	287 11 5
Hawk	725G	Desdemona	120 0 0	116 12 2	...	22 5 11	94 6 3	3 7 10	...	94 6 3
Harbour View Gold & Copper Co., Ltd.	M.L. 52, 94	Kundip	2,886 11 0	2,886 11 0	...	74 16 7	2,811 14 5	8 18 11	445 3 7	3,256 18 0
Hamilton & Congdon (Flag)	...	Phillips River	150 0 0	150 0 0	...	...	150 0 0	...	13 3 8	163 3 8
Holt & Rowe	P.A. 1454E	Kalgoorlie	50 0 0	50 0 0	...	...	50 0 0	...	0 10 11	50 10 11
Hamerston, O. A.	P.A. 184	Phillips River	100 0 0	100 0 0	...	...	100 0 0	...	...	100 0 0

MINING DEVELOPMENT EXPENDITURE—*Advances Outstanding 31st December, 1922*—continued.

Name of Lease, Mine, or Borrower.	No. of Lease.	District.	Amount authorised.	Principal Moneys advanced		Principal Moneys		Interest		Total Principal and Interest outstanding at 31st December, 1922.
				Previously to 1922.	During 1922.	Repaid, including Sale of Securities, etc.	Balance outstanding.	Paid.	Outstanding.	
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Hobby & Party	... ...	Youanmi	125 0 0	117 11 10	0 4 0	...	117 15 10	...	...	117 15 10
Hansen, T.	M.L. 220 ...	West Pilbara ...	100 0 0	...	50 0 0	1 15 0	48 5 0	...	0 17 8	49 2 8
Humphries & Reid	Dry Dredge Area	Bulong	100 0 0	...	100 0 0	...	100 0 0	...	0 19 11	100 19 11
Johnston & Stennett	Temp. Res., 218H	Ravensthorpe ...	150 0 0	150 0 0	...	0 17 3	149 2 9	17 14 2	4 12 8	153 15 5
Kuhlman & Buckle (Ironclad Tribute) ...	... ...	Phillips River ...	300 0 0	263 8 0	...	...	263 8 0	18 8 0	2 17 3	266 5 3
Kuhlman & Buckle (Ironclad Tribute) ...	... ...	Phillips River ...	403 17 3	403 17 3	...	4 0 0	399 17 3	...	...	399 17 3
Kingdom Come	M.L. 112 ...	Northampton ...	204 14 0	204 14 0	...	110 0 0	94 14 0	5 8 6	15 11 0	110 5 0
Klondyke Boulder	604	Warrawoona ...	1,000 0 0	999 10 7	...	163 5 6	836 5 1	34 5 4	150 12 7	986 17 8
Kirkland, A. G.	M.A. 12N ...	Nannine	500 0 0	500 0 0	...	341 9 11	158 10 1	20 17 4	12 12 5	171 2 6
Lake View Extended	4536E	Kalgoorlie	1,050 0 0	892 15 5	...	803 0 0	89 15 5	...	54 11 1	144 6 6
Lorna	4554	Coolgardie	100 0 0	98 15 4	...	4 0 0	94 15 4	2 17 6	8 18 11	103 14 3
Lady Carmen	4556	Coolgardie	500 0 0	83 0 0	417 0 0	5 0 0	495 0 0	12 19 1	15 13 5	510 13 5
Lady of the Lake	5083E, 5173E, 5174E, 5177E, 5178E, 5226E	Kalgoorlie	1,100 0 0	885 8 2	182 13 10	...	1,068 2 0	1 7 6	82 2 6	1,150 4 6
Lewis, D.	... ...	Bulla Bulling ...	32 8 0	18 18 0	...	...	18 18 0	...	...	18 18 0
Lyons & Bacon	P.A. 10370 ...	Mt. Malcolm ...	33 10 0	29 5 0	...	...	29 5 0	...	0 9 10	29 14 10
Lloyd George G.M.	4580, 4726, 4727	Coolgardie	1,750 0 0	1,750 0 0	...	...	1,750 0 0	...	144 1 10	1,894 1 10
Lupton, Chesson & Mathers ...	... ...	Day Dawn	600 0 0	600 0 0	...	...	600 0 0	...	...	600 0 0
Lake View Reward	G.M.L. 4720, 4721, 4722, and Water Rights, 553 and 554	St. Ives	2,675 0 0	...	961 6 7	55 12 4	905 14 3	...	10 15 7	916 9 10
Mindeloo	1518	Mindoolah	300 0 0	198 17 0	...	10 0 0	188 17 0	...	8 1 1	196 18 1
Mt. Rankin G.M., N.L.	2416	Yilgarn	535 6 3	535 6 3	...	292 15 4	242 10 11	60 10 0	13 9 10	256 0 9
Mt. Rankin G.M., N.L.	3135, 3136 ...	Yilgarn	1,000 0 0	911 19 9	...	10 0 0	901 19 9	0 8 3	47 8 4	949 8 1
Mt. Iron	G.M.L. 198 ...	Kundip	200 0 0	188 0 0	6 0 0	...	194 0 0	...	29 3 4	223 3 4
Melba	1053E	Yerilla	575 0 0	496 18 10	...	90 0 0	406 18 10	...	43 2 9	450 1 7
Mac's Lucky Ridge	2103T	Laverton	75 0 0	44 10 0	...	...	44 10 0	2 8 6	2 15 0	47 5 0
Mott & Matthews	P.A. 164 ...	Roebourne	750 0 0	483 6 6	...	16 3 5	467 3 1	1 1 10	45 10 7	512 13 8
Munday, Livingstone & Austin	P.A. 1527E ...	Kalgoorlie	60 0 0	25 0 0	...	...	25 0 0	...	0 4 5	25 4 5
Mt. Magnet Prospecting and Dev. Synd. ...	1190M	Mt. Magnet ...	250 0 0	122 5 6	...	6 15 6	115 10 0	7 11 0	3 12 9	119 2 9
Mills & Barnes	P.A. 570X ...	Kanowna	65 0 0	65 0 0	...	4 4 1	60 15 11	1 18 1	...	60 15 11
Murphy & Gray	... ...	Westonia	90 0 0	62 4 0	...	12 18 4	49 5 8	2 1 5	...	49 5 8
Mohr, John	P.A. 1522E ...	Kalgoorlie	150 0 0	143 5 7	...	...	143 5 7	0 7 6	11 4 1	154 9 8
Manners, W. G.	P.A. 572X ...	Kanowna	120 0 0	73 5 0	...	...	73 5 0	...	1 10 5	74 15 5
Maw, E. L.	P.A. 452 ...	Marble Bar ...	100 0 0	12 18 0	...	...	12 18 0	...	0 19 10	13 17 10
Meekatharra Prospecting Co.	P.A. 1021N ...	Meekatharra ...	150 0 0	35 15 0	41 10 3	...	77 5 3	2 6 4	...	77 5 3
Murrin Proprietary G.M. Co.	372F	Mt. Morgans ...	550 0 0	550 0 0	...	30 2 0	519 18 0	...	54 8 6	574 6 6
Murrin Proprietary G.M. Co.	372F	Mt. Morgans ...	413 3 6	...	413 3 6	15 0 0	398 3 6	...	36 11 6	434 15 0
Mt. Monger Proprietary G.M. Co. ...	4770E	Kalgoorlie	300 0 0	...	196 10 0	...	196 10 0	...	2 0 9	198 10 9
Mt. Zion	1013M, 1183M, 1189M	Mt. Magnet ...	2,000 0 0	...	1,949 16 10	...	1,949 16 10	13 6 5	58 9 3	2,008 6 1
Mt. Zion	1013M, 1183M, 1189M	Mt. Magnet ...	500 0 0	...	500 0 0	...	500 0 0	...	7 0 6	507 0 6
McGregor & Grylls	P.A. 1177 ...	Yilgarn	100 0 0	88 2 6	...	...	88 2 6	...	3 0 9	91 3 3
Norseman Prospecting Syndicate ...	1261	Norseman	515 3 8	415 3 8	...	...	415 3 8	6 10 3	68 19 3	484 0 11
North Harbour View	M.L. 370 ...	Phillips River ...	100 0 0	100 0 0	...	...	100 0 0	...	15 4 1	115 4 1
North End	4622E	Kalgoorlie	150 0 0	102 15 0	46 10 0	...	149 5 0	...	10 9 2	159 14 2
Norma	1460N	Nannine	220 0 0	168 15 0	51 5 0	27 17 0	192 3 0	9 3 11	6 3 4	198 6 4
Noonan & Langlands	P.A. 1739E ...	Kalgoorlie	25 0 0	...	25 0 0	...	25 0 0	...	0 7 7	25 7 7
North West Reward	5162	St. Ives	250 0 0	...	70 6 0	...	70 6 0	...	0 7 9	70 13 9
New Glideaway	3248	Yilgarn	200 0 0	140 0 0	...	13 10 0	126 10 0	44 17 5	3 3 9	129 13 9
Oliver, Arthur	Tem. Res., 260H	Kendenup	50 0 0	21 5 0	...	...	21 5 0	...	0 18 10	22 3 10
Oates & Party	P.A. 1022Z ...	Menzies	90 0 0	90 0 0	...	4 19 6	85 0 6	...	...	85 0 6
Owen & Brown	M.L. 184 ...	Roebourne	100 0 0	...	56 3 0	...	56 3 0	0 14 10	1 15 4	57 18 4
Pearl	1095M	Mt. Magnet ...	76 0 0	76 0 0	...	...	76 0 0	...	24 18 2	100 18 2
Pyx	789B	Sandstone	600 0 0	571 4 8	...	37 10 7	533 14 1	12 14 5	24 15 0	558 9 1
Premier Coal Mining Co., ...	260/6, 271 ...	Collie	500 0 0	500 0 0	...	15 17 4	484 2 8	174 3 6	15 5 1	499 7 9
Pilgrim's Rest G.M. Co.	165, and M.A. 14	West Pilbara ...	1,500 0 0	500 0 0	...	...	500 0 0	...	37 15 2	537 15 2
Pinder, A.	2102T	Duketon	100 0 0	...	100 0 0	2 2 0	97 18 0	...	2 19 4	100 17 4
Quistini & Kinnane	941W	Broad Arrow ...	75 0 0	70 2 6	...	...	70 2 6	...	3 16 4	73 18 10
Rupe & Young	M.A.	Nannine	848 17 5	848 17 5	...	500 0 0	348 17 5	...	24 13 5	373 10 10
Red Guard	M.L. 113E, 117E, 118E, M.A. 68E	Kalgoorlie	150 0 0	150 0 0	...	34 3 6	115 16 6	10 0 4	11 12 11	127 9 5

Rainbow G.M. Co.	5091	Coolgardie	280 0 0	182 10 0	...	1 8 4	181 1 8	6 3 7	27 6 8	208 8 4
Riverina South G.M. Co.	324U, etc.	Mulline	2,000 0 0	2,000 0 0	...	...	2,000 0 0	1 0 0	211 6 9	2,211 6
Riverina South G.M. Co.	324U, etc.	Mulline	3,600 0 0	1,438 0 0	...	...	1,438 0 0	...	80 3 5	1,518 3 5
Raven, H. C.	P.A. 1712E	Kalgoorlie	85 0 0	74 19 2	...	...	74 19 2	...	1 3 2	76 2 4
South Cornwall	567	Greenbushes	1,170 2 0	1,170 2 0	...	86 0 0	1,084 2 0	...	...	1,084 2 0
Stanley	1271X	Kanowna	150 0 0	112 0 0	...	...	112 0 0	2 6 0	39 14 8	151 14 8
			200 0 0	200 0 0	...	...	200 0 0	...	57 6 8	257 6 8
Scots Greys	2801	Yilgarn	200 0 0	200 0 0	...	...	200 0 0	...	49 16 6	249 16 6
			120 0 0	15 0 0	...	...	15 0 0	...	0 19 6	15 19 6
Smith, W. F. (Mt. Kooyoora)	G.M.L. 196	Phillips River	300 0 0	300 0 0	...	...	300 0 0	...	15 19 1	315 19 1
Surprise	M.L. 342	Ravensthorpe	600 0 0	327 4 1	...	11 9 0	315 15 1	1 5 1	28 5 0	344 0 1
	M.L. 150	Northampton	159 0 0	109 0 0	...	...	109 0 0	...	11 0 4	120 0 4
Snelgrove & Mendis	P.A. 1880	Widgiemooltha	100 0 0	49 12 0	50 8 0	...	100 0 0	...	0 10 4	100 10 4
St. George's Prospecting Co., Ltd.	P.A. 391H	Albany	10 0 0	...	10 0 0	...	10 0 0	...	...	10 0 0
Stevens & Party (Tributers)	—	Curran's Find	875 0 0	...	556 7 6	...	556 7 6	...	...	556 7 6
Thomas & McDonald (Tributers)	...	Kalgoorlie	40 0 0	35 0 0	...	...	35 0 0	...	3 10 9	38 10 9
Thorn, A.	P.A. 1913	Widgiemooltha	50 0 0	30 0 0	20 0 0	...	50 0 0	1 13 10	1 11 6	51 11 6
Unexpected	5480, 5481	Mt. Ida	640 0 0	...	640 0 0	3 10 4	636 9 8	8 19 8	30 0 2	666 9 10
V's United	271F	Mt. Morgans	500 0 0	406 14 1	...	...	406 14 1	1 11 2	25 7 9	432 1 10
			172 2 0	172 2 0	...	170 0 0	2 2 0	...	9 6 4	11 8 4
Victory	Res. 297H	Marvel Loch	175 0 0	87 18 3	59 10 0	...	147 8 3	...	5 18 6	153 6 9
Victorian	5121	St. Ives	85 0 0	52 0 0	33 0 0	10 11 0	74 9 0	...	3 1 6	77 10 6
Venture	5160	St. Ives	100 0 0	...	48 14 11	...	48 14 11	...	0 3 1	48 18 0
Western Graphite Co.	M.L. 22	Plantagenet	300 0 0	100 0 0	...	...	100 0 0	8 14 8	6 5 0	106 5 0
Wheal May	Loc. 6	Northampton	302 4 6	302 4 6	...	50 0 0	252 4 6	5 15 9	14 9 8	266 14 2
Williamson & Pender	...	Kanowna	180 0 0	180 0 0	...	...	180 0 0	7 0 0	12 18 1	192 18 1
Wilson & Son	P.A. 1103W	Broad Arrow	26 0 0	26 0 0	...	...	26 0 0	...	0 16 0	26 16 0
Totals	...	...	...	48,577 13 0	11,340 18 9	7,842 9 6	52,076 2 3	1,743 7 7	3,956 16 8	56,032 18 11
B.—Assistance in Erecting Batteries and Treatment Plants to be used for Crushing for the Public.										
Big Stone	357F, 369F	Yundamindera	500 0 0	484 2 1	...	...	484 2 1	...	37 18 0	522 0 1
			1,438 0 0	1,438 0 0	...	418 6 3	1,019 13 9	...	384 6 3	1,404 0 0
Butcher Bird, No. 1	1933	Yilgarn	1,863 14 2	1,863 14 2	...	17 16 2	1,845 18 0	172 3 10	89 6 5	1,985 4 5
Chunderloo	1048N	Nannine	2,032 12 8	1,730 10 2	...	636 4 2	1,094 6 0	...	218 16 2	1,313 2 2
			1,000 10 0	1,000 10 0	...	248 1 6	752 8 6	503 15 8	19 1 4	771 9 10
			150 0 0	150 0 0	...	...	150 0 0	27 15 3	4 14 6	154 14 6
Donovan's Find	768	Yilgarn	433 0 0	433 0 0	...	...	433 0 0	30 13 10	13 12 10	446 12 10
			100 0 0	78 0 9	...	...	78 0 9	3 1 8	2 9 2	80 9 11
Frasers Central	3228, 3232	Yilgarn	3,000 0 0	2,971 16 4	...	...	2,971 16 4	...	235 1 10	3,206 18 2
			1,000 0 0	...	608 2 8	...	608 2 8	...	21 18 5	630 1 1
Great Victoria	719, 944/5, 1229	Yilgarn	2,000 0 0	1,643 3 0	...	1 7 9	1,641 15 3	812 18 3	82 1 9	1,723 17 0
Great Southern	2909	Yilgarn	...	3,881 12 7	96 0 0	...	3,977 12 7	...	566 12 1	4,544 4 8
Hodder, E.	M.A. 64Y	Bulong	253 3 2	253 3 2	...	148 13 0	104 10 2	6 8 4	35 11 3	140 1 5
			2,050 0 0	2,028 12 9	...	98 2 4	1,930 10 5	537 3 10	146 3 0	2,076 13 5
Kirtons South	M.L. 127	Northampton	200 0 0	200 0 0	...	...	200 0 0	15 8 5	14 19 9	214 19 9
			500 0 0	500 0 0	...	...	500 0 0	8 14 1	46 16 8	546 16 8
Lalla Rookh	112, 786, T.A. 10	Marble Bar	...	2,894 3 1	220 0 0	153 19 10	2,960 3 3	428 9 5	92 11 2	3,052 14 5
Malcolm Prospecting Co.	1175C	Mt. Malcolm	1,550 0 0	1,550 0 0	...	15 0 0	1,535 0 0	40 6 10	723 4 9	2,258 4 9
McCahon & Party	...	Mt. Ida	400 0 0	400 0 0	...	7 0 0	393 0 0	...	27 14 5	420 14 5
Neta	1011R	Edjudina	200 0 0	200 0 0	...	17 11 7	182 8 5	44 19 2	31 1 9	213 10 2
Phœnix	622N	Quinns	250 0 0	250 0 0	...	39 12 0	210 8 0	17 12 1	17 5 11	227 13 11
Randwick	978C	Mt. Malcolm	584 14 0	577 3 5	...	54 4 6	522 18 11	...	45 3 5	568 2 4
Red, White and Blue	641B	Curran's Find	2,676 9 0	2,676 9 0	...	224 12 2	2,451 16 10	856 18 10	121 10 1	2,573 6 11
Rocklee	...	Yalogindа	350 0 0	350 0 0	...	38 0 0	312 0 0	12 2 0	21 14 1	333 14 1
Ravensthorpe Battery Co.	...	Ravensthorpe	1,300 0 0	1,038 8 2	...	125 0 0	913 8 2	...	326 1 2	1,239 9 4
Southern Cross leases	1067Y, 1076Y	Bulong	1,000 0 0	1,000 0 0	...	770 15 3	229 4 9	78 9 6	155 11 10	384 16 7
Spring Hill leases	724, 2633	Parker's Range	655 16 5	655 16 5	...	86 2 2	569 14 3	522 2 11	15 15 3	585 9 6
Triplicate	1914	Tuckabianna	730 0 0	608 17 7	...	116 13 10	492 3 9	51 0 8	39 14 7	531 18 4
Totals	...	...	...	30,857 2 8	924 2 8	3,217 2 6	28,564 2 10	4,170 4 7	3,536 17 10	32,101 0 8
C.—Miscellaneous.										
Bligh, R. N. W. (Testing Dryblower)	...	...	75 0 0	59 12 0	...	...	59 12 0	...	5 1 6	64 13 6
D.—Boring.										
Irwin River	...	...	...	3,806 13 5	10 12 5	...	3,817 5 10	...	...	3,817 5 10
Wilga	...	...	...	5,568 14 2	301 15 9	...	5,870 9 11	...	...	5,870 9 11
Totals	...	...	...	9,375 7 7	312 8 2	...	9,687 15 9	...	...	9,687 15 9
A.—Pioneer Mining and Prospecting	...	...	...	48,577 13 0	11,340 18 9	7,842 9 6	52,076 2 3	1,743 7 7	3,956 16 8	56,032 18 11
B.—Assistance Erecting Batteries, etc.	...	...	...	30,857 2 8	924 2 8	3,217 2 6	28,564 2 10	4,170 4 7	3,536 17 10	32,101 0 8
C.—Miscellaneous	...	...	...	59 12 0	...	...	59 12 0	...	5 1 6	64 13 6
D.—Boring	...	...	...	9,375 7 7	312 8 2	...	9,687 15 9	...	...	9,687 15 9
Totals	...	...	...	88,869 15 3	12,577 9 7	11,059 12 0	90,387 12 10	5,913 12 2	7,498 16 0	97,886 8 10

APPENDIX No. 2.

Report on "Mica King" and "Mica Queen" Mineral Claims Nos. 19h and 20h. (Owners Messrs. F. A. Whitlock and R. Spaven.)

(By R. C. Wilson, Assistant State Mining Engineer, 4th May, 1922.)

Location.—The Mica King (M.C. 19H) is situated about 15 miles east of Lockier Range and includes Morrissey Hill.

The Mica Queen (M.C. No. 20H) is a little south of west from the Mica King, the eastern boundary being calculated to be 199 chains from the highest point on Morrissey Hill.

Geology.—By reference to geological plan attached it will be noted that Morrissey Hill is situated in the middle of an extensive area of granite and gneiss.

The occurrence of the mica sheets is confined to pegmatite dykes or veins which usually follow the general trend of the country. These pegmatites are, in effect, giant granites and are found in all parts of the world cutting the more ancient rocks such as the gneisses and mica schists.

Owing to the fact that they have resisted denudation to a greater extent than the surrounding gneiss the pegmatites in this neighbourhood now stand out as prominent land marks.

Morrissey Hill is really an extreme type of pegmatite, and resembles an ordinary granite only in the fact that it is composed of quartz felspar and mica. Instead of these minerals occurring as relatively small crystals the quartz occurs as a huge reef traceable for about a mile in length and a chain in width, and forms the ridge of the hill. The felspar which is in the microcline variety occurs in extensive masses at intervals along the hill and could be quarried out. The mica occurs in veins parallel to the quartz on the southern fall of the hill. Alongside the mica veins is a micaceous schist containing a large number of tourmaline crystals sometimes well developed. This is the usual sequence in the district. Usually quartz is the predominating mineral, but occasionally there is more felspar than quartz. A good instance of this is to be found just outside the south-east corner of the Mica King M. Claim. A hill about 800ft. long consists for the most part of microcline felspar, alongside it is a mica vein followed by the inevitable tourmaline bearing gneiss. Embedded in the microcline are a number of large green crystals of beryl. These are hexagonal in form and are sometimes eight inches or more in diameter and at least 12 inches in length.

Both mineral claims occur along a belt of gneissic granite some miles in length, and apparently a little over a mile in width, which is intruded by pegmatite dykes often of unusually coarse structure.

The Mica King (M.C. 19H).

Whitlock's Workings.—The best mica won from this lease was obtained from Whitlock's workings. A mica vein has been taken out by means of an open cut for a length of 105 feet and a depth of six to eight feet. Its average width is about 30in. The vein has been proved by pot holes to continue for another 100ft. in length. Its strike is a little north of west, and its dip to the south at 50deg. On the hanging wall side is a pegmatite, and on the footwall a tourmaline bearing gneiss. Most of the material excavated from the open cut consists of mica of marketable size. Only a small proportion of the mica, however, can be cut into saleable sheets. Some of the mica has developed gliding planes in addition to the ordinary cleavage plane, with the result that it splits into long narrow strips, and some of it, owing to the condition of crystallisation or to subsequent pressure, will not split into sheets at all. Some excellent mica has, however, been obtained.

Forty cases weighing 25¾ cwt. were sold at prices ranging from 1s. to 10s. per lb., and averaging 3s. 1½d. per lb., equivalent to £349 per ton.

The largest mica sheet free from flaws and squared up for market at the time of my visit was 9½ inches by 7 inches. The smallest sheets cut were 3in. x 3in. All the mica from this vein is discoloured owing to inclusions of magnetite and occasionally of tourmaline. It was to be regretted that there was a good deal of waste material left in the cut, so that the vein going underfoot could only be inspected at one or two points. I formed the opinion that this vein was worth further development by sinking an underlay shaft on it and driving levels in the usual way. More than ordinary care should be taken in the mining of the mica, however. I noticed that none of the footwall country has been broken out in the open cut. The holes had evidently been bored in the mica itself, and it is quite probable that some good mica was destroyed by shooting.

Underwood's Workings.—A number of shafts, one 40ft. deep and the remainder under 10 feet, have been sunk at intervals for a length of about 1,000 feet on mica veins showing on the southern fall of Morrissey Hill. The veins range from a few inches up to several feet in width. Widths of 24 and 30 inches are common. Large mica of clean amber colour is showing freely, but owing apparently to strain most of it seems to have been distorted and very little marketable mica was seen.

The Mica Queen (M.C. 20H).

O'Malley's Lode.—Near the northern boundary of this lease two seams of mica have been worked in a small way. They are both from 24 to 30 inches in width and appear to join together going west. A tourmaline schist forms one of the walls of the southern vein. It thus appears well defined and has more appearance of permanency than is commonly the case. The mica from these veins of the muscovite variety, is mostly of marketable size, *i.e.*, over 3 inches by 3 inches. It has a clear amber colour and judging by the discarded cuttings around O'Malley's old camp, some mica of very good quality and size would seem to have been obtained here. Some further development work upon this mica vein is, I think, justified.

Old Mica Queen Workings.—These workings are near the western boundary of M.C. 20H. In all, eight shallow shafts have been sunk. In colour and size the mica is about the same as at O'Malley's lode, but it seemed to me to have suffered more from crushing, and there was not such a well defined line of lode.

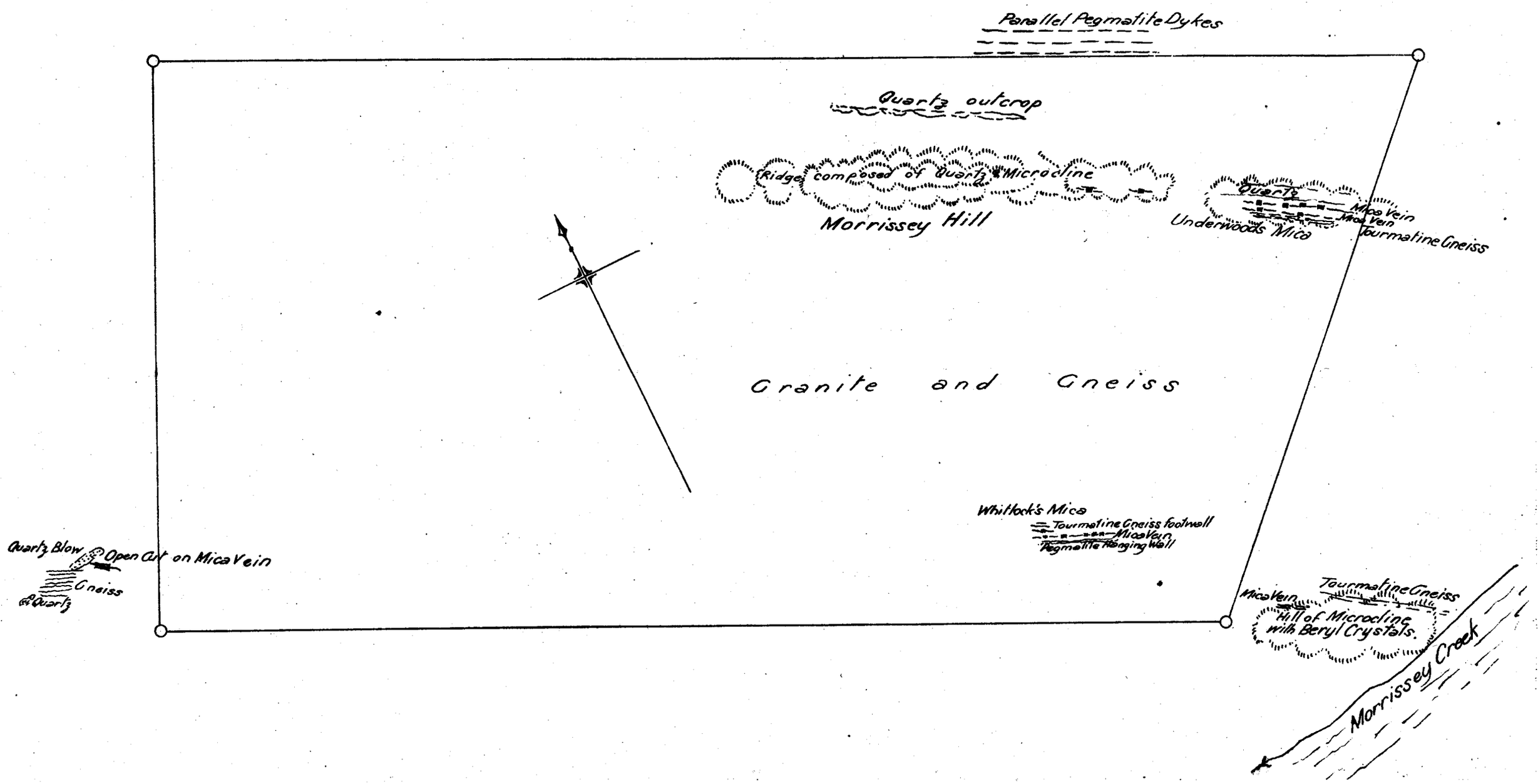
Another outcrop of mica was noticed near the southern boundary of the lease, but no work had been done on it.

General Remarks.

The two most promising mica deposits were Whitlock's on the Mica King lease, and O'Malley's on the Mica Queen. In both instances quantities of large mica can be obtained, and while a large proportion has been rendered unsaleable owing to the development of gliding planes and other defects some books of first class mica have been obtained from both veins. That from Whitlock's vein is opaque, due to inclusion of magnetite, while that from O'Malley's is clear and transparent. In other respects both micas appear to fulfil the necessary requirements. The results obtained certainly justify further prospecting, as there is every reason to suppose that good books of mica will be found. It might be well to point out that while the transport of the mica to the coast is heavy, viz., £10 per ton, this does not amount to such a great deal on a product worth £349 per ton, which is the average price obtained by Messrs. Whitlock and Spaven for the 25 cwt. sold.

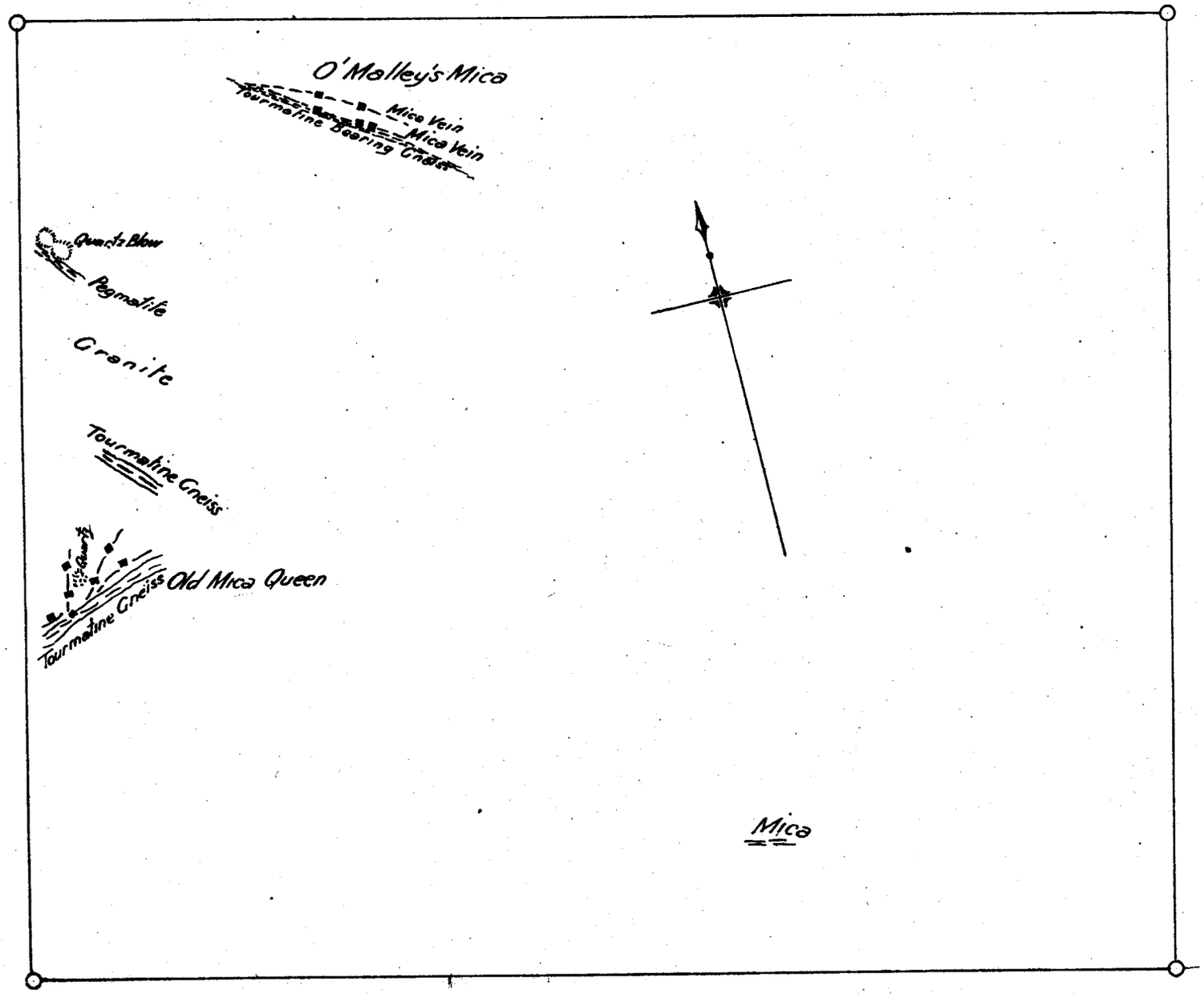
-Mica King- Minl. Claim 19H

to accompany Asst S.M.E. Report



– Mica Queen. – Minl. Claim 20[H].

to accompany Ass[t] S.M.E. Report



To Morrissey Hill 299 chains

APPENDIX No. 8.

Report on Oil Prospecting Areas Nos. 9 and 10H.

(By R. C. Wilson, Assistant State Mining Engineer, 13th September, 1922.)

The area examined, which includes the three oil prospecting areas, Nos. 9H, 10H, and 77H, covers approximately 2,000 square miles. It is bounded on the north by the coast at Geographe Bay, and extends along the south coast from Black Head to Cape Leeuwin. It is bounded on the west by the coast between Cape Naturaliste and Cape Leeuwin, and on the east by the Darling Range.

Previous Prospecting Operations.—Asphaltum, which is a petroleum residual, has been known to occur along the southern coast of this State for a considerable number of years, but according to *H. P. Woodward it does not seem to have been connected with the possible presence of petroleum springs until the year 1901, its origin being assumed as sea-borne. This conclusion was arrived at owing to its occurrence only upon the coast above high water mark, where it was associated with a heterogeneous assortment of material which has been thrown up in stormy weather.

In the year 1901, however, Messrs. Sinclair and Boyd reported the discovery of petroleum in this district. A syndicate known as the W.A. Mining Syndicate was formed which floated a company known as "The Westralian Mining and Oil Corporation," by whom Mr. E. J. Nankivell was appointed manager.

Three bores were put down by this company in the neighbourhood of the Warren River. No. 1 bore is stated to have been put down about six miles from the mouth of the river, situated too close to the Darling Fault to be of informative value.

No. 2 bore is situated half a mile further south, still close to the same fault line. This was put down to a depth of 504 feet in drift sand and then abandoned.

No. 3 bore was put down at a site selected by Mr. Goczel in a sand dune area about two miles from the mouth of the Warren River. About 700 feet of this bore was put down by the company, while the balance, 1,700 feet, was subsidised by the Government at the rate of £2 for £1 expended. The results obtained are given at length in Geological Bulletin No. 65, pages 34 to 36.

No oil was found. The coal series of rock were passed through in the first 700 feet. Thereafter the bore was in a mixture of angular grains of quartz felspar, garnet and mica, *i.e.*, granite constituents. The granite floor was not reached.

Previous Literature.—The literature already published by the Geological Survey dealing with portions of the area under review includes the following publications:—

The Reported Petroliferous Deposits of the Warren and the Donnelly Rivers, by A. Gibb Maitland, published in the Annual Report of the Department of Mines, 1902.

A Geological Reconnaissance of a portion of the South-West Division of Western Australia, W.A. Geological Survey Bulletin No. 44, by E. C. Saint Smith, published 1912.

The Reported Petroliferous Area of the Warren River District, W.A.G.S. Bulletin No. 65, by H. P. Woodward, Assistant Government Geologist.

The Reported Occurrence of Oil near Wonnerup, South-West Division, Geological Survey of W.A. Bulletin No. 74, by E. De C. Clarke and H. P. Woodward, published 1917.

In addition, a report by the State Mining Engineer, Mr. A. Montgomery, was published in the Annual Report of the Mines Department 1903, after an examination of the area, conducted under the guidance of Mr. W. L. Brockman, an old resident, and Mr. W. L. Nankivell, representative of the Westralian Mining and Oil Corporation, Ltd., which company was making application to the Government for financial assistance.

A report was issued in pamphlet form by the Westralian Mining and Oil Corporation, Ltd., for whom it was written by Mr. S. Goczel, formerly Field Geologist, in 1902.

A report upon the possibilities of finding oil in the South-Western Districts of W.A. was written for the W.A. Oil Exploration Co. by Herbert Basedow in 1919.

A report on a part of the South-West Division of W.A. was written for the W.A. Oil Exploration Co. by J. J. East in 1920.

From the above it wil be obvious that the area has already been somewhat extensively reported on, and in this report I have collected information from all these reports, and have attempted to show just what our real knowledge of the area is, and what are its possibilities.

Geology.—The area under review is the southern portion of the downfaulted strip of country lying to the west of the Darling Range which extends in a northerly direction past Geraldton and is separated from the Darling Peneplain by the sharp scarp known as the Darling Fault Scarp.

The country to the east of the Darling Range is practically all granite country, and may be dismissed as far as oil possibilities are concerned.

The geological nature of the area under consideration can be seen by reference to the sections prepared by Saint Smith and Woodward, copies of which are attached. They afford the following information:—

(1) Crystalline rocks consisting of granite gneiss, etc., are exposed at the surface on the Darling Range, and on the peneplain to the east of the Range.

(2) Sedimentary rocks more or less horizontally bedded, and having a maximum thickness of over 1,700 feet, occur to the west of the Darling Range for a distance of roughly 32 miles, terminating against the C. Naturaliste to C. Leeuwin range of hills.

(3) Crystalline rocks similar to those east of the Darling Range form a range of hills along the west coast eight to ten miles in width, capped in places by calcareous sandstone.

Of these areas No. 1 and No. 3, which are composed of ancient crystalline rocks, may be eliminated from any possibilities of being oil bearing, and we can confine our attention to area No. 2.

The extent of this area, as indicated by Mr. H. P. Woodward's geological plan, is approximately 50 miles in a north and south direction by 32 miles in an east and west direction, giving a total area of 1,600 square miles. I have no doubt that the eastern boundary of this area is correctly shown. With regard to the western boundary, Mr. Higgins of Margaret River, spoke to me of having obtained mica sheets, which are obtained in granite country, considerably east of the line shown, on the north side of the Blackwood River.

I made an endeavour to check the correctness of this, but found that the country was quite inaccessible at this time of the year.

Mr. Higgins recently made an attempt to locate this mica, which he first saw years ago, and could not do so. I am therefore assuming the plan correct in this respect also for the time being.

The bore holes which have been put down, taken in conjunction with the surface observations, indicate that over the whole of this area there are practically the same series of rocks.

(a) Superficial deposits consisting of sand dunes, alluvial deposits, laterite, etc.

(b) †Calcareous sandstone also known as coastal limestone.

(c) †Basaltic lavas.

(d) A series of sandstone grits, clay shales, and coal seams (Donnybrook series?).

(e) The crystalline rocks, granites, etc., which form the floor on which the other formations were laid down.

A brief description of each of the series will now be given.

* Geological Survey of W.A., Bulletin No. 65, page 8.

† Not occuring over the whole area.

(a) *Superficial Deposits.*—In the neighbourhood of the coast sand dunes are everywhere to be seen, and as is usual with sand dunes they are moving in the direction of the prevailing winds. Some anxiety was felt that the main road in the neighbourhood of Jarrahdale would soon be covered with sand, but by planting grass it was found that the eastward movement of the dunes was arrested.

Inland there is a large area of flat sandy country which is often swampy, and makes heavy roads. This might reasonably be expected to overlie sandstone rocks.

On the hills laterite is everywhere to be found, and obscures the nature of the underlying rocks. It consists of a hard dense ironstone sometimes siliceous. It has been formed by the action of water which, carrying iron in solution, is drawn to the surface by capillary attraction, and on evaporation deposits its iron there.

(b) *Calcareous Sandstone.*—This rock, in which our caves occur, is commonly known as the coastal limestone. It consists of more or less rounded grains of sand cemented together with carbonate of lime, and is correctly called a siliceous limestone or a calcareous sandstone, depending on whether lime or sand is the predominant constituent. The Government Geologist, and practically the whole of his staff are agreed that this rock is of aeolian origin. In this connection Mr. Jutson* has expressed himself as follows:—

"This rock is of very recent origin and borders the sea in narrow belts along the various parts of the western and south-western coasts. It is essentially blown sand which containing a certain quantity of carbonate of lime in the form of hard remains of molluscs and other marine animals, has by solution and precipitation of such carbonate of lime been transformed into a sandy limestone. It has the usual characteristics of limestone country such as abundant and large caves, often of great beauty, as in the south-western portion of the State, rapid run off of surface water and an underground circulation."

Mr. A. Montgomery, State Mining Engineer, on the other hand, is of opinion that these rocks were formed in shallow water. The following excerpt is taken from his report on the prospects of finding oil in the Warren River District:—

"All along the range of hills on the inland side the beds of both limestones and sandstones appear to have a strong easterly dip of about 20 to 30 degrees, and though this varies a good deal in direction within short distances it seems to me on the whole to be much too regular to be the result of formation by wind. The lamination is also, in my opinion, too regular to be due to aeolian action, and in my opinion these strata have been laid down in shallow water originally."

I took a sample of this calcareous limestone from Sugarloaf Hill, near Black Point, on the South Coast, and it will be noted that from the microscopic appearance of the grains, Mr. Farquharson supports the dune theory.

I have come to the conclusion that in the main this is the manner in which this rock has been formed. It is quite possible, however, that there is a certain amount of true marine limestone which has formed in shallow water during a recent period of subsidence.

(c) *Basaltic Lavas.*—Basaltic lavas are found at intervals between Black Point, on the South coast, and Bunbury. The outcrops are more or less along a north and south line which suggests a line of weakness. In places the lava seems to have flowed along between the bedding planes of the sedimentary rocks as at Black Point, while in other places, as for instance at Bunbury, it would seem to have reached the surface.

At Black Point columnar structure is well developed. Right on the sea coast very perfect columns from two to three feet in thickness and 20 feet in height standing vertically are the outstanding feature of this portion of the coast. The basalt shows lateral variations, and the columnar structure gives place to the characteristic spheroidal weathering of this rock. In one place it is clear that the basalt has come up from below and then flowed out between the bedding planes of the sandstones. Whether this really represents a volcanic neck or not is not clear.

(d) *Coal-bearing Series of Clays, Shales, Sandstones, and Grits.*—This series of rocks has been met with in the Busselton bores as well as at Fly Brook, Mill Brook, and in the Warren River bore, and at Donnybrook.

At Fly Brook a hand bore 128 feet in depth passed through 17 seams of coal aggregating 20 feet in thickness. The largest of these seams measured 5ft. 4in. in thickness, but had a 6in. clay parting the next largest 2ft. 4in. with a 3in. parting and another 2ft. 3in. with a 2in. parting.

According to Mr. H. P. Woodward it is a lustrous coal, having a sub-conchoidal fracture resembling jet but lacking in hardness, while wood structure is clearly visible on the weathered surface. It is a very light hydrous coal which rapidly falls to pieces upon exposure to the air.

This coal has a chemical composition of striking similarity to that of Collie-Burn and lends colour to Mr. Woodward's contention that these beds are in all probability the southern extension of the Donnybrook series, which are possibly the upper beds of the Collie series.

The following information in connection with the coal possibilities of the area is taken directly from E. C. Saint Smith's Geological Reconnaissance of a portion of the South-West Division of Western Australia, from page 23 onwards, and I have quoted it *in extenso* as the bulletin is now, unfortunately, out of print, and as will be seen later, Cunningham Craig, an eminent oil geologist, considers that there is a close relationship between coalfields and oil fields:—

"The strata associated with the coaly bands at Donnybrook present a striking resemblance to that at Collie; no determinable fossils have as yet been found, though obscure fragments of carbonised plant remains can be seen through the shales. A report dated 15th August, 1911, was furnished by Mr. H. P. Woodward, Assistant Government Geologist, whose intimate knowledge of the strata met with at Collie Coal Field renders his remarks of peculiar interest in the present description. Mr. Woodward reported as follows:—

"I visited this locality as instructed, and inspected the dump around two old shafts upon extinct P.A. 155H which are situated upon the western side of the Crendon Road about three and a half miles south of Donnybrook. These shafts were inaccessible, one being full of water and the other without means of descent, but since they have been previously examined by several members of this staff, this was of little importance. The shafts have been sunk in sedimentary beds belonging to what may be provisionally classed as the Donnybrook series, which includes the sandstones, largely quarried for building purposes. This formation flanks the granitic rocks upon the west, the latter being the southward extension of the Darling Range, which rises fairly abruptly, presenting the characteristic escarpments to the seaward, surmised to be due to a downthrow fault which has reduced the level of the newer bed which constitutes the coastal plain. This area, which may be said to lie upon the foothills like those further north, is usually capped by lateritic, clayey or sandy gravels, whilst the intervening flats are usually sandy. In this respect this locality presents a marked resemblance to the Collie basin, as also does the vegetation, whilst the material raised from the shafts is identical with that from several of the prospecting shafts at Collie. The seam is evidently a shaly coal, since the percentages of ash and water are high, but many bands of no better quality exist at Collie. After this inspection I am inclined to the opinion that the Donnybrook series are of the same geological age as the Collie, and that in all probability seams of similar value to those worked at that centre will be proved to exist if boring operations are undertaken. Should this opinion prove to be the correct one, there is no doubt that a very extensive coal basin will be found to exist, bounded on the east by the Darling Range, on the south by the south coast, on the west by the granite ridge which underlies the limestone between Cape Naturaliste and Cape Leeuwin. Within this area indications have been discovered at four localities, viz.:—

"1st, at Busselton on the north-west margin of the basin.

"2nd, at Flybrook at the south-east corner.

"3rd, at Millbrook on Reserve 8627, upon the east side.

"4th, at Donnybrook, which may provisionally be called the north-east corner.

"The area over which these formations extend is therefore about 1,500 square miles, and although no marketable coal has as yet been discovered, in such an extent of country, great possibilities must exist.

* Geological Survey Bulletin, No. 61. An outline of the Physiographical Geology of W.A., by J. T. Jutson, p. 194.

"The question of the existence of payable coal seams can only be proved by boring, but before work of this character is undertaken it would be most advisable that a geological examination be made of the entire area.

"In conclusion, I may state:—

"(1) That I consider there is every possibility of coal seams being encountered by boring.

"(2) That the quality of these will not be superior to Collie coal.

"(3) That the area over which they extend will probably be great."

"Mr. Torrington Blatchford, B.A., at that time Assistant Government Geologist, reported on the gold-mining operations at Donnybrook in 1899, and his report contains the following particulars of strata met with there:—

"*Young's Prospecting Area* (*abandoned*).—A prospecting shaft has been sunk to a vertical depth of about 94 to 95 feet. I was unable to descend the shaft, but believe the following section, as given to me, to be correct:—

Nature of Strata.	Thickness of Strata, in feet.	Depth beneath the surface, in feet.
Sandstone beds	60	...
Bands of brown coal in dark shale	5	60
Turpine brown coal with thin seams of brown coal (the whole is flammable) ...	2	65
Sandstone, more or less ferruginous	28	67
Total	95	95

"*Wellington G.M.L.* 28.—One shaft has been sunk on this lease to a depth of 94ft. 6in. The following is a section as seen in the shaft:—

Nature of strata.	Thickness of Strata in feet.	Depth beneath the surface in feet.
	ft. in.	ft. in.
Sandstone with rounded boulders	50 0	...
Shale with patches of lignite ...	6 0	50 0
Sandstone with rounded boulders	1 0	56 0
Shale bands in sandstone ...	37 0	57 0
Thin seam of pyrites ...	0 6	94 0
Total	94 6	94 6

"Murphy's shaft, to which I have already made reference, was examined by Mr. W. D. Campbell in 1906, then Assistant Geologist, and the following section supplied by him on the 13th September of that year:—

Murphy's Shaft.

Depth in feet.	Strata.
8	Gravel and laterite.
8—23...	Pipeclay (?shale).
23—33	Grey clay (?shale).
33—73	Dark grey clay (?shale).
73—77	Lignite.
77—180	Clays (?shales) and sandy grits with pyrites and lignite.
180—190	Sandstone.
190—202	Loose sandy grit.
202—220	Borehole, similar.

"This bore hole is said to have stopped upon a hard springy substance."

"This shaft has now been filled up to the 70ft. level with the material taken out of the drive at that level above referred to.

"Good bituminous coal has at times been reported to have been won from this shaft, but nothing at all comparable to that material was visible anywhere in the workings at the time of my own examination. Such being the facts, I do not consider that the existence of commercially suitable coal has, up to the present, been demonstrated in this locality.

"Several analyses of the coal from Murphy's shaft have been conducted in the Geological Survey Laboratory. A sample submitted by one of the prospectors, O'Grady, taken from the 70 feet level, was 'brown coal of no particular value,' low calorific value, and containing a total of over 52 per cent. of ash and moisture.

"*Analysis*—3441c.

	per cent.
Moisture	26.95
Volatile hydrocarbons	25.46
Fixed carbon	21.98
Ash	25.61
	100.00

Calorific value:—5,710 B.T.U.

"Further samples, taken by Mr. Briggs, Inspector of Collieries at Collie, who furnished the following particulars of the seam*:—

"Sample 1.—Ligneous coal or brown carbonaceous shale (claimed by Mr. O'Grady to burn well), 8in.

"Sample 2.—Black hydrous coal with a brown streak, 5in. Turns brownish on exposure and on being crushed. Clay shale, 12in.

"Sample 3.—Black hydrous coal similar to 2, 3in. Shale, 16in. Thickness, 3ft. 8in.

"All these samples were taken from the face of the drive. Samples 2 and 3 were mixed together as they are very similar. Sample No. 4 was taken from the top coal of the drive, but near to the bottom of the shaft.

"These few samples were analysed and proved to be of very little, if any, commercial value, as indicated by the following chemical composition:—

		per cent.
No. 4169 Donnybrook, No. 1.	Moisture	31·34
	Volatile hydrocarbons ...	28·43
	Fixed carbon	24·37
	Ash	15·86
		100·00
	B.T.U.	6,315
No. 4170 Donnybrook, Nos. 2 and 3 (mixed)	Moisture	3·28
	Volatile hydrocarbons ...	31·57
	Fixed carbon	26·12
	Ash	11·03
		100·00
	B.T.U.	6,928
No. 4171, Donnybrook, No. 4	Moisture	35·00
	Volatile hydrocarbons ...	28·60
	Fixed carbon	24·70
	Ash	·70
		100·00
	B.T.U.	6,429

"These samples were all non-caking brown coal.

"The Government Geologist, Mr. A. Gibb Maitland, visited this locality in October, 1909, but was unable to gain access to the workings below the 70 feet level drive in Murphy's shaft, owing to the presence of foul air. Mr. Maitland states:—

"A few feet from the shaft a fault of unknown down-throw exposes a thin seam of brown coal, associated with very earthy brown coal or carbonaceous shale.

* Annual Progress Report of the Geological Survey, 1909, p. 12.

"An analysis of this brown coal yielded the following results:—

		per cent.	
No. 4302	Moisture	36·28	
	Volatile hydrocarbons ...	27·67	
	Fixed carbons	22·60	
	Ash	13·45	
		100·00	
	Calorific value	6,072	B.T.U.

"A further sample of the coal from the same seam as that taken by Mr. Briggs was carefully secured by Mr. Maitland from a freshly broken face, and the following analysis indicates a very close resemblance to those given previously:—

		per cent.	
No. 4303	Moisture	33·48	
	Volatile hydrocarbons ...	29·12	
	Fixed carbons	22·66	
	Ash	14·74	
		100·00	
	Carlorific value ...	6,364	B.T.U.

"Prospectors and others would be well advised to carefully test this and other shafts for the presence of foul air before attempting to descend, as they are particularly liable to this drawback, especially in dull weather, when the excessive barometric pressure tends to prevent the escape of the noxious gases liberated from the decomposing coal seams and mine timber.

"Murphy's shaft is timbered from top to bottom with slabs, as also are the two other shallower shafts on the same Prospecting Area. Operations had to be abandoned at a depth owing to inability to cope with the water without a pumping engine. Small seams of coal were met with at 45 feet and 70 feet in the other shafts. There would appear to be a slight inclination of the strata to the south-west, identical with that found to be the case at the sandstone quarries, to which attention has already been directed.

"At Millbrook (now re-named Jarrahwood) coal was discovered about 13 years ago by Mr. Porritt, when he was engaged in erecting a timber mill at that place, on Location 361 (Lands Department Litho. 414/80). The coal was met with when sinking a water supply well at the mill. Two bores were subsequently put down on Prospecting Area 8267, one of which is located about one chain east of where the Wonnerup to Nannup railway line crosses Millbrook. As the bore cores were forwarded to this Department for examination, the following determinations of the sections of strata pierced may be accepted as authentic:—

"*Millbrook Bore No.* 1 (*Sussex Prospecting Syndicate*).

Feet.	Strata.
34—64	Grey sandy clay.
65	Green clay (glauconitic).
74—78	Grey clay.
87	Coaly matter.
91	Dark clay.
96	Coaly matter.
99—118	Dark grey clay.
145—161	Grey clay.
161—163	Grey sand (clayey).
164	Coaly matter.
165—174	Grey clay.
174—183	Grey sand with pyrites.
183—187	Brownish clay.
187—200	Dark grey clay.
200—208	Grey sand and rock pyrites.
222	Grey clay.

"*Millbrook Bore No.* 2 (*Sussex Prospecting Syndicate*).

Feet.	Strata.
7½	Mottled clay.
7½—19	White pipeclay.
19—22	Grey clay
22—30	Yellow and red mottled clay.
30—33	Green grey clay.
43—54	Dark green grey clay.
59—60	Green clay } glauconitic.
60—76	Sandy green clay }
78	Dark clay.
79	Coaly matter.
82—84	Carbonaceous clay.
85	Coaly matter.
86	Carbonaceous clay.
86—95	Dark grey clay.
95—100	Dark grey clay with coaly matter.
101—109	Grey sandy clay.
110	Coaly matter.
110—114	Dark grey clay with coaly matter.
114	Grey clay.
115—120	Dark clay with coaly matter.
120—135	Dark greenish clay.
135—144	Grey sandy clay with pyrites.

"Mr. H. P. Woodward, Assistant Government Geologist, in commenting upon the results of the above bores, under date 23rd February, 1906, says:—

"'No information has been furnished with regard to the thickness of the coaly seams, but they are apparently small, as the seams described as coal in the list sent could at the outside have been two feet.

"'The whole of the borings indicate a recent deposit, as no shales occur, whilst coaly matter is most probably of swamp origin. The one point of interest in continuing the bore holes would be to determine the nature of the underlying strata.'

"At a later date, viz., 2nd August, 1907, Mr. Woodward again referred to these bores, and stated that:—

"'The reported coal proved to be only a poor lignite of no value. From this it will be apparent that the results of all prospecting so far have been of a most negative character.'

"The seams met with in the above bores are said to agree closely both in quality and depth of occurrence with those originally opened in the well at Millbrook Mill. An examination of the dump around the bore near the railway line showed only odd fragments of brown very impure, hydrous coal and sandy shale with pyrites, exhibiting a very marked resemblance to the strata seen in Murphy's shaft at Donnybrook.

"It appears to be very questionable whether the discovery of commercially valuable coal seams in this neighbourhood (Jarrahwood) would, for some time to come, assist the development of the only local industry —timber getting—for the large amount of waste timber produced here in milling practice provides a far more than sufficient supply for the present requirements of steam production. However, the locality is within easy range by railway communication with both the ports of Busselton and Bunbury, at which excellent shipping facilities are provided. Timber for mining purposes is abundant and of good quality, and water can easily be conserved in the Mill Brook.

"The surface of the country all round Jarrahwood is covered with laterite, over which are scattered isolated irregular-shaped patches of white sand and yellow clay, and may be taken as fairly typical of the whole belt extending from the eastern edge of the plains country to the western flank of the Darling Range. The ground maintains a gradual slope to the westward, such slope being broken at intervals by low ridges of laterite showing a rocky surface and well timbered with jarrah.

"*Preston River.*—The Annual General Report for the year 1898-9 contains the following reference by Mr. H. P. Woodward, to the reputed occurrence of coal at this centre:—

"'A few miles from Bunbury, on the Preston River, are some old workings, where two or three pits have

been put down to the water level, with the idea of prospecting for coal, as some carbonaceous matter has been found in the bank of the river, associated with sandstone and clays. These pits have now fallen in, and the debris from the cliff has quite covered any exposure there might have been in the river bank, so I was unable to see anything, but it is highly probable that a modern coal or lignite will be met with here.'

''*Busselton.*—Considerable attention has in the past been devoted to the question of the possibilities of finding commercially valuable deposits of coal in the neighbourhood of Busselton. The erection of a splendid new jetty, one and one-third miles long, with railway lines, etc., has further brought this subject into prominence, and much interest was manifested locally in the matter on the occasion of my visit to that district.

''The prospecting operations conducted to date in the area consist of a series of bore holes put down, partly by private enterprise and partly by the Government. The bores are mostly located near the Vasse River, to the south of Busselton.

''No. 1 Bore (private) is on C.P. 48/2383, half a mile to the west of the Vasse River. Reached a depth of 159ft.

''No. 2 Bore (private) is on Crown lands, slightly over a mile to the east of the river and about quarter mile due east of the south-east corner of Location 335. Depth 144ft.

''No. 3 Bore (private) is the nearest bore of the group to Busselton, being approximately three miles to the south thereof and one mile to the west of the Vasse. This bore attained a depth of 269 feet.

''No. 4 Bore (private) is on Location 391, close to the river, and is the furthest south of any of the bores. Depth 476ft.

''No. 5 Bore (Government) is on Crown lands midway between Locations 335 and 282, and one-third of a mile to the east of the Vasse. Depth 653ft., at which depth red granite was entered.

''Still a sixth bore was put down at Newtown; this last-mentioned attempt resulted in encountering the basal gneissic granite rocks at the comparatively shallow depth of 330 feet.

''The difference in level of the bed rocks forming the basin in which the coal was deposited points to the existence of a somewhat uneven surface of the gneissic granite at the time that deposition of the overlying strata was commenced. This difference in level is probably due to the rising of the bed of the basin towards the western granite outcrop.

''Nothing in the nature of payable coal seams was passed through in any one of the bores, and this fact, taken in conjunction with the negative results hitherto obtained at Donnybrook and Millbrook mentioned above, cannot be interpreted in any other way than that expressed by the Government Geologist in a report dated the 9th of June last:—

'' 'Beyond the fact that the boring seems to indicate that the deepest part of the basin is in the valley of the Vasse River, there does not appear to be any geological reason for believing that the neighbourhood contains any workable coal seams of commercial value.'

''Regarding the nature of the coal met with in these bores, Mr. Woodward's remarks on this subject are of interest. Under date 23rd February, 1906, that gentleman states:—

'' 'In a bore put down near the Vasse by the Government in 1888 or 1889, some beds of what appeared to be re-deposited coal were passed through which contained fragments of weathered coal, but of what class could not be determined.'

''The accompanying particulars relating to the above bores should prove of interest in the future testing of this area:—

Bore No. 5 (No. 35 of Public Works Department).

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Sand and clay	1 6	1 6	Boring commenced 1st Sept., 1896, and carried out departmentally. Calyx drill used. The object of boring was to prospect district for coal.
Ironstone	1 0	2 6	
Drift sand	51 5	53 11	
Coal	0 1	54 0	
Soft clay (?shale)	2 0	56 0	
Drift sand	3 6	59 6	
Soft clay (?shale)	1 6	61 0	

Bore No. 5—continued.

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Drift sand with clay (?shale) bands	29 0	90 0	
Sand and clay (?shale) ...	7 0	97 0	
Dark sand and clay with soft coal bands	26 0	123 0	
Dark grey clay (?shale) and sand with coal bands	17 0	140 0	
Dark clay (?shale) ...	5 0	145 0	
Dark grey clay (?shale) with sand	5 0	150 0	
Dark grey shale	4 0	154 0	
Dark shale	3 0	157 0	Water struck at 188 feet, yielding 5,000 gallons daily, which ceased in February, 1897.
Sandstone and shale ...	10 0	167 0	
Soft sandstone	44 0	211 0	
Coal	0 1	211 1	
Soft dark shale	6 11	218 0	
Soft shale	4 0	222 0	
Soft sandstone	14 0	236 0	
Shale	1 0	237 0	
Sandstone and pyrites ...	1 0	238 0	
Dark shale	1 0	239 0	
Dark shale and coal bands	11 0	250 0	
Soft sandstone	12 0	262 0	
Dark shale	1 0	263 0	
Sandstone and shale ...	3 0	266 0	
Sandstone	7 0	273 0	
Light grey shale	8 0	281 0	
Light shale and soft sandstone (alternate layers)	18 0	299 0	
Soft sandstone with soft coal bands	15 0	314 0	
Shale	1 0	315 0	
Ironstone	13 0	328 0	
Soft sandstone	7 0	335 0	
Dark shale	11 0	346 0	
Soft sandstone	3 0	349 0	
Shale	4 0	353 0	
Sandstone and shale ...	8 0	361 0	
Soft sandstone with veins of pyrites	9 0	370 0	
Shale	4 6	374 6	
Soft coal with sandstone veins	1 6	376 0	
Shale	3 0	379 0	
Soft sandstone	10 0	389 0	
Soft sandstone with shale (alternate layers) ...	29 0	418 0	
Soft sandstone	12 0	430 0	
Sand with band of soft brown coal	73 0	503 0	
Shale	21 0	524 0	
Sand with soft coal veins ...	4 0	528 0	
Pyrites	0 3	528 3	
Sand	1 9	530 0	
Shale	1 0	531 0	
Grey sand and clay with bands of pyrites ...	3 0	534 0	
Clay	2 0	536 0	
Sand with bands of pyrites	2 0	538 0	
Clay and sand with bands of pyrites	3 0	541 0	
Clay	3 0	544 0	
Micaceous clay	8 0	552 0	
Sand and clay with pyrites	14 0	566 0	
Grey clay	4 0	570 0	
Micaceous clay	9 0	579 0	
Sand and clay	5 0	584 0	
Dark shale	2 0	586 0	
Clay and sand with bands of pyrites	22 0	608 0	
Sand and pyrites	3 0	611 0	
Sand and clay with bands of pyrites	12 0	623 0	
Sand with bands of pyrites	4 0	627 0	
Sand and clay	8 0	635 0	Boring completed 9th January, 1897.
White sand	5 0	640 0	
Light grey clay and sand in alternate layers, with bands of pyrites ...	15 0	655 0	
Gneiss	6	655 6	Abandoned, 1st Mar., 1897.
Red granite	0 11	656 5	

''The other bore which actually reached bed rock was No. 6 (Public Works Department No. 36), at Newtown, near Busselton. The strata passed through in this instance were as follow:—

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Loam...	1 6	1 6	Boring commenced 29th March, 1897, and carried out departmentally, Calyx drill used. The object of boring was to prospect for coal. Narrow coal bands, all of inferior quality, were struck at depths of 110, 113, 136, 209, 213, 235, 245, 279, and 281 feet.
Ironstone	8 0	9 6	
White clay and sand ...	8 0	17 6	
White sand	35 0	52 6	
Sandstone	0 9	53 3	
Black clay and pyrites ...	2 0	55 3	
Grey shale and pyrites ...	40 9	96 0	
Dark shale	6 0	102 0	
Sand	1 0	103 0	
Shale, pyrites, and coal band	8 0	111 0	
Grey shale	2 0	113 0	
Inferior coal	1 6	114 6	
Shale and pyrites	1 0	115 6	
Grey sand	19 6	135 0	
Sandstone	0 6	135 6	

No. 6 Bore—continued.

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Dark shale and coal band ...	2 0	137 6	
Grey sand	12 0	149 6	
Grey shale and pyrites ...	10 6	160 0	
Fine dark grey sandstone band of shale	16 0	176 0	
Hard dark grey sandstone	6 0	182 0	
Grey shale	4 0	186 0	
Soft sandstone	3 0	189 0	
Grey shale	2 0	191 0	
Sand	16 0	207 0	
Coal (inferior)	1 6	208 6	
Sandstone	1 0	209 6	
Sand	3 0	212 6	
Coal	0 6	213 0	
Sand	5 6	218 6	
Soft sandstone	16 0	234 6	
Coal (inferior)	1 0	235 6	
Sandstone	4 0	239 6	
Yellow clay	2 0	241 6	
Sandstone	3 0	244 6	
Coal	0 6	245 0	
Shale	10 0	255 0	
Sand	12 0	267 0	
Shale	8 0	275 0	
Sandstone	3 6	278 6	
Coal	0 6	279 0	
Sandstone	2 0	281 0	
Coal	0 3	281 3	
Sandstone	4 0	285 3	
Shale	4 0	289 3	
Sandstone	2 0	291 3	
Shale	17 6	308 9	
Black clay	2 0	310 9	
Shale	5 0	315 9	
Sandstone	1 0	316 9	
Shale	5 0	321 9	
Sandstone	3 0	324 9	Boring abandoned. 8th January, 1897
Shale	2 0	326 9	
Coarse sand	3 0	329 9	
Gneiss	...	330 0	

"Three shallow shafts, close together, were sunk in 1891 near the south-east corner of Location 96 (Lands Litho. 413/80). The strata passed through consisted of:—

Bluish clay and sand with much pyritous nodules—10ft.

Ironstone—5ft.

Impure brown coal—0ft. 9in.

"One of these shafts yielded a thin seam of shining black coal within the brown coal. The property is known as Ravenswood (Mr. Douglas Armstrong, owner).

"In the northern portion of Location 520 (Lands Department Litho. 413/80), about a quarter mile west-south-west of the No. 1 (private) bore referred to above, a shallow well was sunk by N. Abbey in 1908 for water. This well is 14 feet in depth, and the following section of strata was met with:—

"Sand and yellow clay	12ft. 9in.
Blue sandy shale	0ft. 6in.
Very bright bituminous coal (hydrous)	0ft. 9in.

"Lumps of ironstone are here intermixed with the clay. The shale contains odd blobs of coaly matter. Evidence of the very recent origin of the superficial deposits at this spot is furnished by my finding a capsule from a eucalypt in the shale above the seam of coal; this capsule was in no way carbonised, the original woody material being still quite intact; the specimen in question was not kept, not being considered of sufficient importance.

"For many years it has been considered locally that deposits of payable coal will be met with at Quindalup, about 12 miles west of Busselton, near the road to Yallingup Caves; indications are said to have been found at that place during the course of well-sinking operations for water. In my opinion, however, it is improbable that such will prove to be the case, as Quindalup is not far removed from the actual edge of the basin, the basal gneissic granite making its apperance at a relatively slight distance to the westward.

"Coal was met with in the northern portion of the area examined during the progress of boring for water on the Honourable H. W. Venn's estate at Dardanup; the accompanying bore sections furnish, *inter alia*, a detailed list of the materials which comprise the superficial deposits covering a large area in this portion of the South-West.

Artesian Bore at Venn's Estate, Dardanup (No. 1), near Railway Line, close to Dardanup Railway Station.

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Black soil slightly mixed with sand	8 0	8 0	Boring commenced 19th Jan., 1898, and carried out departmentally. Hand drill used from surface to 416ft. Calyx drill used from 416ft. to 453 feet.
Hard clay	4 0	12 0	
Cement	1 0	13 0	
Blue clay mixed with ironstone	6 0	19 0	
Sand mixed with clay ...	15 0	34 0	
Drift sand	9 0	43 0	
Sand and black soil ...	2 0	45 0	
Sand and black soil ...	2 0	45 0	
Drift sand with pieces of charcoal at 98 feet, and a thin layer of ironstone at 128 feet	107 0	152 0	Surface water at 8ft.
Black clay	8 0	160 0	
Decomposed sandstone ...	15 0	175 0	
Ironstone	2 0	177 0	
Sand and clay	17 0	194 0	
Ironstone	1 0	195 0	
Black clay	8 0	203 0	
Red clay	5 0	208 0	
Sandstone	27 0	235 0	
Decomposed sandstone ...	42 0	277 0	
Black clay with pieces of ironstone	4 0	281 0	
Sand mixed with sandstone	20 0	301 0	
Drift sand	3 0	304 0	
Black clay	6 0	310 0	
Sandstone	2 0	312 0	
Black clay	11 0	323 0	
Sand and wash stones ...	2 0	325 0	
Clay, very black	20 0	345 0	
Decomposed sandstone ...	19 0	363 0	
Hard black clay	10 6	373 6	
Yellow clay	11 6	385 0	
Sandstone	3 10	388 10	
Dark soft sandstone ...	4 2	393 0	Boring abandoned Aug., 1898, no water bearing strata having been met with, and new site selected.
Light sandy silt	2 0	395 0	
Very soft sandy clay ...	4 6	399 6	
Red sandy boulders, quartz, gravel, and drift sand	0 7	400 1	
Light hard sandy clay ...	1 0	401 1	
Light sandstone	12 10	413 11	
Black shale	1 0	414 11	
Gneiss*	1 6½	416 5½	
Light compressed sand ...	...	453 0	

"A second site was then chosen, the results of the boring disclosing the following section of strata:—

Artesian Bore at Venn's Estate, Dardanup (No. 2), near Dardanup Railway Station.

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Brown chocolate soil ...	2 0	2 0	Boring commenced 16th Aug., 1898, and carried out departmentally. Calyx drill used. At 26 feet water rose to within 8in of the surface. Fresh.
Hard yellow sandy clay ...	10 0	12 0	
Fine brown running sand ...	1 6	13 6	
Stiff pipeclay	1 6	15 0	
Ferruginous clay	4 0	19 0	
Very fine compressed sand	2 0	21 0	
White pipeclay cement ...	7 0	28 0	
Sandstone	22 0	50 0	
Soft sandy silt (light) ...	15 0	65 0	
Hard clay	12 0	77 0	
Soft sandy silt (light) ...	13 0	90 0	
Gravel (water-bearing) ...	0 6	90 6	
Hard conglomerate ...	29 0	119 6	
Soft sandy silt	30 6	150 0	
Quartz boulders	0 6	150 6	
Bituminous coal	0 6	151 0	
Grey shale	14 0	165 0	
Coarse brown drift sand ...	15 0	180 0	
Ferruginous sandstone ...	15 6	195 6	
Mudstone with fossil vegetable matter	10 6	206 0	
Hard red clay	4 0	210 0	
Soft sandy clay	26 0	236 0	
Shale	2 0	238 0	
Soft red sandstone ...	6 0	244 0	
Dark soft sandy clay ...	9 0	253 0	
Hard black clay	5 0	258 0	
Very soft dark sandy clay	14 0	272 0	
Hard black clay	11 0	283 0	
White sandstone	0 6	283 6	
Soft sandy silt	5 6	289 0	
Mudstone	4 0	293 0	
Sand	8 0	301 0	
Hard black clay	1 0	302 0	
Mudstone	20 0	322 0	

* This was, in all probability, a boulder of gneiss carried down by stream action, and not in any way connected with the true bed rock, except that it originally belonged to the same rock mass, E.C. St. S.

No. 2 Bore—continued.

Description of Strata.	Thickness of Strata.	Depth below Surface.	Remarks.
	ft. in.	ft. in.	
Soft sandy clay	3 0	325 0	
Mudstone	21 0	346 0	
Light sandy silt	15 0	361 0	
Very soft black silt ...	13 0	374 0	
Very coarse dark sand ...	3 0	377 0	
Sandstone	19 0	396 0	
Gneiss boulder	0 6	396 6	
Sandstone	2 11	399 5	
Boulder	0 1	399 6	
Soft strata	9 6	409 0	At 409 feet water rose to within 19 feet of the surface.
Quartzite	3 0	412 0	
Quartz pebble	0 6	412 6	
Soft sandstone	11 6	424 0	
Mudstone	16 0	440 0	
Sand	8 0	448 0	
Coarse sand	4 0	452 0	
Soft sandy clay	16 7	469 0	
Coal	0 5	452 5	Diamonds used at 452ft. 5in.
Soft sandstone	10 0	479 0	
Coarse sand	12 0	491 0	
Granite boulder	0 3	491 3	
Compact stone	13 0	504 3	
Sandstone	5 0	509 3	
Coarse sand and grit ...	5 0	514 3	
Sandstone	0 2	514 5	
Soft sandy clay	8 0	522 5	
Sandstone	5 0	527 5	
Hard sandstone	0 4	527 9	
Soft sandy shale	12 0	539 9	
Loose fine sand	6 3	546 0	
Ferruginous sandstone ...	0 2	546 2	
Soft sandy clay	27 10	574 0	
Sandstone boulders ...	0 1	574 1	
Shale	19 11	594 0	
Micaceous shale	10 0	604 0	
Mudstone with carbonaceous remains and pyrites ...	0 1	604 1	
Shale with carbonaceous remains	9 11	614 0	
Micaceous sandstone ...	77 0	691 0	
Mudstone	48 0	739 0	
Micaceous sandstone ...	27 0	766 0	
Hard vein of pyrites ...	0 1	766 1	
Soft sandstone	9 11	776 0	
Hard brown clay	27 0	803 0	
Sandy clay	39 0	842 0	
Drift sand	18 4	860 4	
Quartz wash and iron pyrites	2 11	863 3	
Sandy clay	69 8½	933 0½	Water rose to within 16ft. of the surface.
Dark shale	63 7½	996 8	
Sandstone and shale with iron pyrites and coal spots	19 4½	1,016 0½	
Sandy clay with micaceous shale	16 0	1,032 0½	Boring abandoned.

"A marked feature of the sedimentary beds found within the south-western district is the entire absence—at least so far as observations have been carried—of the intrusive igneous dykes, *e.g.*, basalt, which characterise the Permo-Carboniferous and Triassic strata in Eastern Australia. The same remark applies to the Collie Coal Field. In this connection it may be of interest to recall the fact that Dr. R. L. Jack, the well-known authority on coalfields in Australia, has published his opinion, in the year 1902, that after a careful examination of this last-mentioned occurrence he considers these strata to be of Cretaceous age.

"Only the roughest approximation can be obtained as to the total proved extent of the Donnybrook coal measures, owing to the southern extension of the beds being at present unknown, but they cover an area of at least 1,500 square miles. Near the Vasse River, in the Busselton district, these strata attain a thickness of about 600 feet, as proved by boring."

The following additional information might be added to that already given.

Lignite near Longbottom's Farm.—A sample of coal, said to have been obtained in the bed of the Blackwood River about six miles east of Mr. Longbottom's farm, was presented to me by Mr. Longbottom, jun. He informed me that he found quite a large piece of it. This was examined by Dr. Simpson, and gave the following result:—

Proximate Analysis.

	Per cent.
Moisture	10.27
Vol. Matter	47.67
Fixed Carbon	38.53
Ash	3.53
	100.00

Lignite and Brown Coal near Alexandra Bridge.—A small shaft, which has now fallen in, was sunk for about 10 feet about half a mile north of Alexander Bridge. Lignite and brown coal was lying about the dump and samples collected by myself gave the following results:—

Proximate Analysis.

	Lignite. Per cent.	Brown Coal. Per cent.
Moisture	17.48	13.24
Vol. Matter	41.59	36.89
Fixed Carbon	36.05	27.90
Ash	4.88	21.97
	100.00	100.00

THE ORIGIN OF OIL.

Cunningham Craig is a strong supporter of the vegetable-origin theory of petroleum; he states* as follows:—

"Petroleum is formed from the remains of terrestrial vegetation accumulated in clays, sands, or actual beds which, under other conditions, would develop into carbonaceous shales, sandstones, and seams of coal or lignite, by natural processes which can be not only reproduced in the laboratory, but can also be proved to have taken place in the past, and are taking place at the present day."

He draws attention to the fact that careful stratigraphical mapping has proved that the same horizons that are carbonaceous in one locality are petroliferous in another, often within a short distance, the only variation being that the bands of impervious clay are sometimes more conspicuous among, and especially above, the petroliferous strata than among or above the carbonaceous. This point, he states, has been established over very wide areas in Burma, Trinidad, and other countries by careful geological mapping on the scale of six or more inches to the mile, and the change from the petroliferous to the carbonaceous phase can, in some cases, be shown to take place within three hundred yards.

He also quotes† as an illustration of the close relationship between lignite and petroleum the fact that, in Venezuela, in the State of Falcon, there is a tertiary series of at least 8,000 feet, the lower part of which is distinctly petroliferous, while the upper half contains lignite seams, lignite clays, and carbonaceous sandy beds. This he regards as a striking illustration of the transition from oil-bearing to coal-bearing conditions, the former characterising the strata that have been subjected to the greatest pressure and the most effective sealing so as to prevent loss of gaseous compounds.

The question which naturally suggests itself is: "Under what conditions will accumulated remains of terrestrial vegetation be converted into petroleum?"

Cunningham Craig answers this question as follows:—‡ "The essential conditions are great pressure, comparatively low temperature, and a limited quantity of water."

Water is in any case present in the peat, even after drying, for it is as impossible without destructive distillation to remove the combined water in peat as it is in the case of a lignite.

It is obvious that similar conditions can easily be obtained in nature. The presence of water in greater or less quantity is almost inevitable in sedimentary rocks; the requisite pressure is amply provided for by a covering of a few hundred, or it may be thousand, feet of superincumbent strata; while, as soon as decomposition commences the potential gas pressure may become so great that almost any hydrostatic pressure required can be obtained. The temperature, increasing as it does on a general average one degree Fahr. for every 55 feet of descent into the earth's crust after the first hundred, would soon be raised sufficiently to favour chemical reaction while, as pressure increased, the temperature would also rise till the necessary equilibrium was reached.

POSSIBILITIES OF OIL IN THE AREA UNDER REVIEW.

Let us now see how far the area under review satisfies the necessary conditions. In the first place estuarine conditions, which are regarded as being very favourable, have probably existed for a long geological period. There have probably been periods of elevation, but the resultant movement has been one of gradual subsidence.

* Oil-finding by E. H. Cunningham Craig, [page 27.]
† " " " " [page 34.
‡ " " " " [page 49.

That there have been accumulations of terrestrial vegetation is obvious from the fact that coal or lignite has been found in all the bore holes that have been put down.

With regard to pressure, No. 5 Busselton bore shows coal at a depth of 528 feet, and the Warren River carbonaceous shale at 729 feet, and as these may not be the deepest places where coal occurs, the necessary pressure, especially in view of the earth movements which have taken place, would seem to have been present.

In regard to the impervious covering over the carbonaceous matter which Cunningham Craig regards as necessary for the formation of oil, and which is certainly necessary for its retention, the bores up to the present have not indicated very favourable prospects. The bores, however, are widely separated, and while I do not regard it as probable, the possibility of a lateral variation from the lignite series to a petroliferous series must be admitted if in some part of the area an impervious bed overlies this series.

As regards a favourable structure, it is generally held that the beds are too flat to be favourable, but our information on this score is by no means conclusive, and gentle undulations and a consequently improved structure are quite possible.

It must be borne in mind, however, that the bores which have already been put down have shown no traces of oil, and the possibility of getting it in another bore is a long shot. It seems to me more probable that coal will be met with, and as there is always the chance of a better seam than any yet found, I would recommend the company, if they decide upon putting down another bore, to acquire the rights to any coal found, and then pick a site well removed from the coast where oil would have a chance to dissipate, and in the centre of the area, or possibly a little towards the Darling Range side of the centre, where the sedimentary beds may be expected to be thickest. The results obtained from such a bore, if taken right down to bedrock, would give us a good deal more information about the area than we have at present, and would serve as a guide for any future operations.

Site for Boring Operations.—J. J. East's recommendations were as follows:—

(1.) Some half-dozen bore holes near the Blackwood sunk to a shallow depth by hand-boring plants.
(2.) A group of three similar bores at the Alexandra Bridge locality.
(3.) Another group of three at the Chapman Junction.

He suggests that from the information there obtained the company's future policy could be framed, and that a bore hole to some more ambitious depths might later be made in the anticline underlying the head of the Margaret River Valley, and yet another at a still later period in the Vasse Basin plain towards its northern limits, where the deepest sedimentation has taken place during an oil gathering period.

A certain amount of information might be gained by putting down the hand-bores recommended, but the information obtained from hand-boring is not, as a rule, very satisfactory, as no core can be obtained, and greater depths than these bores can accomplish is generally necessary.

With regard to the proposal to put down a deep bore at the head of the Margaret River, I could find no proof of the presence of an anticline, but, at the same time, think that a point about 12 miles east of the rapids, where a big thickness of sedimentary beds may be expected would be quite a good position for a bore if it were not so inaccessible.

At the Vasse River a good deal of boring has already been done, which proved a certain amount of coal but no oil. I would be inclined to select a site further removed from these, which have already given negative results.

Owing to the comparatively flat nature of the deposits no stratified rocks are found outcropping in the district, and one has to rely mainly on the results of previous boring for geological data. It is therefore difficult to select the point most likely to be successful.

With the limited amount of information which is at present at my disposal, I would be inclined to select as a site for the first bore, the point indicated by the letter "D" in the Blackwood River, for the following reasons:—

(1) This is just south of the Blackwood River, and if there is anything in the late J. J. East's contention that this river has been carrying down accumulations of vegetable matter for a long geological period, it will be conveniently placed.
(2) It is also not far removed from a basalt outcrop which some geologists regard as being a favourable position.
(3) As far as present knowledge goes there will be a big thickness of sedimentary rocks here.
(4) It is not too near the Darling Range Fault.
(5) It is alongside a main road, which is an important practical consideration, as this is extremely difficult country to get about in where there are no roads.

I will conclude by saying that I regard the report made by Mr. H. Basedow as being a very fair one, and setting out the position very correctly.

There is a chance that somewhere in the area the lignite series will be replaced by a petroliferous series. It is more likely, however, that at any site selected coal will be met with than oil.

Further information can only be obtained by boring, and at least one deep bore seems to be warranted.

Report on Oil Prospecting Area 77H.

By R. C. Wilson, B.Sc., B.E., Field Geologist and Acting Assistant State Mining Engineer.

Introduction.—While visiting O.P. Areas No. 9 and No. 10 recently it was arranged that I should also visit 77H. Much of what I have already said regarding the geology of these areas will also apply to the area now under review, and I would therefore point out this short report should be read in conjunction with my more extensive report on the above-mentioned areas.

Location.—O.P. Area 77H begins at White Point on the south-west coast, thence 12 miles north, thence 10 miles east, thence about 18 miles south to the south coast, thence along this coast back to White Point.

Geology.—The series of rocks represented are as follows:—

(a) Surface deposit country of sand drifts and sand and loam flats.
(b) Calcareous sandstones.
(c) Basaltic lavas.
(d) Sandstones and shales with coal seams (Donnybrook series).
(e) Gneissic granite.

(a) *Surface Deposits.*—Fringing the coast for a few miles is a range of sandhills consisting of blown sand from the beach, while further inland is an extensive sand and loam flat. In the winter time quite a large area of this flat is under water. This water is dammed back by the coastal hills, which it gradually soaks through, and can be seen running out in a stream at the base of the sandstone cliffs on the coast. Continual running water through the stratified rocks allowed a green vegetable matter to accumulate, which Mr. Benari thought might possibly be an oil seepage.

(b) *Calcareous Sandstones.*—These occur near the coast, and, owing to current bedding, show apparent stratification in all directions. This rock consists of sand grains cemented together with carbonate of lime, and as has been explained previously in my report on oil areas No. 9 and No. 10, the Geological Staff are all agreed that the rock consists of a consolidated sand dune, while Mr. Montgomery, the State Mining Engineer, considers it more likely to have been formed under water. These sandstones are apparently thickest near the coast, and pinch out going north. The bore hole put down by Mr. Benari would be entirely on this rock.

(c) *Basaltic Lavas.*—There is an extensive basalt outcrop at Black Head, in fact Black Head has probably been so named because it consists almost entirely of hard black basalt. There is also a further outcrop of basalt about a mile west of Black Point, where very fine columnar structure has been developed.

(d) *Sandstones and Shales with Coal Seams.*—This series of rocks does not reach the surface except, possibly, in the north-eastern corner of the area, but there is every probability that they will be met with in boring, and it is in this series of rocks where, in my opinion, any coal or oil, if present at all, will be found.

(e) *Gneissic Granite.*—This rock forms the floor upon which the others have been laid down. It outcrops on the Darling Range to the east of the area under review, and along the Cape Leeuwin-Cape Naturaliste range to the west. It was met with in the Busselton bores at depths varying up to 656 feet, but had not been reached in the Warren River bore at a depth of 1,700 feet.

General Remarks.—There is every reason to suppose that in this area considerable thickness of sedimentary beds will be found to have been laid down on the gneissic granite. No even approximate thickness can be arrived at, but there is reason to suppose that there will be 1,000 feet or more.

I have in another report quoted Cunningham Craig's views in regard to oil formation, particularly his contention that a lignite-bearing series has been proved to change to a petroliferous series where the overlying rocks have been impervious in Burma and other places. This area has the same chance as O.P. Area 9H and 10H of such change from carbonaceous to petroliferous conditions.

I think it most likely that this series will everywhere be found to be a coal-bearing series, and that there is a reasonable chance of a good seam of coal being met with by boring. At the same time, I do not exclude the possibility that oil may be found. Only by a deep bore can any further information be gained in this respect.

Petrological Examination of Coastal Limestone from the South Coast in regard to the Origin of the Limestone, for R. C. Wilson.

A fragment of the limestone was treated with HCl. in a glass beaker without the rock being crushed in the smallest degree. The $CaCO_3$ having been wholly dissolved, the residue of sand grains was examined microscopically.

All the grains, which consisted chiefly of quartz and felspar (chiefly microcline) were rounded, the largest were nearly all quite round or blunt oval; the smaller were somewhat irregular in shape, but with smoothed surface, and the smallest were subangular, or irregular with the corners and edges rubbed off.

It is known that marine sands are, in general, more round-grained than those of rivers or lakes; that wind-borne sands, such as those of deserts, are still more rounded; and that only in desert sands are the smallest grains found to be well rounded.

The examination, therefore, of the sands shows that the sandy limestone or calcareous sandstone of the South Coast is composed probably of ocean beach sand, *i.e.*, of more or less marine sand.

The probable mode of origin of the rock is as follows: The prevailing winds have driven the beach sands a short distance inland to form a dune. This dune may then have been driven still further inland by the winds and a new dune may have been formed from fresh beach sand on the site of the former. In the course of time the action of atmospheric water on the surface of the dune has caused the solution of some of the $CaCO_3$ of the constituents of the rock, and this dissolved lime on reprecipitation has formed a cement which makes the sand a semi-consolidated calcareous sandstone or siliceous limestone. Subsequent rains easily penetrate this semi-consolidated crust, and ultimately the dune, for a considerable depth, becomes a porous friable calcareous sandstone.

In my opinion the occurrence of these sandstones some distance from the present coast can be explained by a slight rise in the level of the coastline. As the coast rises each dune already formed will lie farther and farther from the coast, and those farthest from the beach will be at a higher level than the others. The origin of the sandstones from dune sand pre-supposes, of course, that they are nowhere of any great lateral or longitudinal extent, and that they have the characteristic arrangement and individual shape.

(Sgd.) R. A. FARQUHARSON,
Petrologist.

Geological Survey Office,
Perth, 29th August, 1922.

Vide Bulletin 26, pages 27 to 33.

Government Chemical Laboratory,
Museum St., Perth, 30th Aug., 1922.

No. M.L. 23/103.

ASSAY CERTIFICATE.

Report on two samples for Mr. R. C. Wilson, Mines Department, Perth.

No.	Private Mark or Description.	Result of Assay.
9620E	No. 1 Blackwood River.	Lignite. *Proximate Analysis :* Moisture ... ... 10·27 per cent. Volatile matter ... 47·67 Fixed carbon ... 38·53 Ash ... ... 3·53 100·00
9621E	No. 2, near Alexandra Bridge.	One half of the sample consisted of a mixture of quartz pebbles, ferruginous sandstone and shale, the remaining half lignite and brown coal. *Proximate analysis :* Lignite. % / Brown Coal. % Moisture ... 17·48 / 13·24 Volatile matter 41·59 / 36·89 Fixed carbon... 36·05 / 27·90 Ash ... ... 4·88 / 21·97 100·00 / 100·00

(Sgd.) EDWARD S. SIMPSON,
Government Mineralogist and Analyst.

The Hon. J. Scaddan M.L.A.
Minister for Mines

GEOLOGICAL SKETCH MAP OF

THE EXTREME SOUTH WESTERN PORTION OF WESTERN AUSTRALIA

BY

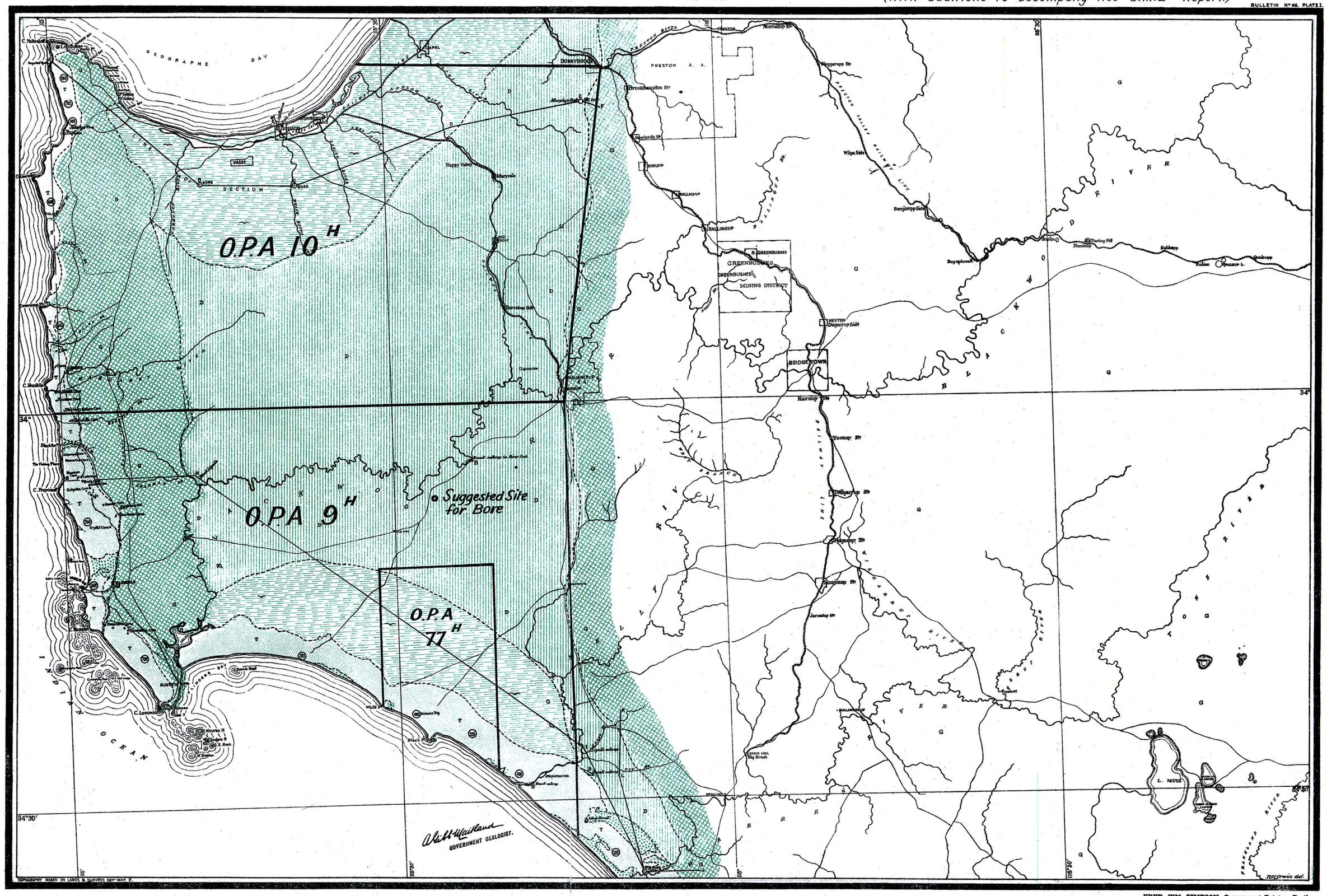
H. P. Woodward *Assistant Government Geologist* & E. C. Saint-Smith *Field Geologist.*

To accompany Report on —— The Refined Petroliferous Deposits of the Warren River District.

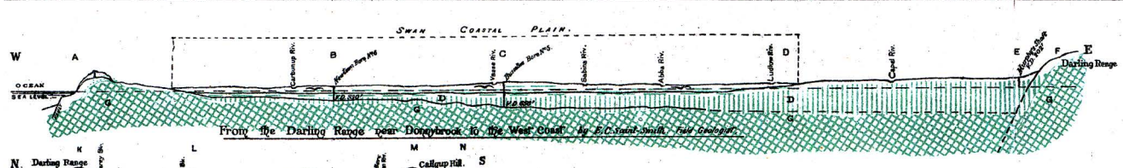
Scale of Miles 0 4 8 12 16

(With additions to accompany Asst S.M.E's Report.)

BULLETIN No 65. PLATE I.

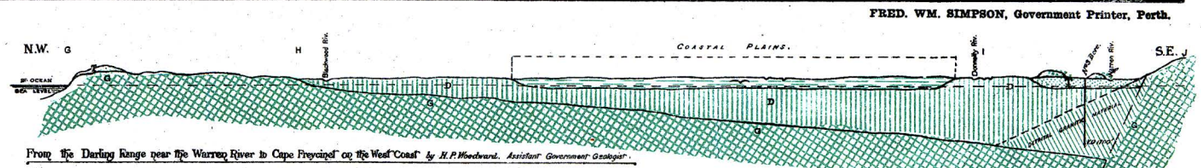


FRED. WM. SIMPSON, Government Printer, Perth.



From the Darling Range near Donnybrook to the West Coast by E.C. Saint-Smith, Field Geologist.

From the Darling Range to South Coast at Moorup Brook by H.P. Woodward, Assistant Government Geologist.



From the Darling Range near the Warren River to Cape Freycinet on the West Coast by H.P. Woodward, Assistant Government Geologist.

EXPLANATION

SAND DRIFTS... CALCAREOUS SANDSTONES... TERTIARY T SAND AND LOAM FLATS... TERTIARY SANDSTONES & SHALES WITH COAL SEAMS... DONNYBROOK SERIES. PERMO CARBONIFEROUS(?) P GRANITIC DETRITAL MATERIAL... GNEISSIC GRANITE... DARLING RANGE SERIES. G BASALT... FEET ABOVE SEA LEVEL...

APPENDIX No. 4.

Report on Oil Prospects at Martin's Well, Pingelly.

By R. C. Wilson, Assistant State Mining Engineer, June, 1922.

At the request of the W.A. Oil Exploration Co. I visited the well in June last to inspect the oil which was reported to make an appearance from time to time on the surface of the water, and if possible to prove or disprove the occurrence of an oil seepage.

Location and General Geology of Site.

The well is situated 9¼ miles north-east of Pingelly Station and about 100 yards south of Carbalotting Creek.

The well, which is about 20 feet deep, was sunk in alluvial wash, but solid granite is found outcropping in the creek and also on the high ground about 800 yards south.

I formed the impression that a shallow alluvial deposit consisting of cemented sand and granite detritus was resting on a solid granite floor, which in places had been intruded by dykes of a more basic rock. A bore hole (sample No. 6) at the bottom of the well was in greenstone schist, suggesting that the well had been sunk on top of one of these dykes. Granite can be seen outcropping at a number of places along the road from Pingelly.

Description of Well and Sampling Operations.

The well is a circular one of approximately 7 feet diameter and 20 feet in depth, and at the time of my visit contained about 12 feet of water.

It had been my original intention to collect a sample of any scum on the surface of the water, then pump it dry, thoroughly clean out the well, allow the water to rise again and to collect another sample from the surface.

Upon my arrival at Pingelly I was informed that this would be no easy task, and I was given to understand that Mr. de Courcey Clarke, who had previously pumped out the well, had procured a pump for the purpose.

I could learn of no available pump in Pingelly, so decided to do the best I could with the hand pump at the well. This latter was out of repair and had apparently not been used for some considerable time. I therefore engaged the services of the local blacksmith, Mr. Pearson, to get it in order and assist in pumping out the water. Our operations were as follows:—

Thursday, 28th June.—A sample was taken of the oily scum on the surface of the water. I found that by bumping the bottom of the well with a long wooden pole numerous bubbles rose to the surface and burst leaving a thin iridescent film on the surface. I found the bubbles to consist of an inflammable gas, probably marsh gas, CH_4. A sample (No. 10)* of this gas was collected. Skimmings from the surface of the water were also collected and taken to Perth in sealed bottles. Dr. Simpson's determination of the sample (No. 7) is attached. He found that it appeared to contain an appreciable amount of oil of mineral origin. After taking these samples the rest of the day was spent in pumping the water out of the well. This was heavy work, and it was 6 o'clock before Messrs. Pearson, Stevens, and Paton succeeded in getting it out. At the bottom of the well I found a quantity of clay sludge and organic matter. Sample No. 1* was taken from the bottom of the well.

Friday, 29th June.—In the morning the water had risen two feet in the well. This was pumped out and a quantity of sludge taken out with the aid of a wire rope, a pulley wheel, and a bucket, but by no means all of it.

Saturday, 1st July.—In the morning there was over three feet of water in the well. This was pumped out again, but I gave up all idea of cleaning out the rest of the sludge.

Samples were taken from the sides of the well after chipping the surface clean and by boring inclined holes as indicated by the sketch attached from the side and bottom of the well.

I thought that, while it was possible for oil to get into the well either by accident or design, it would not be likely to get into these samples, while on the other hand if there was a seepage some oil might reasonably be expected to show in them. Owing to the expense involved only one of these samples, namely No. 6, from a bore hole at the bottom of the well, was tested for oil contents and gave a negative result. See Dr. Simpson's attached report.

Sunday, 2nd July.—I had occasion to visit the well again in company with Mr. R. H. Johnson, and as there was a fair showing of scum I collected another sample, No. 8. This was examined by Dr. Simpson but was found to contain no mineral oil contents.

General Remarks.

The geology in the neighbourhood of the well appears to be most unfavourable. I saw no evidence of the existence of any great thickness of sedimentary beds which are essential for the presence of petroleum in commercial quantities. This has already been pointed out by Dr. Basedow in his report to the W.A. Oil Exploration Co. dated 21st July, 1919. At the same time he describes the fluid found on the surface of the water as beyond doubt a natural filtered rock oil, but offers no explanation as to its source. Of the ten samples taken by myself only three were examined for oil contents. A sample bored into the schist at the bottom of the well contained no mineral oil. Mineral oil was found floating on the water before pumping out but not after it had been pumped out and allowed to fill again. I am rather surprised at this as it was very imperfectly cleaned out.

Dr. Simpson obtained from the skimmings brownish-yellowish globules resembling the residue obtained after saponification of a lubricating oil. This sample, he says, appears to contain an appreciable amount of oil of mineral origin.

The finding of oil on the surface of the water is offset to some extent by the fact that there is the small hand pump on the well which must have been lubricated at different times, although by the look of it not at all recently.

I purposely took a number of other samples which would have been of greater value in establishing a seepage if they had contained mineral oil.

Unfortunately, owing to the expense involved only one of these samples was treated, and it gave a negative result. I would recommend anyone who still thinks there is a seepage and wishes to establish the fact to put down a hand bore alongside the well.

Government Chemical Laboratory,
Museum Street, Perth,
29th November, 1922.

Test for Mineral Oil of a Sample for the W.A. Oil Exploration Co. Ltd., 56 St. George's Terrace, Perth.

Registered No. 9726E.

I have examined the sample of greenstone schist, marked No. 6, submitted by Mr. Wilson on your behalf with a view to determining if it contains any indications of the presence of natural rock oil.

Extraction with petroleum ether gave no residue on evaporation, which proves the absence of any mineral oil or residuums in the sample.

(Sgd.) EDWARD S. SIMPSON,
Government Mineralogist and Analyst.

---

* This sample was not examined for mineral oil contents.

24th October, 1922.

Report on two samples for the W.A. Oil Exploration Co., Ltd., 40 William Street, Perth.

(M.S.F. 1799/22.)

The two samples collected by Mr. Wilson have been tested for oil, with the following results:—

L. No. 9986E. Mark, "No. 7, Skimmings."

This sample consisted of about 1½ pints of water with a considerable amount of paper pulp* and organic matter. It emitted a strong odour of sulphuretted hydrogen. The sample was divided in half as requested. The portion retained for treatment was filtered to remove solid matter. The filtrate was shaken with petroleum ether and the ether evaporated at room temperature. A colourless, waxy looking residue was obtained with no odour. This contained a small amount of unsaponifiable matter, soluble in rectified spirits and yielding no indication of mineral oil.

* This was blotting paper used in collecting the sample. (Sgd.) R.C.W.

The solid matter was similarly treated, leaving a thick brownish-yellow, oily looking residue weighing .06 gm., which upon saponification yielded .01 gm. of unsaponified matter, consisting of brownish-yellow globules resembling the residue obtained after saponification of a lubricating oil. This sample appears to contain an appreciable amount of oil of mineral origin.

L. No. 9987E. Mark, "No. 8, Skimmings."

This sample of fairly clear water was divided, as in the previous case, and portion shaken with petroleum ether, omitting filtration. On evaporation a white waxy looking residue with an aromatic odour was obtained, weighing 0.004 gm. This, after saponification, gave .0006 gm. of a colourless, odourless substance, soluble in rectified spirits and yielding no indication of mineral oil.

(Sgd.) EDWARD S. SIMPSON, D.Sc., B.E., F.C.S.,
Government Mineralogist and Analyst.

APPENDIX No. 5.

Report on Asbestos at Goomalling. (Owners Messrs. Thomas and Truscott.)

(By R. C. Wilson, Assistant State Mining Engineer, 11th September, 1922.)

General Geology.

The asbestos occurs in a more or less narrow belt of talc rock, probably a decomposed serpentine, which runs in a north-westerly direction, and crosses the railway line near Goomalling Station. Elsewhere granite outcrops are everywhere to be seen.

A little exploratory work has been carried out by Mr. E. C. Roberts just north of the railway line, while Thomas and Truscott's workings are about 6 chains to the south-east of the line.

In each case the asbestos has been found to be of the type known as anthophyllite, which it might be mentioned was only previously known to occur on Mr. Le Mesurier's holdings at Moora.

Thomas and Truscott's Workings, P.A. No. 392.

Workings on West side of Slater Street.—About 2 chains to the west of Slater Street lode material 36 inches in width, containing asbestos, has been worked by an open cut for a length of 30 feet and a depth of about 8 feet.

The fibre from this shaft (L No. 9861E) was of fair length but of low tensile strength, evidently largely altered to talc. Alongside the lode, on the eastern side, is a seam of bronze-coloured mica (L 9878), about one chain further east is an outcrop of dolerite (L 9876).

A little asbestos has been picked up along the line of this lode at intervals for a distance of about 100 yards.

Owing to the poor class of fibre obtained, the prospectors have ceased operations here, and have confined their attention to the asbestos occurrence on the other side of Slater Street.

Workings on the East side of Slater Street.—A main shaft has been sunk to a depth of about 12 feet on a nearly vertical seam of asbestos.

The lode, if it can be correctly so termed, occurs between two fissures in the talc rock, varying from 15 to 20 inches apart. The best asbestos is obtained in these fissures, and a smaller proportion of asbestos occurs all through the lode material between these fissures.

Picked samples from this shaft, L No. 9858E and L No. 9882E, were the best seen at Goomalling. The sample from the dump contained 48.8 per cent. of fibre, and that taken by myself from the fissures in the shaft contained 35 per cent. The fibre was cream coloured, except where slightly stained by iron; it was soft and fine, and possessed considerable tensile strength and flexibility.

An average sample, L No. 9859E, taken over a width of 18 inches of the lode, consisted of talc rock, with scattered fibres of anthophyllite of inferior quality.

Dr. Simpson's examination gave the following result:—

	Per cent.
The amount of A grade fibre collected on a 10-mesh sieve was	0·5
The amount of B grade fibre collected on a 20-mesh sieve was	5·7
Total fibre	6·2

Talc rock containing asbestos in irregular patches was obtained in two shallow holes a little to the north of this shaft.

A south shaft situated about 100 yards south of the main shaft has been sunk to a depth of about 12ft. in the same class of country. A strong seam of asbestos about 12 inches in width is showing in the bottom of the shaft. The fibre is very rotten, however, having been evidently largely altered into talc. A little fibre of good quality, 9860E, was also obtained from this shaft.

A shaft between Slater Street and the main shaft, about 10ft. deep, shows no asbestos, but a quantity of common opal, which is a common decomposition product of serpentine.

E. C. Roberts' P.A. No. 399H.—A shaft has been sunk on this P.A. to a depth of about 20 feet in talc rock, containing anthophyllite asbestos of very similar appearance and quality to that on Thomas and Truscott's P.A. See Dr. Simpson's description of samples, L No. 9856E and L No. 9857E, which were both obtained from the dump at the surface of this shaft.

General Remarks.

The asbestos in all cases appears to be of the type known as anthophyllite $4(MgFe)O\ 4SiO_2\ H_2O$, a large proportion of which is weathered or altered into talc $3(MgFe)O\ 4SiO_2\ H_2O$. The unaltered portion is of fine texture, and has considerable tensile strength. That which has been weathered or altered to talc is too easily broken for most commercial purposes.

I agree with Dr. Simpson that the best fibre would be quite suitable for the manufacture of fibro-cement articles, and would certainly be well suited for insulation purposes, for which a certain amount of the poorer quality fibre might be added, and that all of it might well be used as a substitute for cowhair in wall plasters.

With a view to ascertaining the commercial value of this class of fibre a small sample, left at this office by the owners of Avon location 19913, adjoining P.A. No. 392, was forwarded to the Agent General for W.A., London, in June last, with a request that he should obtain Messrs. Hale & Son's opinion as to its marketable quality and value. This firm supplied the following information:—

"In reply to your letter of the 11th instant, enclosing samples of Goomalling asbestos, we find this to be apparently surface material, discoloured by weathering. The fibre is of good length, rather coarse and generally weak. Your friends should have sent at least one bag (about 100lbs.), as it is very difficult to judge out-turn from two or three pieces. We should say, however, that it is undoubtedly marketable and probably worth about £60 per ton. It might easily realise up to £150, should the fibre be found of same length, cleaner and of better colour. The only practical method of testing same is for shippers to make a trial of a ton or two, making it as presentable as possible by sieving out the very short rock and dust."

Material from a greater depth would, I think, be more uniform in colour, and be of greater tensile strength owing to less weathering and alteration to talc. The concentration tests carried out at the Government Chemical Laboratory show that the material lends itself readily to concentration by means of rolls and shaking screens.

It does not look at present as if the asbestos-bearing rock will be at all easy to mine, on account of its occurrence in small veins and irregular bodies.

I would recommend the owners to sink a shaft on the strongest vein, and test the fibre at a greater depth.

Dr. Simpson's report on my samples, which is attached, and to which I would draw your attention, deals with their physical qualities as well as their chemical composition.

Duplicate.
ML. A/99.

Government Chemical Laboratory,
Museum St., Perth, 18th Oct., 1922.

(Report on Seven Samples of Asbestos from Goomalling for Mr. R. C. Wilson (M.F. 2774/21, S.F. 1772/22.)

The seven samples of asbestos and asbestos-bearing rock from Goomalling submitted by you for concentration test have now been tested with the results given below.

The samples were crushed between rolls and sifted on 10 and 30 (or 20) mesh sieves, the finely broken material passing through the finer sieve being rejected as useless. These rejects consisted of non-fibrous talc, serpentine and chlorite, together with a variable proportion of the more brittle fibre in very short lengths.

Grade A.—The longest fibres which were retained on a 10-mesh sieve consisted in each case of partly separated bundles of rather flexible fibres, with a maximum length of a little over one inch and an average of about half an inch.

Grade B.—The fibre which passed a 10-mesh sieve but was retained on a 30-mesh (or in some cases a 20-mesh) was of the nature of a fibrous meal.

The asbestos was of the variety known as anthophyllite, a species of the amphibole group, having the formula, $4(MgFe)\ 0{\cdot}4SiO_2\ H_2O$. This mineral alters readily to talc, the formula for which is $3\ (Mg,Fe)\ 0{\cdot}4SiO_2\ H_2O$. Anthophyllite is a tough mineral when fresh, and is often, as in this case, very finely fibrous. Such material should be commercially valuable. Specimens which are weathered or altered to talc are very deficient in tensile strength, and thus lose their value. Much of the material collected at Goomalling is of this nature, and none of the concentrate approaches good chrysotile in quality. The best of the A Grade would, I think, be quite suitable for the manufacture of fibro-cement articles. It would certainly be well suited for insulation purposes, for which Grade B might be added to it. All of it might well be used as a substitute for cowhair in wall plasters. The colour varies from almost pure white through shades of cream to buff, the darker coloured ones being ironstained, owing to weathering. Material from a greater depth would probably be of uniformly better colour.

Details of the individual samples are as follow:—

E. C. ROBERTS' P.A.

L. No. 9856E.—"Dump sample."

Yield—Grade A (over 10-mesh)	...	12·5 per cent.
Grade B (over 30-mesh)	...	24·2 „
Total fibre ...	...	36·7 „

The fibre was of a cream colour, slightly flexible, but of low tensile strength. Most of the A Grade was from ½ to 1 inch long. An analysis showed that it was anthophyllite, partly altered to talc, the figures being

SiO_2.	MgO.	CaO.	MnO.	FeO.	Fe_2O_3.	Al_2O_3.	H_2O.	Total.
57·48	25·76	0·04	0·55	7·64	3·54	0·93	4·64	100·58

L. No. 9857E.—"Dump sample."

Yield—Grade A (10-mesh)	...	59·1 per cent.
Grade B (30-mesh)	...	26·2 „
Total fibre	...	85·3 „

The fibre was slightly darker in colour than 9856, but otherwise similar. In the original specimen it had a maximum length of three inches, but in the concentrates very little of the fibre was over one inch in length.

THOMAS AND TRUSCOTT'S P.A.

L. No. 9858E.—"Picked sample from dump."

Yield—Grade A (10-mesh)	...	38·2 per cent.
Grade B (20-mesh)	...	10·6 „
Total fibre ...	...	48·8 „

The fibre from this sample was better than that from any other. The best of it was light cream in colour, the rest somewhat more strongly ironstained. The length of the A Grade reached to two inches, whilst the diameter of the individual fibres was only about one-thousandth of a millimetre. All of it was soft, fine, and possessed considerable tensile strength and flexibility. This is typical anthophyllite asbestos.

L. No. 9859E.—"Main shaft, 18in. of lode."

Yield—Grade A (10-mesh)	...	0·5 per cent.
Grade B (20-mesh)	...	5·7 „
Total fibre ...	...	6·2 „

This was a poor sample, consisting of talc rock with scattered fibres of anthophyllite of inferior quality.

L. No. 9860E.—"Best fibre, south shaft.

Yield—Grade A (10-mesh)	...	17·9 per cent.
Grade B (30-mesh)	...	29·3 „
Total fibre ...	...	47·2 „

The fibre from this was rather short (up to ¾ inch), but fairly strong. It was of a pale cream colour.

L. No. 9861E.—"Open cut, W. of Slater Street."

Yield—Grade A (10-mesh)	...	55·3 per cent.
Grade B (30-mesh)	...	30·5 „
Total fibre ...	...	85·8 „

This was the whitest fibre of all. It was fairly short after milling (maximum length, one inch), and of very low tensile strength. It is evidently largely altered to talc.

L. No. 9882E.—"Picked ore from main shaft."

Yield—Grade A (10-mesh)	...	19·0 per cent.
Grade B (20-mesh)	...	16·6 „
Total fibre ...	...	35·6 „

Cream coloured fibre up to two inches in length, associated with talc rock. The fibre was strong, like No. 9858.

(Sgd.) EDWARD S. SIMPSON,
Government Mineralogist and Analyst.

[Duplicate M.L. A/88.]

Government Chemical Laboratory,
Museum Street, Perth, 14th Oct., 1922.

Determinations of Minerals in eight specimens for Mr. R. C. Wilson (M.F. 1772/22).

L. 9875E.—A. Open cut, Thomas & Truscott's P.A., Goomalling. Biotite granite.

L. 9876.—B. Same locality.
Ophitic dolerite composed of plagioclase, augite, chlorite and ilmenite. (R.A.F.)

L. 9877.—C. Same locality.
Asbestiform anthophyllite with 9.23 per cent. FeO.
Formula: $4(Mg,Fe)O.4SiO_2.H_2O$.

L. 9878.—D. Same locality.
Coarse scaly, bronze-coloured vermiculite. An altered (hydrated) biotite. Cf. Jeffersite.

L. 9879.—E. Same locality.
Fibrous anthophyllite partly altered to talc.
Formula for talc—
$3(Mg,Fe)O.4SiO_2.H_2O$).

L. 9880.—F. Same locality.
Talc rock, the talc in part fine scaly, in part rather coarsely foliated.

L. 9881.—G. Shaft, just east of Slater Street.
Common opal of various colours, viz.: bottle green (siliciophite), yellow, brown and oyster. Such opal is a common decomposition product of serpentine.

L. 9882.—H. Picked ore from main shaft.
Talc rock with asbestiform anthophyllite.

(Sgd.) EDWARD S. SIMPSON,
Government Mineralogist and Analyst.

Petrological Examination of a Rock from Goomalling for Mr. R. C. Wilson.

The specimen forming part of the country of the asbestos occurrence at Goomalling consists now chiefly of foliated scaly talc and decomposed chlorite. In places, however, there are doubtful traces of former long thin acicular crystals, and, as talc is a decomposition product of anthophyllite, it is possible that these traces are what remains of needles of this mineral.

(Sgd.) R. A. FARQUHARSON,
Petrologist.

28th September, 1922.

APPENDIX No. 6.

Report on the W.A. Magnesite, Marbleite, and Asbestos Co's Leases, M.L. No. 77, M.L. No. 78, and P.A. 2015.

(By R. C. Wilson, Assistant State Mining Engineer, 9th August, 1922.)

(a) Prospecting Area No. 2015.
(b) Mineral Lease No. 77, known as "Clarke's Easter Gift."
(c) Mineral Lease No. 78, known as "Asbestos Queen."

Geology.—The above-mentioned leases are all contained in the extensive greenstone area lying to the east of the Coolgardie townsite, which also contains the auriferous lodes.

This greenstone area consists of an extensive series of rocks lying for the most part to the east of the granite belt, and, according to Mr. T. Blatchford, is cut off by the granite at a point seven miles south of Londonderry. The rocks forming this area consist of coarse and fine-grained amphibolites as well as peridotites (serpentines). Magnesite veins are found in the weathered portions of the last named, when the magnesium silicates have been converted into carbonates by the action of carbonic acid gas. According to Van Hise the change is represented by the following formula:—

$$\underset{\text{(Serpentine)}}{H_4 Mg_3 Si_2O_9} + 3\ \underset{\text{(Carbonic acid gas)}}{CO_2} = \underset{\text{(Magnesite)}}{MgCO_3} + 2\ \underset{\text{(Quartz)}}{SiO_2} + 2\ \underset{\text{(Water)}}{H_2O}$$

Prospecting Area No. 2015.

Location.—This P.A. is situated alongside the railway line between Coolgardie and Kalgoorlie on the western side at a distance of 4½ miles from Coolgardie.

Deposits of Magnesite.—A strongly developed seam of magnesite has been followed in an underlay shaft for a distance of 25 feet. At this depth an east drive has been driven 8 feet. The seam of magnesite is the full width of the shaft and the drive (4 feet), and no proper walls are showing.

On present appearances this is a strong, persistent seam of the mineral. Its length and depth should be ascertained by continuing the shaft on the ore body as far as magnesite of good quality is obtained, and then driving both ways upon it.

A sample (No. 5) from the bottom of this shaft taken over its full width was examined by Dr. Simpson, Government Mineralogist and Analyst, and proved to be of excellent quality for making Sorrel cement.

Two other seams of magnesite, apparently parallel and having a north-easterly strike, have been exposed by shallow shafts about 150 feet north-west of the main shaft.

In the most easterly of these, from which sample No. 7 was taken, the seam has a width of 24 inches, and in the other, where sample No. 8 was taken, the seam of magnesite is 36 inches in width.

These three seams were the only ones seen by me on this P.A. This is due to the fact that the surface of the ground is very flat in this locality, and recent superficial deposit obscures what is underneath. There appears to me to be every reason to suppose other seams will be found.

Dr. Simpson's report upon the samples taken by me from this P.A. is as follows:—

Lab. No.	9716E.	9718E.	9719E.
Mark	5	7	8
$MgCO_3$	97·54	99·04	97·47
CO_2 ...	50·90	51·68	50·86
MgO ...	46·64	47·36	46·61
Extra MgO ...	*Nil*	*Nil*	·59
$CaCO_3$	·07	·39	1·68
CO_2 ...	·03	·17	·74
CaO ...	·04	·22	·94
Fe_2O_3	·05	·01	·04
Al_2O_3	·11	·19	·34
Insoluble—Bases	·06	·04	·10
Silica	·14	·12	·12
	97·97	99·79	100·34

None of these three is well situated for refractories. Nos. 5 and 7 are excellent magnesites for making Sorrel cement, and although No. 8 is a little high in calcium carbonate it is otherwise good and could well be mixed with Nos. 5 and 7 without ill effect, the total $CaCO_3$ being thus brought well below one per cent."

Mineral Lease No. 77

(Clarke's Easter Gift).

This lease is situated on the south of the Coolgardie-Kalgoorlie Railway line, and is described in the application as commencing at datum peg about 22½ chains south-east by east of 355½ mile peg on the Kalgoorlie-Coolgardie Railway line, thence about 12 chains south-east, thence about 20 chains north-east, thence about 12 chains north-west, thence about 20 chains south-west to datum peg.

Mode of Occurrence and General Description.—The surface is not so flat as in P.A. 2015, and the country rock consisting of weathered serpentine can frequently be seen outcropping.

Through this serpentine rock there are numerous small seams of magnesite. Sample No. 1 is taken from one of such seams 15 inches in width at a depth of 5 feet. In this instance the seam was exposed in a small open cut for a length of 15 feet. It had a north-easterly strike, and was inclined to the horizontal at an angle of about 40°.

Sample No. 2 was taken from another seam on which some work had been done. This seam was from 30 to 36 inches in width, had an east and west strike, and dipped to the south.

A dump containing 20 tons of clean magnesite evidently obtained from these workings is now ready to be carted away. Sample No. 4 was taken from this dump.

A creek running through the lease has exposed a number of small seams varying from a few inches up to about 2 feet in width. Sample No. 3 was a sample taken from these veins. In this instance the magnesite was contaminated with a certain amount of surface soil.

Dr. Simpson's examination of the four samples of magnesite taken from this lease gave the following results:—

Lab. No.	9712E.	9713E.	9714E.	9715E.*
Mark	1	2	3	4
$MgCO_3$ ...	99·38	98·41	86·20	98·18
CO_2 ...	51·86	51·35	44·98	51·23
MgO ...	47·52	47·06	41·22	46·95
Extra MgO†...	·20	·71	2·22	·19
$CaCO_3$	·04	*Nil*	1·75	·04
CO_2 ...	·02	...	·77	·02
CaO ...	·02	...	·98	·02
Fe_2O_3 ...	·04	·07	1·07	·06
Al_2O_3 ...	·26	·13	·75	·50
Insoluble—Bases ...	·08	·08	1·04	·10
Silica ...	·24	·36	5·00	·72
	100·24	99·76	98·03‡	99·79

* From dump of 22 tons.
† Present as silicate (serpentine), etc.
‡ Contains also H_2O, Cl, etc.

No. 3 contains too much iron and lime to be used in the manufacture of Sorrell cement, but is the best of the three for the manufacture of refractories.

Nos. 1, 2, and 4 are all very high-grade white magnesites, unusually low in both iron and lime, and therefore eminently suitable for the manufacture of Sorrel cement. They are too pure to make good refractories, for which purposes the presence of several parts per cent. of iron oxide and silica evenly distributed through the ore are desirable.

Mineral Lease No. 78
(Asbestos Queen).

This lease is situated about two miles south by west of M.L. 77. Two seams of asbestos six to eight inches in width have been opened up to a shallow depth, one being vertical and the other inclined at an angle of about 45°.

Outcrops of epidiorite and serpentine occur in the vicinity of this deposit, and the asbestos is associated with a certain amount of magnesite.

The asbestos is of the actinolite or hornblende variety, which is of little or no value where strength of fibre is a consideration.

Dr. Simpson examined a sample of this asbestos, and his description is as follows:—

"Lab. No. 9720. This is typical actinolite asbestos with fibres reaching to a length of eight inches. The fibres are easily separated and rather soft, but are entirely deficient in tensile strength and flexibility. Such material is of very little value, in fact there is no regular market for it at all, though small parcels are used from time to time in the manufacture of boiler lagging, 'mineral sponge,' etc. It is of no value for making fibro-cement or for any other purpose which requires a high-grade asbestos."

Composition and Uses of Magnesite.

These are well set out in Geological Bulletin No. 82, The Magnesite Deposits of Bulong by F. R. Feldtmann, from which the following information is taken:—

"*Theoretical Composition.*—Magnesium Carbonate ($MgCO_3$); 47.6 per cent. magnesia (MgO), 52.4 per cent. carbon dioxide (CO_2). Hardness, 3.5 to 4.5. Specific gravity, 3 to 3.12; a cubic foot of solid magnesite weighing about 190 pounds. Colour: dazzling white, but grey or brown when impurities, such as clay, iron oxides, or serpentine, are present in any quantity."

Magnesite is used in the manufacture of carbon dioxide, magnesia, epsom salts, and chloride of magnesium. When dead burnt it is used in the manufacture of fire-proof basic bricks and hearths, converter linings, and other refractory material.

"*Oxychloride or Sorrel Cement.*—Finely ground caustic calcined magnesite wet with a solution of magnesium chloride of a certain strength sets as an exceedingly strong, hard vitreous cement. For flooring and similar purposes it is usually mixed with a filler such as wood-flour, sawdust, cork-dust, asbestos, serpentine, or ground quartz, which may constitute from 10 to 40 per cent. of the finished cement. It is applied in a plastic state to wood, metal, or concrete, to which it holds firmly; it sets in a few hours. Thus used it is said, when properly mixed and laid, to be superior to any other cement for cleanliness, resilience, immunity from abrasion, lightness, warmth, and the fact that it may be laid thinly (usually to a depth of half an inch) over large surfaces without cracking. It takes colours readily, takes a good polish with oil or wax, and is fire and water-proof. It is not, however, acid-proof nor wholly alkali-proof, and softens with constant immersion in water.

"Owing to the difficulty of obtaining raw material of uniform quality and the deterioration of the caustic magnesite before using these floors have not always been satisfactory. The cement must be practically free from lime, the presence of which, owing to its greater tendency to absorb carbon-dioxide and moisture, causes swelling.

"In addition to its use as a flooring, oxychloride cement is used for the manufacture of tiles and artificial marble."

The W.A. Magnesite, Marbleite, and Asbestos Co., Ltd., make the following claim:—

"The demand for magnesite during recent years has far exceeded the supply. It is in ever increasing demand by builders for use in the construction of floorings, staircases, tiles for hearths, bathrooms, shop-fronts, dados, etc. It is used extensively for making marbleite tops for washstands, baths, sinks, washhand basins, balusters, verandah posts, boiler lagging, troughs for stock and poultry, magnesite firebricks for lining furnaces, fire and retort linings. It is very suitable for the manufacture of tiles, both for interior and exterior use. The lower portion of the building occupied by the Photo and Optical Supply Company, Hay Street, Perth, is covered with magnesite tiles. The floors of many of the public buildings in Perth are principally constructed of it. The staircase leading to the offices of the Millar's Karri and Jarrah Company, St. George's Terrace, Perth, is also constructed of it. It will be found that magnesite can be put to profitable use, in many ways not enumerated above, and for the manufacture of a large number of articles not included in the above list. As a matter of fact marbleite manufactured from magnesite can be used for all purposes for which marble is used, and for many uses for which marble would not be suitable. The only difference between marble and marbleite is that the lime in the marble is replaced by magnesia in the marbleite.

Summary and Conclusions.

The magnesite is of excellent quality for the manufacture of Sorrel cement. Numerous small veins of this mineral occur in the decomposed portion of the serpentine rock. They will not extend downwards into the undecomposed rock, and consequently cannot be expected to live to any great depth.

There appear, however, to be a large number of small veins to be taken out, and at least one seam, namely that in the main shaft on P.A. 2015, gives promise of yielding quite a considerable tonnage.

APPENDIX No. 7.

Report on Red, White and Blue Extended No. 2, G.M.L. 1281, Dundas.

(By R. C. Wilson, Assistant State Mining Engineer, 18th October, 1922.)

Location.—This lease is situated about three miles south by east of Norseman.

Geology.—The following table taken from Bulletin No. 21, "The Geology and Mineral Resources of the Norseman District," by W. D. Campbell, indicates the various geological formations occurring in the Dundas Goldfield:—

Superficial deposits	Ironstone gravel and laterite Travertine Gypsum Dolomite
Crystaline rock	Norite
Amphibolite traversed by	Granite porphyries Quartz reefs Felsite and quartz porphyries Dolerite Diorite and epidiorite
with interbedded	
Metamorphic sandstones and conglomerates with banded quartzites and ironstone	Quartz reefs and lodes Felspar porphyries Mica-diorite and epidiorite

The Red, White and Blue is situated on the western side of a persistent banded quartzite and ironstone ridge, which can be traced for several miles in a north and south direction passing through Zieglar's Find, the Lady Millar, the Battler, and other leases.

W. D. Campbell points out that "In the neighbourhood of the banded ironstones the heavier residual particles left after the decomposition of that material have recombined as laterite or concretionary ironstone. This laterite is found in all stages of solidification, from stray patches to masses ten or more feet thick forming cappings and fringes chiefly on the eastern side of the banded ironstone ridges. It often weathers into boulder-like blocks having a dark rusty red colour, and these masses are often attributed by miners to volcanic action. Particles of gold are found sometimes in the centre of the ironstone nodules, or scattered throughout its mass; also occasionally fragments and pebbles of quartz, but the ironstone conglomerate does not contain fragments or pebbles of other rocks, being simply a residual concretion."

The Red, White and Blue ore body appears to me to have been formed much in the manner described. It does not appear to be a true lode, but consists of a flat lateritic ironstone formation resting on an undulating kaolin bottom, which Mr. Farquharson has determined as a decomposition product of an original quartz porphyry rock. This is interesting geologically inasmuch as no quartz porphyries have previously been known to exist in this part of the field, although they are common further west.

The results of my sampling are indicated on the plan attached. I took in all 35 samples, one of which assayed 1oz. 12dwts. 10grs. per ton. The next highest assay was 7dwts. 15grs. Ten of the samples gave an assay value of over 4dwts. per ton, and the remaining 25 samples gave an assay value of under 4dwts. per ton. The general average of all the samples taken was 3dwts. per ton.

As will be seen from the returns given below, the amount of ore crushed by the present leaseholders up to June, 1922, was 1,409 tons averaging 15.7dwts. per ton.

The last crushing, particulars of which are just to hand, gave a poor return; 174 tons of ore yielded 25.55 ozs. of gold, equivalent to 2dwts. 7grs. per ton over the plates, and the tailings were worth 2dwts. 17grs. per ton. These results seem to point to the fact that the prospectors worked the deposit in an east and west direction as far as payable values were obtained, and gradually extended their workings northward, taking out all payable ore in sight as they went.

There is a large quantity of the same class of ironstone formation in sight as has already been worked, but my sampling results indicate that most of it is too poor to be profitably worked.

All the ore won up to the present has been obtained from a depth of not more than about 35 feet. There is no evidence in support of Dr. Milsom's supposition that ore worth 12dwts. per ton occurs all over the lease to a depth of 400 feet. The deposit appears to be a flat shallow one carrying fair values in certain areas. Just at present very little payable ore can be said to be in sight.

The value of the ore already mined is indicated by the following returns:—

Red, White and Blue Extended No. 2, G.M.L. No. 1281.

—	Tons.	Gold recovered on plates.		Estimated total Value.*
		Fine ozs.	Value per ton. dwts.	dwts. per ton.
Previous to 1922	951·00	353·95	7·8	18·0
January to June, 1922	458·00	122·67	5·4	12·5
	1,409·00	476·62	6·8	15·7

Old Iron King Lease, G.M.L. No. 1239.

1918–1922 ...	561	92·22	3·3	7·7

Old Red White and Blue, G.M.L. No. 1242.

1919–1921 ...	2,614	587·83	4·5	10·2

*Note.—Some of this ore was crushed at the State Battery and the remainder at Rawlings, Bullen and Rumble's Battery. Of the ore crushed at the State Battery 43 per cent. of the total gold was recovered on the plates, and the balance 57 per cent. of the gold remained in the tailings. The total value of the ore is estimated by assuming the same proportion for the ore treated at Rawlings, Bullen and Rumble's battery.

We have not been supplied with the assay value of their tailings.

APPENDIX No. 8.

Report on H. G. Leeder's P.A. 24 PP.

(By R. C. Wilson, Assistant State Mining Engineer, 2nd November, 1922.)

Location and Occurrence.—This P.A. is situated about 2¼ miles south-west of the old Geraldine mine, and includes old M.L. 140. This ground was previously held by Kowalich and Mitchell, and was reported upon by myself in August, 1917 (file 1799/17, page 3).

As is common in the Northampton district, the lode occurs in granite alongside a diorite dyke running north-east and south-west.

Workings.—There are two shafts on the property, about 40 feet apart. The main shaft is now about 38ft. deep, and is being sunk in hard siliceous lode material, carrying small stringers of brown copper ore.

The north shaft is about the same depth, and a little ore is showing at the bottom.

Between these shafts a small vein, 15 or 18 inches, has been taken out. The applicants state "that a parcel of 20 tons was sent away with about 20 per cent. copper." This vein does not apparently represent the full width of the lode, and it is quite possible that a good ore over a larger width might be met with by further development.

It might be well to point out, however, that at the present price of copper, about (spot) £63 10s. (electrolytic) £70 10s., and high tariff, it takes very rich ore to be profitable. It will be seen by the following figures, which are to be taken as an approximate estimate only, that there is little or no profit in ore averaging 20 per cent. copper contents if shipped to the Electrolytic Refining Co.'s Works at Port Kembla.

VALUE OF 20 PER CENT. COPPER ORE.

20 per cent. less 1·3 = 18·7 per cent.

	£ s. d.	£ s. d.
In 1 ton of ore 0·187 tons copper paid for at £62*		11 11 10
Smelting charge	1 10 0	
Refining charge 18·7 units at 3s.	2 16 1	
Realisation (19s. per ton) 0·187 tons	0 3 6	
Freight, railage, haulage, etc., 37s.	1 17 0	
	6 6 7	
Value at Fremantle per ton		5 4 3
Bags and bagging	1 0 0	
Cartage mine to railway 16s.	0 16 0	
Railage	1 4 9	
Wharfage	0 15 0	
Sampling and assaying locally per ton, say	0 4 0	
Hambridge A/c, per ton, say	0 7 6	
Insurance	0 1 0	
	4 8 3	
Value on mine		£0 16 0

*Spot standard copper in London, less £1 10s.

The only ground on which a loan could reasonably be recommended is that it would put the mine into good shape for working should the price of copper improve.

The men on the job made no mention to me of water trouble. They are sinking the shaft without any pump so that there can be no great quantity of water up to the present. They are sinking in fairly hard siliceous lode material, which, with hand labour, would, I think, cost £3 10s. to £4 per foot to sink.

RICHARD C. WILSON,
Assistant State Mining Engineer.

18/11/22.

APPENDIX No. 9.

Report on Felspar near Jacob's Well. (Mr. Iles.)

(By R. C. Wilson, Assistant State Mining Engineer, December, 1922).

Locality and General Geology.—The felspar occurs as the chief constituent of a big pegmatite dyke situated a little more than three miles to the south-west of Jacob's Siding.

This pegmatite can be seen outcropping for a distance of about 300 feet, when its further continuation is obscured by surface soil. At costeen A, where the best felspar is showing, its width is proved to be over 40 feet.

Reference to the sketch accompanying the report will show that its strike is north of west, and that it is parallel to and almost in contact with a prominent outcrop of grano-diorite (Specimen No. 5). This rock has a rather unusual appearance. A specimen was examined microscopically by Mr. Larcombe, Acting Petrologist, and determined by him as a micrographic quartz augite diorite. For field purposes the name grano-diorite is satisfactory.

With the exception of the rocky patch in the neighbourhood of the pegmatite, the country which I have assumed to be granite, is covered with soil, and is at present under crop.

Along the strike of the pegmatite further east I came upon some floaters (Specimens Nos. 3 and 4) having a greenish colour, due to the presence of epidote.

All the abovementioned rocks have been carefully determined by Mr. Larcombe, whose report upon them is attached.

Value of Deposit.—A large quantity of felspar could be obtained by means of a quarry or open cut. A certain amount of picking would be necessary to remove the quartz and the mica with which it is associated, but it would be a comparatively easy matter to collect clean felspar. I saw no mica of marketable size, but in the course of mining operations it is possible that some might be found.

A sample was examined by Dr. Simpson, who furnished the following report:—

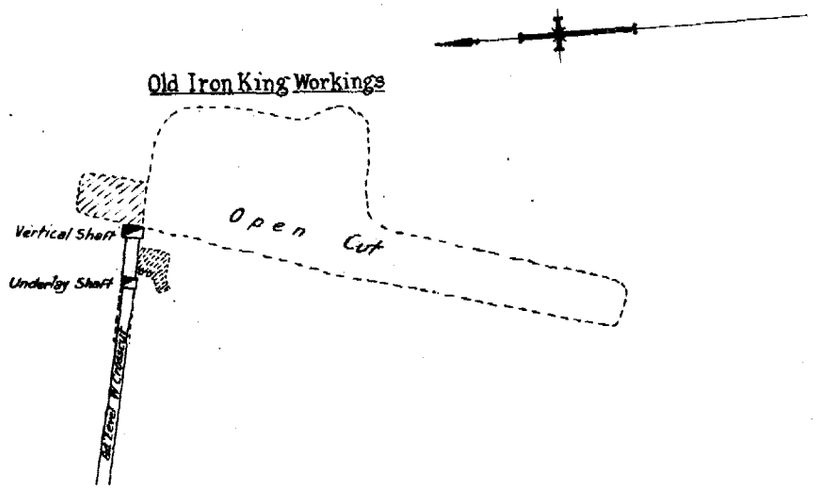
Total potash K_2O	10·14 per cent
Total soda Na_2O	4·56 „
Ferric oxide, Fe_2O_3	0·12 „
Equal to—	
Orthoclase, Silicate of Potassium and Aluminium	59·94 „
Albite, Silicate of Sodium and Aluminium	38·58 „

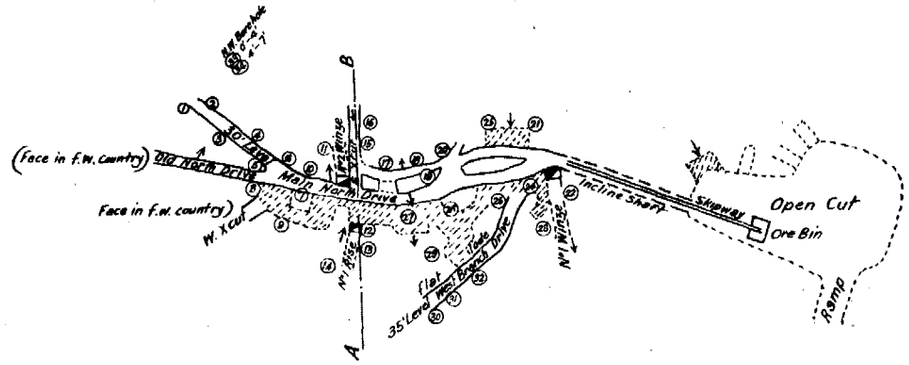
Remarks.—This is a slightly kaolinised felspar, suitable for use in the pottery and enamelling trades. By sinking a few feet deeper still better mineral would certainly be obtained."

Similar felspar from the Coolgardie District has been sold locally at £4 per ton, and in June last we were advised that Chance & Co., Birmingham, were paying £7 14s. for ground felspar delivered at their works. Since then, however, the price in England seems to have slumped, as Messrs. Hale & Son advised the Agent General in October, 1922, that they had been offered ground felspar at 70s. per ton.

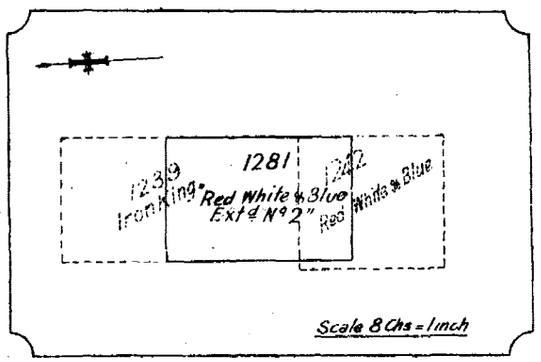
Rough Plan shewing Assay Results
—on—
Red White & Blue Extended N°2 - G.M.L.1281

Scale 40 feet - 1 inch



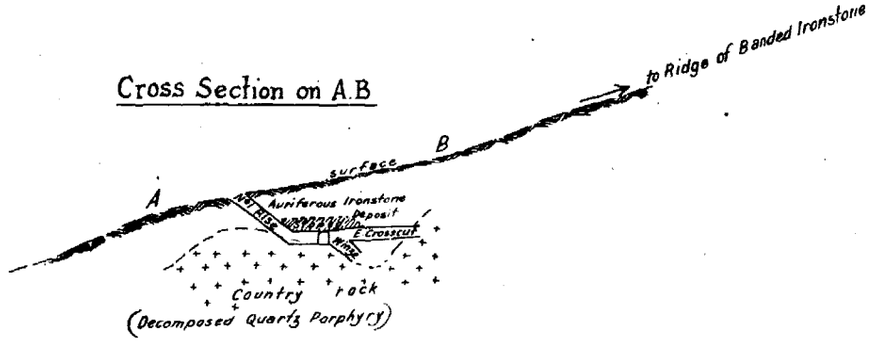


Note:- The arrows indicate the direction the footwall of the ore deposit is dipping.



Scale 8 Chs = 1 inch

Cross Section on A.B



REFERENCE

Sample N°	Width inches	Value Oz.	dwts	grs
1	84	–	2	9
2	84	1	12	10
3	84	–	1	12
4	84	–	–	5
5	72	–	–	5
6	60	–	–	3
7	60	–	5	6
8	72	–	4	18
9	60	under		3
10	66	"		3
11	84	"		3
12	84	0	4	16
13	42	–	–	5
14	48	–	–	17
15	54	–	–	18
16	42	–	5	14
17	72	–	–	10
18	72	–	–	18
19	66	–		10
20	84	–	–	10
21	72	–	2	14
22	36	under		3
23	36	"		3
24	144	–	7	17
25	108	–	3	22
26	108	–	4	23
27	168	–	4	12
28	60	under		3
29	60	–	–	6
30	72	–	1	29
31	72	–	6	15
32	72	–	1	29
33	48	–	2	14
34	36	–	1	–
35	84	–	4	17

To accompany Ass't S.M.E. Report

Annual Report of the Board of Examiners for Colliery Managers' and Under-Managers' Certificates under "The Coal Mines Regulation Act, 1902."

The Under Secretary for Mines, Perth, W.A.

Office of the State Mining Engineer,
Mines Department, Perth,
26th April, 1923.

Sir,—

We have the honour to submit for the information of the Hon. the Minister for Mines the Annual Report of the Board of Examiners for the year 1922.

Meetings were held on 27th April and 25th October, 1922, at which all members of the Board were present.

No applications were received for examination for First or Second Certificates of Competency at either of the advertised dates for such in April and October, 1922.

At the meeting of the Board on October 25th, a First-Class Certificate of Competency was granted to Walter Rawling, without examination, on his New South Wales First-Class Certificate.

Reciprocity.—At the meeting of the Board on 27th April, 1922, it was decided after correspondence with the New South Wales Department of Mines that, in view of the attitude of the New South Wales Board that general reciprocity in certificates cannot be agreed to, this Board also resolves that Certificates from other States and countries are not necessarily to be accepted by the Western Australian Board, but each case must be considered on its merits.

We have the honour, etc.,

A. MONTGOMERY,
State Mining Engineer, Chairman.

JAS. McVEE,
Inspector of Mines, Member.

A. GIBB MAITLAND,
Geovernment Geologist, Member.

F. A. LANE,
Secretary.

DIVISION III.

REPORT OF THE SUPERINTENDENT OF STATE BATTERIES.

Department of Mines,
State Batteries Branch,
Perth, 5th April, 1923.

The Under Secretary for Mines.

Sir,

I beg to submit my report upon State Battery operations for the year ended 31st December, 1922, being the twenty-fifth Annual Report.

MILLING.

Operations were conducted departmentally at twenty-two State Batteries (150 stamps) and by lessees at four plants (35 stamps), whilst three plants were idle (15 stamps).

Tonnage.—Six hundred and forty-seven parcels of auriferous ore were milled, the total tonnage being 35,722¼. The mean weight per parcel treated was 55.21 tons. During the previous year 606 parcels aggregating 34,761 tons were treated. The tonnage showed an increase of 961¼ tons compared with 1921 returns, but was only sufficient to keep batteries employed about 17 per cent. of full time. The largest tonnages were milled at: Wiluna 8,179¾ tons, St. Ives 3,040 tons, Cue 2,835½ tons, Meekatharra 2,315½ tons, Ora Banda 2,175 tons, Norseman 2,033¾ tons, Coolgardie and Payne's Find each 1,994½ tons.

Stamp Duty.—At 10-stamp batteries the duty was 3.91 tons, and at 5-stamp batteries 4.3 tons per stamp per 24 hours. The bulk of the ore was crushed through screens having 800 holes per square inch.

Amalgamation.—Six hundred and eight parcels of ore were treated by amalgamation aggregating 27,885¼ tons; 28,812.94 ozs. of bullion, estimated to contain 24,423.41 ozs. of fine gold, were recovered, equal to 74.4 per cent. of the gross value of the ore. During 1921 the recovery was 75.8 per cent. The mean value of the ore was 99s. 8d. per ton, whilst the mean value during 1921 was 71s. 10d. A very rich parcel treated at Warriedar yielded tailing worth nearly 4 ozs. per ton and barely 3 ozs. per ton by amalgamation, and was the principal cause of the slight reduction in the recovery by amalgamation.

Charges.—No alteration was made in charges, which remained at pre-war rates. On 5,822¾ tons rebates for low grade ore were paid to the extent of £854 15s. 8d. from the Development of Mining Vote.

Expenditure.—The total milling expenditure was £30,280 0s. 3d., and included £3,957 11s. 4d. for renewals and repairs and £3,693 9s. 7d. for sundries and administration. The cost per ton was 16s. 11.28d. and 17s. 3.86d. during 1921.

Revenue.—£16,417 14s. 3d. was collected as milling revenue, equal to 9s. 2.16d. per ton. Revenue during 1921 was 9s. 0.72d. per ton. A slight reduction in cost and a slight increase in revenue per ton reduced the loss on milling to £13,862 6s. from £14,360 19s. 3d. during 1921 (Schedules 1, 5, 8).

TAILING TREATMENT.

At twelve leaching plants 24,234 tons of tailing were treated. The mean head assay value was 6.024 dwts. per ton and the mean residue assay value was 1.216 dwts. per ton, an assay extraction of 79.8 per cent. The actual recovery was 79.3 per cent., but slag values were not realised and could not be brought to account.

During 1921 the mean head value of 19,763 tons was 5.688 dwts. per ton and the mean residue value 1.267 dwts. per ton.

Expenditure.—Treatment cost £12,088 1s. 11d., including £1,329 1s. 8d. for renewals, equal to 9s. 11.71d. per ton, compared with 10s. 0.85d. during 1921.

Revenue.—£19,076 11s. 1d. was the amount of revenue, and included in the figure was an amount of £6,000 on account of gold premiums since March 1919. The profit was £6,988 9s. 2d. (Schedule 9 and General Remarks).

SLIME TREATMENT.

Seven thousand four hundred and ninety-two tons were treated at Wiluna. The mean head value was 11.359 dwts. per ton and the mean residue value 2.216 dwts. per ton, the extraction being 80.4 per cent. During 1921 there were 7,370 tons treated, worth 9.68 dwts. per ton before treatment and from which a recovery of 78.1 per cent. was obtained.

Expenditure.—The total cost of treatment was £4,450 5s., including £393 15s. 9d. for repairs and renewals—equal to 11s. 10.56d. per ton. During 1921 the cost of treating 7,370 tons was 10s. 11.64d. per ton.

Revenue.—The total revenue was £3,178 16s. 11d., equal to 8s. 5.83d. During 1921 the revenue amounted to 8s. 5.73d. per ton. The loss on treatment was £1,271 8s. 1d. (Schedule 9).

TIN ORE TREATMENT.

The market price of tin remained too low to permit of ore being worked profitably, consequently none was offered to our Greenbushes plant for treatment. An expenditure of £55 8s. 2d. was incurred in caretaking

the plant and buildings, which are in first class condition. The rise in price of tin should enable claim holders to mine ore and it is anticipated the plant may be put into commission this year.

REPAIRS AND RENEWALS.

An amount of £5,680 8s. 9d. was spent in repairing and renewing plants. In 1921 £4,499 18s. 11d. was spent. The extra amount last year was required for renewing cyanide vats. (See General Remarks.)

TOTAL OPERATIONS.

A total of 67,448¼ tons were treated at a cost of £46,875 15s. 4d., equal to 13s. 9.77d. per ton. During 1921, 61,976 tons were handled at a cost of 14s. 3.6d. per ton.

The total revenue amounted to £38,675 2s. 3d., equal to 11s. 5·61d. per ton, compared with £36,522 6s. 4d., or 11s. 9·43d. per ton in 1921.

The loss on all operations was £8,200 13s. 1d., compared with a loss of £7,801 14s. 11d. in 1921.

Comparative Synopsis of Results at State Batteries for 12 months ended 31st December, 1922 and 1921.

	1922.			1921.		
	Tonnage.	Expenditure.	Revenue.	Tonnage.	Expenditure.	Revenue.
		s. d.	s. d.		s. d.	s. d.
Milling	35,722¼	16 11·28	9 2·16	34,761	17 3·86	9 0·72
Tailing Treatment	24,234	9 11·71	15 8·90	19,763	10 0·85	17 10·08
Slime Treatment	7,492	11 10·56	8 5·83	7,370	10 11·64	8 5·73
Tin Treatment	...	...	...	54	82 0·55	8 0·43

Receipts and Expenditure, 1922.

	Tonnage.	Expenditure.	Revenue.	Profit.	Loss.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.
Milling	35,722¼	30,280 0 3	16,417 14 3	...	13,862 6 0
Tailing Treatment	24,234	12,088 1 11	19,076 11 1	6,988 9 2	...
Slime do.	7,492	4,450 5 0	3,178 16 11	...	1,271 8 1
Tin do.	...	57 8 2	2 0 0	...	55 8 2
	67,448¼	46,875 15 4	38,675 2 3	6,988 9 2	15,189 2 3
				Less Profit ...	6,988 9 2
				Net Loss ...	£8,200 13 1

PURCHASE OF TAILINGS.

During the year 20,899 tons of tailing were purchased for £25,339 13s. 5d. net; 16,756¼ tons were purchased during 1921 for £24,711 2s. 2d.

OUTPUT SINCE INCEPTION.

Tons of auriferous ore milled 1,354,005.

Production.	£
By Amalgamation ..	4,626,252
„ Sand Treatment ..	687,316
„ Slime Treatment ..	238,958
„ Residue Treatment ..	9,353
	£5,561,879

Tons of Tin ore treated 80,068.

Production.	
By Black Tin	92,420
„ Residue Treatment ..	572
	£5,654,871

STAFF.

Further retrenchment was effected during the year. Two Managers, Messrs. T. W. Lees and D. A. Wilson were retired, and the Engineer took over the duties of buying stores, thus reducing the goldfields staff by two and Head Office staff by one. Our staff has now been reduced so greatly that it is difficult to discharge our obligations in regard to crushings and tailing treatment at some of the isolated plants. At some centres, facilities which existed until recent years are now conspicuous by their absence, and our staff and employees are called upon to face many hardships and discomforts. I desire to thank the staff for the splendid manner in which they have met an increasingly difficult position.

GENERAL REMARKS.

Although the amount of ore offered for treatment showed an increase of 961¼ tons on the previous year's figures, the tonnage was small, *i.e.*, 35,722¼ tons. Wages remained unaltered on the Murchison and North-West goldfields, but were reduced one shilling per shift on the Eastern Goldfields. The cost of Milling and Tailing Treatment showed slight decreases, but Slime Treatment costs (Wiluna) rose 11 pence per ton. Since decreased tonnage has reduced our Wiluna Plant operations to 16 hours a day for six days a week, costs have been unavoidably high.

The gross cost per ton for our total operations was reduced from 14s. 3·64d. last year to 13/9·77. Such a reduction is satisfactory, but was mainly due to the proportionately large tonnage of tailing treated. The fact is that the cost of milling has risen 4s. per

ton during the past two years, whilst tailing and slime treatment costs have risen 1s. and 2s. per ton respectively. There is no chance of reducing these costs so long as tonnages remain small, and wages, services and commodities remain high. Firewood and cartage of supplies cost more to-day than ever before, whilst the cost of railage is heavy.

From year to year the cost of maintenance of plants increases, principally on account of deterioration during frequent periods of idleness. During 1922 repairs and renewals cost the large sum of £5,680, of which £1,000 was spent in renewing vats and tanks. When the price of cement dropped, we repaired the vats of one tailing plant with a mixture of creek sand and cement reinforced with one-inch wire netting. The result was quite satisfactory, and during the coming winter several plants will be dealt with in a similar manner. The cost is about the same as installing new galvanised iron vats, and vats so treated should stand permanently. Such expenditure has to be found from Revenue, and is a heavy drain upon it.

Gold premiums in the past two years have enabled our operations to proceed with an annual loss of about £8,000. During 1921 and 1922, we have brought to account no less than £13,000 from our share of premiums since March, 1919. During the current year we will have only about £1,500 to assist our finances —and the price of gold is now so little above standard, we cannot expect future premiums of any consequence. Under present conditions, therefore, it is certain that our annual losses will be very much increased. Had it not been for gold premiums brought to account this year, our loss would have been £14,000.

To cope with the gradual disappearance of transport facilities outback, two Ford cars have been recently purchased for the use of our staff. We have already demonstrated the wisdom of their purchase and look forward with certainty to reaping many advantages from their use.

No new plant was constructed during the year, but the battery at Mt. Keith had to be closed on account of the district becoming deserted

Appended will be found twelve schedules, showing details of operations, and also the Report of the Inspector of State Batteries.

I have, etc.,

A. M. HOWE,
Superintendent of State Batteries.

Report by Mr. D. F. Browne, Inspector of State Batteries.

The Superintendent of State Batteries.

Herewith my report on operations at State Batteries for the 12 months ended December 31st, 1922.

The total tonnage handled shows an increase over the previous 12 months of 5,472 tons, the figures being 67,448 and 61,976 tons respectively.

Tailings treatment was responsible for most of the increased tonnage handled, though the ore milled was approximately 1,000 tons more, which is somewhat reassuring, after the continual decline in previous years.

A net loss of £8,200 13s. 1d. was made for the year as against £7,801 14s. 11d. in 1921.

MILLING.

Excluding Wiluna, seven 10 stamp and fourteen 5 stamp mills crushed auriferous ores for customers under full departmental control, while four plants were run by lessees.

The 21 mills mentioned above crushed 13.67 per cent. of full time, excluding Sundays, representing 7,438 stamp days out of a total 53,680 available.

Expenditure and Receipts.—The total expenditure on milling was £30,280 0s. 3d., and revenue amounted to £16,417 14s. 3d., showing a loss of £13,862 6s.

Cost per ton fell from 17/3.86 to 16/11.28 and Revenue rose from 9/0.72 in 1921 to 9/2.16; an all round improvement of 6.02d. per ton.

Repairs and Renewals.—2/4.08 per ton was expended on repairs and renewals, which was an increase of 5.08d. on 1921 figures. This is a heavy item, due partly to the increased cost of skilled labour, costly substitutes due to the engineers' strike, and the starting up of mills for smaller tonnage under amended Regulation 6. The substitution of the Linden Engine at Wiluna, a comprehensive overhaul at Youanmi and Boogardie, and the installation of modern guides at Payne's Find incurred large expenditure.

Low Grade Rebate.—Only 5,822.75 tons were crushed under this heading, on which a rebate of £854 15s. 8d. was allowed. This shows a large falling off compared with the previous 12 months, when 11,534 tons were crushed, with a rebate allowed of £1,595 6s.

Stamp Duty.—The efficiency of the mills has been well maintained. Excluding Wiluna, the 10 stamp mills averaged 3.72 tons per stamp per day, and 5 stamp mills 4.30 tons, against 4.24 and 4.33 respectively in 1921, when Wiluna figures were included in 10 stamp figures.

Fuel Consumption and Costs.—In steam plants a general rise has occurred, due to increased prices for firewood, and probably increased consumption due to more startings up of plants.

Charcoal Producer.—Plants have shown slightly increased costs, whilst wood-producer plants have generally improved and show good results under the conditions worked.

The best cost figures for the different power plants are:—

Steam—Coolgardie, 0.85 pence per H.P.H.
Producer (Charcoal)—Mt. Ida, 0.35 pence per H.P.H.
Producer (Wood)—Ora Banda, 0.22 pence per H.P.H.

TAILING TREATMENT.

Twelve tailings plants were in operation, and treated 24,234 tons at a cost of 9/11.71 and a revenue of 15/8.90 per ton. In 1921 the figures were 19,763 tons for a cost and revenue of 10/0.85 and 17/10.08 respectively. A net profit of £6,998 9s. 2d. was made.

The increased tonnage was due to new vats having been erected at Black Range, Bamboo Creek, Laverton and Coolgardie, enabling accumulations to be treated.

The installation of new vats has been a big tax, coming as it does out of working, and is directly the cause of such high costs.

Repairs and Renewals amounted to £1,329 1s. 8d., or 1s. 1.15d. per ton, as against 9.05d. in 1921 and 6.34d. in 1920.

Extraction.—Details of extraction are shown on Schedule following. The average extraction called for was 79.8 per cent. and the actual recovery was 79.3 per cent. exclusive of slag values. The head value of tailings treated, excluding Wiluna, which appears under a separate heading, was 6.024 dwts., the average residues being 1.216 dwts.

WILUNA SLIME.

Seven thousand four hundred and ninety-two tons of slime were pressed with a head value of 11.359 dwts., a considerable increase in value on 1921. The extraction called for was 80.4 per cent.

Costs for the period are high, due to installation of the Linden engine and consequent break in treatment.

The cost was 11s. 10.56d. per ton and receipts 8s. 5.83d., showing a net loss of £1,271 8s. 1d.

TAILING TREATMENT.

Head and Tail Values and Extraction.

Twelve months ending 31st December, 1922.

Battery.	Tons Treated.	Head Value.	Contents.	Tail Value.	Contents.	Per cent. Extraction.	Shortage.	Surplus.
		dwts. grs.	dwts.	dwts. grs.	dwts.	%	£	£
Bamboo Creek	660	7 6	4,784	1 12	991	79·3	...	187
Black Range	1,320	9 10·5	12,461	1 14·4	2,124	83·04	90	...
Boogardie	2,166	7 1	15,265	1 7·2	2,818	81·5	229	...
Coolgardie	5,864	3 18	22,067	0 18·72	4,754	79·2	10	...
Cue	3,900	5 7	20,646	1 4·73	4,678	77·3	...	97
Laverton...	1,180	6 2·6	7,209	1 0·79	1,206	83·1	...	...
Meekatharra	1,444	8 21·2	12,829	1 15·12	2,357	81·6	317	...
Niagara	1,064	4 20·8	5,179	1 8·5	1,443	72·1	197	...
Norseman	2,220	6 23	15,380	1 17·7	3,880	75	180	...
Warriedar	1,006	19 0	19,140	2 1	2,101	89·7	...	614
Payne's Find	2,856	2 12·68	7,340	0 19·68	2,341	67·5	37	...
Youanme	430	6 20·8	2,952	1 11·2	634	78·5	29	...
	24,110	6·024	145,252	1·216	29,327	79·8	1,089	898
Wiluna	7,492	11·359	85,108	2·216	16,606	80·4	345	...

Synopsis—

Average	Head Value	6·024 dwts.
„	Tail Value	1·216 „
„	Estimated Extraction ...	79·8
„	Actual Extraction ...	79·3

ORE DRESSING PLANTS.

Our tin dressing plant at Greenbushes was idle for the whole 12 months on account of the abnormally low price of tin. Fortunately, as I write, it has appreciated much in value and there should be prospects of our starting up again shortly. The Coolgardie ore dressing plant was not used by customers except in conjunction with our battery for the concentration of a small parcel of sulphide auriferous ore.

Repairs and Renewals.

	Total Expenditure.	Expenditure per ton.
Milling	£3,957 11s. 4d.	.. 2s. 4.08d.
Tailings ..	£1,329 1s. 8d.	.. 1s. 1.15d.
Tin	..	..
Slime	£393 15s. 9d.	.. 1s. 0.60d.
	£5,680 8s. 9d.	

STAFF.

Alterations in the management of our batteries to suit the ever varying conditions of the circuits have been extensively made and have added to the expense of the system.

Manager E. T. Thorley resigned early in the year after 12 years' efficient and loyal service, and the services of two managers had to be dispensed with owing to lack of work.

Manager A. Hepworth was transferred from the Laverton-Leonora circuit to the Murchison, taking charge of Boogardie, Sandstone and Youanmi batteries.

Manager Leipold, consequent on the closing down of Niagara and the leasing of Mt. Sir Samuel Battery, is now in charge of Leonora and Laverton in addition to Yarri and Linden.

Head Office staff has been curtailed by the transfer of Mr. J. Ferguson, our Clerk-in-charge for many years. The loss of the services of this valued and experienced officer has thrown an additional burden on the remaining officers.

Good and cheerful service has been given by your officers, especially those in charge of out-back circuits, where the conditions of living are by no means ideal.

CONCLUSION.

Though the prospects for the coming year are not particularly bright there is cause for satisfaction in the fact that the continual decrease in tonnage milled has stopped, if only temporarily, and the milling cost is slightly better.

The decreased tonnage milled under our low grade rebate charges is evidence that the increased cost of mining, even with the chance of favourable developments, precludes prospectors from working shows under 9 dwts. profitably.

That richer ore is essential is also borne out by the fact that the average value of tailings has increased during 1922 considerably.

My recommendation for a car for the Eastern fields and Murchison was carried into effect, but owing to the strike these cars were not delivered till after the close of the year. I feel sure their acquisition will be very satisfactory and isolated batteries can be given more attention.

The North-West circuit has been disappointing; 20-Mile Sandy receiving no stone and Bamboo Creek and Marble Bar only producing small tonnages, though the yield at the former place is high.

In view of the circumstances the question of running Marble Bar and Bamboo Creek Batteries from Meekatharra will have to be considered.

As mentioned under Tailings Treatment, the cost of renewing cyanide vats has been great, and during the year the decision to replace worn-out vats by ferro-concrete ones has been commenced. A trial vat was made at Boogardie with satisfactory results, and the whole of the plant at Meekatharra has now been so repaired.

The policy of substituting cast iron sleeve guides on our mills in place of the old type wooden ones has been continued and is reflected in the output and repair bills of batteries so altered, though the initial cost, coming as it does out of revenue, swells the milling cost.

D. F. BROWNE,
Inspector of State Batteries.

16th April, 1923.

Schedule 1.

Return showing the number of tons crushed, gold yield, average per ton in shillings, and total value for year ending 31st December, 1922.

Battery.	Tons Crushed.	Gold Yield, Bullion.	Average per ton in shillings.	Total Value.
		ozs.		£
Bamboo Creek ...	705·5	1,209·40	123·42	4,353·84
Black Range ...	842·5	1,124·07	96·06	4,046·65
Boogardie	993·5	1,275·67	92·44	4,592·41
Coolgardie	1,994·5	1,772·89	64·00	6,382·40
Cue	2,835·5	2,926·30	74·30	10,534·68
Laverton	1,338·75	2,305·40	123·98	8,299·44
Leonora	1,152·5	1,564·00	97·70	5,630·40
Linden	218·0	545·20	180·06	1,962·72
Marble Bar	516·5	658·45	91·78	2,370·62
Meekatharra	2,315·5	1,600·05	49·74	5,760·18
Mt. Ida	686·75	443·90	46·52	1,598·04
Mt. Keith	118·0	62·90	38·38	226·44
Niagara	258·0	127·00	35·44	457·20
Norseman	2,033·75	2,537·70	89·84	9,135·72
Ora Banda	2,175·0	2,004·78	66·36	7,217·20
Payne's Find ...	1,994·5	2,780·30	100·36	10,009·08
Peak Hill	1,513·5	950·15	45·20	3,420·54
St. Ives	3,040·0	2,343·74	55·50	8,437·46
Warriedar	961·25	1,321·90	99·00	4,758·84
Wiluna	407·75	351·95	62·14	1,267·02
Yarri	546·75	454·35	59·82	1,635·66
Youanme	1,302·25	452·81	25·02	1,630·11
	27,950·25	28,812·91	74·22	103,726·65
Wiluna Lode ...	7,772·0	3,923·34	36·34	14,124·00
	35,722·25	32,736·25	65·98	117,850·65

Schedule 2.

Return showing the number of tons crushed, gold yield, average per ton, and value since inception to 31st December, 1922.

Battery.	Tons Crushed.	Gold Yield.	Average per ton.	Value.
		ozs.	ozs.	£
Bamboo Creek ...	10,248·75	17,469·86	1·704	62,891·50
Black Range ...	71,638·40	74,367·12	1·038	267,916·96
Boogardie	67,520·40	45,244·60	·670	164,274·74
Coolgardie	116,433·50	76,359·92	·655	274,949·36
Cue	10,823·00	13,601·75	1·256	48,966·29
Darlot	33,210·00	37,637·74	1·133	138,928·25
Laverton	18,659·75	20,132·61	1·078	73,649·12
Leonora	56,006·70	61,901·85	1·105	226,320·98
Linden	19,544·50	22,179·25	1·134	79,845·39
Marble Bar	11,300·25	14,234·00	1·259	51,242·55
Meekatharra	77,286·25	91,596·99	1·185	332,428·55
Mt. Egerton	7,893·25	4,084·86	·517	13,972·32
Mt. Ida	42,752·15	54,452·66	1·273	199,331·75
Mt. Keith	9,787·00	8,618·75	·880	31,027·50
Mt. Sir Samuel ...	9,681·25	7,505·97	·775	27,021·48
Mulline	77,008·45	98,573·64	1·280	354,035·25
Niagara	64,866·00	57,770·81	·890	210,163·11
Norseman	63,504·70	70,508·81	1·110	257,014·18
Ora Banda	20,099·00	10,132·78	·504	36,477·96
Payne's Find ...	25,845·25	32,041·11	1·239	115,347·99
Peak Hill	21,459·80	21,825·82	1·017	79,744·19
Siberia	15,699·00	16,541·24	1·054	59,473·79
20-Mile Sandy ...	12,184·15	19,055·77	1·563	68,930·34
St. Ives	3,269·00	2,620·89	·801	9,435·20
Tuckanarra	15,476·85	21,276·06	1·374	78,217·53
Warriedar	5,624·75	3,355·85	·596	12,081·06
Wiluna	56,289·25	30,640·94	·544	110,452·56
Yarri	47,553·00	31,693·26	·666	114,095·56
Youanme	29,336·75	9,932·04	·338	35,755·33
Batteries closed ...	259,629·34	270,313·31	1·041	981,998·47
	1,280,630·44	1,245,670·26	·972	4,515,989·26
Wiluna Lode ...	73,374·25	30,538·79	·416	110,262·44
	1,354,004·69	1,276,209·05	·942	4,626,251·70

Tin Plants.

—	Tons.	Tons Black Tin.
Greenbushes	791·00	3·566
Plants closed	79,276·75	969·276
	80,067·75	972·842

Milling.

	Tons.		ozs.
Up to 1901 (3 yrs.)	68,791	...	75,553
1902	39,517	...	57,255
1903	49,233	...	58,305
1904	71,616	...	78,309
1905	85,018	...	92,327
1906	95,831	...	94,187
1907	95,280	...	97,962
1908	95,624	...	89,875
1909	94,218	...	83,127
1910	89,278	...	80,074
1911	59,373	...	56,265
1912	56,636	...	53,868
1913	60,573	...	52,515
1914	56,570	...	45,641
1915	49,595	...	39,095
1916	47,330	...	31,734
1917	42,947	...	38,015
1918	39,329	...	33,523
1919	40,291	...	27,027
1920	46,494	...	28,450
1921	34,761	...	24,035
1922	35,722	...	32,736

Sand Treatment.

	Tons.
Up to 1902	29,255
1903	33,369
1904	42,559
1905	54,420
1906	60,422
1907	63,778
1908	62,081
1909	61,265
1910	43,915
1911	27,444
1912	18,599
1913	18,300
1914	6,219

Tailing Treatment.

	Tons.
1913	13,078
1914	32,723
1915	31,887
1916	34,725
1917	24,890
1918	24,364
1919	15,764
1920	15,437
1921	19,763
1922	24,234

Slimes Treatment.

	Tons.
Up to 1904	691
1905	7,028
1906	...
1907	8,220
1908	5,818
1909	16,848
1910	28,819
1911	20,821
1912	8,085
1913	6,089
1914	6,246
1915	3,454
1916	15,536
1917	13,086
1918	11,892
1919	12,780
1920	11,525
1921	7,370
1922	7,492

Schedule 3.

Tailing Treatment, 1922.

Battery.	Tons.	Yield.	Value.
		Fine ozs.	£
Bamboo Creek	660	233·62	992·20
Black Range	1,320	495·76	2,105·50
Boogardie	2,166	574·12	2,438·33
Coolgardie	5,864	810·37	3,602·61
Cue	3,900	831·80	3,532·73
Laverton	1,180	271·27	1,152·12
Meekatharra	1,444	347·10	1,917·47
Niagara	1,064	141·95	602·86
Norseman	2,220	519·12	2,240·37
Payne's Find	2,856	221·41	1,027·10
Warriedar	1,130	1,379·42	5,858·37
Youanme	430	99·05	420·69
	24,234	5,924·99	25,890·35

Slime Treatment.

Battery.	Tons.	Yield.	Value.
		Fine ozs.	£
Wiluna	7,492	3,364·08	14,284·01

Schedule 4.

Sand and Tailing Treatment since Inception to 31st December, 1922.

Battery.	Tons.	Yield.	Value.
		Fine ozs.	£
Bamboo Creek	8,038	2,883·01	12,258·76
Black Range	47,068	13,646·89	57,683·92
Boogardie	51,678	13,620·47	57,266·92
Burtville	16,788·75	5,464·13	22,793·76
Coolgardie	67,722	10,182·52	43,089·89
Cue	8,370	1,900·48	8,058·77
Laverton	16,176	2,838·25	11,860·60
Leonora	37,139·5	9,056·71	37,699·89
Linden	16,917	5,619·01	23,883·63
Meekatharra	51,144	10,202·51	43,163·25
Mt. Keith	7,053	816·70	3,468·72
Mt. Sir Samuel	5,988	1,367·56	5,809·39
Mulline	44,794·5	12,261·27	49,863·24
Mulwarrie	23,809·25	4,675·53	19,220·11
Niagara	44,828	6,839·37	28,471·79
Norseman	47,359·5	10,790·47	45,101·00
Ora Banda	8,372	1,734·05	7,366·65
Payne's Find	17,623	1,947·79	8,360·58
Quinn's	7,486	686·56	2,916·43
Sandy Creek	11,496·25	3,512·53	14,639·07
Siberia	5,550	1,201·56	5,105·29
Warriedar	4,506	2,493·79	10,591·17
Wiluna	17,852	7,930·79	33,590·87
Yarri	44,180	4,197·75	17,567·84
Youanme	12,335	3,220·48	13,676·56
Batteries closed	134,971·5	25,074·55	103,894·38
	759,245·25	164,164·73	687,402·39

Residue Treatment from Inception to 31st December, 1922.

Battery.	Tons.	Yield.	Value.
		Fine ozs.	£
Linden	670	95·14	349·34
Menzies	24,270	1,579·26	6,679·01
Mulwarrie	4,618	546·85	2,325·02
	29,558	2,221·25	9,353·37

Slime Treatment from Inception to 31st December, 1922.

Battery.	Tons.	Yield.	Value.
		Fine ozs.	£
Mulwarrie	4,733·5	751·79	3,194·22
Wiluna	83,321·0	31,472·08	133,653·29
Slimes Plants closed ...	111,196·25	25,088·87	102,110·62
	199,250·75	57,312·74	238,958·13

Tin Residue Treatment from Inception to 31st December, 1922.

	Tons.
Greenbushes, Bunbury End	315
Greenbushes, Salt Water Gully	1,444
	1,759

Schedule 5.

Return showing Number of Parcels treated and Tons crushed at State Batteries for Year 1922.

Number of Parcels crushed.	Battery.	Tons.	Yield by Amalgamation. Bullion.	Yield by Amalgamation. Fine Gold.	Gross Contents of Tailings. Fine Gold.	Total Contents of Ore. Fine Gold.	Average per ton. Fine Gold.	Gross Value of Ore per ton.
			ozs.	ozs.	ozs.	ozs.	dwts. grs.	£ s. d.
8	Bamboo Creek	705·5	1,209·40	1,025·16	316·31	1,341·47	38 1	8 1 8
16	Black Range	842·5	1,124·07	952·82	422·58	1,375·40	32 15	6 18 8
43	Boogardie	993·5	1,275·67	1,081·33	384·70	1,466·03	29 12	6 5 5
57	Coolgardie	1,994·5	1,772·90	1,502·81	328·79	1,831·60	18 8	3 17 11
85	Cue	2,835·5	2,926·30	2,480·49	465·63	2,946·12	20 18	4 8 2
25	Laverton	1,338·75	2,305·40	1,954·18	467·93	2,422·11	36 4	7 13 8
37	Leonora	1,152·5	1,564·00	1,325·78	426·53	1,752·26	30 9	6 9 1
7	Linden	218·0	545·20	462·14	148·41	610·55	56 0	11 18 0
11	Marble Bar	516·5	658·45	558·14	101·82	659·96	25 13	5 8 7
49	Meekatharra	2,315·5	1,600·05	1,356·29	622·09	1,978·38	17 2	3 12 7
13	Mt. Ida	686·75	443·90	376·27	410·43	786·70	22 21	4 17 3
3	Mt. Keith	118·0	62·90	53·31	11·16	64·47	10 22	2 6 5
9	Niagara	258·0	127·00	107·65	58·54	166·19	12 21	2 14 9
38	Norseman	2,033·75	2,537·70	2,151·10	628·68	2,779·78	27 8	5 16 2
35	Ora Banda	2,175·0	2,004·78	1,699·36	542·16	2,241·52	20 14	4 7 6
43	Payne's Find	1,994·5	2,780·80	2,356·74	188·12	2,544·86	25 12	5 8 4
22	Peak Hill	1,513·5	950·15	805·40	310·68	1,116·08	14 18	3 2 8
36	St. Ives	3,055·0	2,343·75	1,986·69	775·67	2,762·36	18 2	3 16 10
15	Warriedar	881·25	1,321·90	1,120·51	1,152·07	2,272·58	51 13	10 19 0
13	Wiluna	407·75	361·95	298·33	141·24	439·57	21 13	4 11 7
20	Yarri	546·75	454·35	385·13	117·83	502·96	18 9	3 18 1
23	Youanme	1,302·25	452·82	383·83	284·50	668·33	10 6	2 3 7
608		27,885·25	28,812·94	24,423·41	8,305·87	32,729·28	23 11	4 19 8
39	Wiluna Lode	7,772·0	No amalgamation		4,815·27	4,815·27	12 9	2 12 7
647		35,657·25						
	Add tonnage not completed, 31st December, 1922	80·0						
		35,737·25						
	Less tonnage not completed, 31st December, 1921	15·0						
		35,722·25						

Schedule 6.

Expenditure from Consolidated Revenue Vote and Loan Expenditure Funds on Erection of State Batteries, for Year ended 31st December, 1922, and Totals since Inception.

Battery.	From Revenue.	From Loan.	Total.
	£ s. d.	£ s. d.	£ s. d.
St. Ives—Erection of 5-head Battery	...	255 13 4	255 13 4
Payne's Find—Reconstruction of Tailing Treatment	...	13 17 0	13 17 0
Segregation of Machinery ...	...	77 17 2	77 17 2
Dismantling Quinn's Battery...	...	135 8 10	135 8 10
St. Ives—Cyanide Plant ...	...	473 10 7	473 10 7
Norseman—Frenier Pump ...	...	117 1 5	117 1 5
	...	1,073 8 4	1,073 8 4
Erection of State Batteries—Expenditure to 31st December, 1907	91,981 1 8		
Loan Expenditure to 31st December, 1921	...	302,090 6 5	394,071 8 1
Totals	91,981 1 8	303,163 14 9	395,144 16 5

Schedule 7.

Direct Purchase of Tailing, 1922.

Battery.	Tons.	Amount.
		£ s. d.
Bamboo Creek	492·25	320 6 10
Black Range	593·0	1,332 6 2
Boogardie	863·75	904 6 0
Coolgardie	623·5	526 19 0
Cue	1,023·75	590 10 10
Laverton	760·25	515 15 9
Leonora	669·25	1,034 13 3
Linden	222·5	493 8 8
Meekatharra	1,393·25	1,307 4 3
Mt. Keith	16·25	2 8 9
Mt. Sir Samuel	8·5	2 19 10
Mulline	...	21 14 7
Niagara	240·5	112 8 3
Norseman	1,476·0	1,382 4 0
Ora Banda	858·5	926 4 5
Payne's Find	200·75	35 16 4
St. Ives	1,737·75	608 11 0
Warriedar	524·0	3,303 11 6
Wiluna (Lode)	8,119·0	11,478 16 7
Yarri	441·0	192 8 10
Youanme	635·25	246 18 7
	20,899·0	25,339 13 5

Schedule 7a.

Return showing Tailing payable and unpayable and Gross Contents for 1922.

Battery.	Tailing payable.		Tailing unpayable.		Totals.	
	Tons.	Gross Contents.	Tons.	Gross Contents.	Tons.	Gross Contents.
		ozs. dwts. grs.		ozs. dwts. grs.		ozs. dwts. grs.
Bamboo Creek	546·75	313 15 8	18·0	2 11 0	564·75	316 6 8
Black Range	572·75	405 3 1	145·25	17 8 14	718·0	422 11 15
Boolgardie	771·75	373 12 18	99·5	11 1 9	871·25	384 14 3
Coolgardie	712·0	252 15 22	777·25	75 19 23	1,489·25	328 15 21
Cue	1,276·5	384 12 12	945·0	81 0 6	2,221·5	465 12 18
Laverton	1,031·5	449 11 18	146·75	18 6 21	1,178·25	467 18 15
Leonora	749·0	402 4 2	201·25	24 6 14	950·25	426 10 16
Linden	159·0	146 1 10	24·5	2 6 23	183·5	148 8 9
Marble Bar	369·75	97 2 1	42·75	4 14 12	412·5	101 16 13
Meekatharra	1,586·5	602 19 0	266·5	19 2 20	1,853·0	622 1 20
Mt. Ida	537·0	408 13 18	12·5	1 14 23	549·5	410 8 17
Mt Keith	16·25	3 3 15	80·0	7 19 12	96·25	11 3 3
Niagara	192·75	56 18 20	24·0	1 12 0	216·75	58 10 20
Norseman	1,385·25	585 3 18	320·0	43 10 0	1,705·25	628 13 18
Ora Banda	1,046·0	491 8 21	734·0	50 14 7	1,780·0	542 3 4
Payne's Find	132·0	25 16 3	1,464·0	162 6 11	1,596·0	188 2 14
Peak Hill	527·25	263 10 12	673·25	47 3 3	1,200·5	310 13 15
St. Ives	2,122·5	715 13 16	426·5	59 19 13	2,549·0	775 13 5
Warriedar	705·0	1,150 6 19	17·25	1 14 12	722·25	1,152 1 7
Wiluna	326·25	139 8 23	16·25	1 15 21	342·50	141 4 20
Yarri	419·25	113 13 3	37·25	4 3 15	456·5	117 16 18
Youanme	817·5	265 6 15	233·5	19 3 9	1,051·0	284 10 0
	16,002·5	7,647 2 11	6,705·25	658 16 4	22,707·75	8,305 18 15
Wiluna Lode	7,772·0	4,815 5 11	...	...	7,772·0	4,815 5 11
	23,774·5	12,462 7 22	6,705·25	658 16 4	30,479·75	13,121 4 2

Schedule 8.

Statement of Receipts and Expenditure for Year ended 31st December, 1922.

MILLING AND TIN.

Plant.	Tonnage.	Management.	Wages.	Stores.	Total Working Expenditure.	Cost per ton	Repairs and Renewals.	Sundries.	Gross Expenditure.	Cost per ton.	Receipts.	Per ton.	Profit.	Loss.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.
Bamboo Creek	705·5	128 0 4	269 0 0	272 4 5	669 4 9	18 11·66	93 5 1	67 1 4	829 11 2	23 6·19	413 6 0	11 8·59	...	416 5 2
Black Range	842·5	77 7 8	343 7 4	261 18 1	682 13 1	16 2·44	162 17 0	152 19 8	998 9 9	23 8·42	426 14 6	10 1·56	...	571 15 3
Boogardie	993·5	123 18 0	387 1 0	367 12 4	878 11 4	17 8·23	226 8 9	154 4 0	1,259 4 1	25 4·17	512 0 11	10 3·69	...	747 3 2
Coolgardie	1,994·5	184 5 3	443 17 5	652 1 9	1,280 4 5	12 10·03	110 10 7	147 9 9	1,538 4 9	15 5·08	971 3 0	9 8·85	...	567 1 9
Cue	2,835·5	254 11 5	783 6 7	760 3 5	1,798 1 5	12 8·18	114 19 2	273 13 2	2,186 13 9	15 5·07	1,435 9 9	10 1·48	...	751 4 0
Darlot	...	...	...	1 7 2	1 7 2	...	...	...	1 7 2	...	40 1 9	...	38 14 7	...
Laverton	1,338·75	193 19 9	413 9 1	342 11 11	950 0 9	14 2·30	63 6 10	169 8 3	1,182 15 10	17 8·04	590 19 10	8 9·93	...	591 16 0
Leonora	1,152·5	87 9 9	282 0 8	333 17 5	703 7 10	12 2·47	40 17 10	169 14 0	913 19 8	15 10·32	542 19 10	9 5·06	...	370 19 10
Linden	218·0	15 13 10	83 9 2	79 19 0	179 2 0	16 5·16	7 15 8	23 19 0	210 16 8	19 4·10	121 4 10	11 1·46	...	89 11 10
Marble Bar	516·5	140 6 6	193 8 3	212 13 8	546 8 5	21 1·89	348 2 7	70 15 1	965 6 1	37 4·53	310 14 0	12 0·36	...	654 12 1
Meekatharra	2,315·5	199 12 1	628 6 6	499 15 9	1,327·14 4	11 5·61	180 1 11	221 4 3	1,729 0 6	14 11·20	862 18 1	7 5·42	...	866 2 5
Mt. Ida	686·75	208 11 1	264 5 4	101 15 10	574 12 3	16 8·80	24 9 6	41 13 9	640 15 6	18 7·92	370 5 1	10 9·38	...	270 10 5
Mt. Keith	118·0	26 18 3	53 9 9	137 3 5	217 11 5	36 10·51	24 12 9	33 11 1	275 15 3	46 8·88	138 10 2	23 5·71	...	137 5 1
Mt. Sir Samuel	...	25 15 11	38 8 3	35 11 4	99 15 6	...	...	32 3 11	131 19 5	...	135 7 3	...	3 7 10	...
Mulline	...	...	...	65 10 7	65 10 7	...	...	8 6 7	73 17 2	...	162 7 3	...	88 10 1	...
Niagara	258·0	142 8 4	99 15 2	143 3 0	385 6 6	29 10·44	27 10 0	74 17 1	487 13 7	37 9·64	192 11 8	14 11·13	...	295 1 11
Norseman	2,033·75	222 9 10	698 4 10	499 17 7	1,420 12 3	13 11·64	211 8 3	174 7 1	1,806 7 7	17 9·16	1,068 11 10	10 6·09	...	737 15 9
Ora Banda	2,175·0	349 17 11	529 11 6	606 6 2	1,485 15 7	13 7·94	128 17 0	161 5 0	1,775 17 7	16 3·96	940 9 0	8 7·77	...	835 8 7
Payne's Find	1,994·5	175 16 2	624 7 6	568 15 2	1,368 18 10	13 8·71	255 4 2	231 9 1	1,855 12 1	18 7·27	1,046 10 9	10 5·92	...	809 1 4
Peak Hill	1,513·5	119 19 8	414 17 6	312 12 6	847 9 8	11 2·37	382 7 11	169 18 7	1,399 16 2	18 5·95	533 12 4	7 0·60	...	866 3 10
Siberia	...	...	...	7 9 0	7 9 0	...	...	1 10 0	8 19 0	...	3 0 0	...	...	5 19 0
20-Mile Sandy	...	...	100 0 0	33 0 5	133 0 5	...	...	...	133 0 5	...	...	...	...	133 0 5
St. Ives	3,040·0	361 0 1	1,351 6 9	982 4 11	2,694 11 9	17 8·73	82 7 3	318 11 4	3,095 10 4	20 4·36	1,660 17 4	10 11·11	...	1,434 13 0
Tuckanarra	...	...	...	...	...	...	...	...	...	...	11 6 8	...	11 6 8	...
Warriedar	961·25	125 7 7	282 14 0	251 10 9	659 12 4	13 8·68	116 9 5	113 13 5	889 15 2	18 6·14	515 16 0	10 8·78	...	373 19 2
Wiluna	407·75	11 9 1	54 19 0	44 7 10	110 15 11	5 5·20	43 10 9	31 0 6	185 7 2	9 1·10	277 5 8	13 7·20	91 18 6	...
Yarri	546·75	87 9 3	162 1 2	245 7 2	494 17 7	18 1·22	126 19 8	51 4 7	673 1 10	24 7·44	268 19 2	9 10·05	...	404 2 8
Youanme	1,302·25	140 13 9	451 12 4	353 18 2	946 4 3	14 6·38	358 14 3	204 6 4	1,509 4 10	23 2·13	502 9 1	7 8·59	...	1,006 15 9
Yerilla	...	...	...	...	...	...	...	...	...	...	4 2 3	...	4 2 3	...
Burtville	...	...	...	...	...	...	...	...	...	...	18 0 0	...	18 0 0	...
Pinjin	...	...	...	...	...	...	...	...	...	...	4 2 3	...	4 2 3	...
	27,950·25	3,403 1 6	8,952 19 1	8,172 18 9	20,528 19 4	14 8·28	3,130 16 4	3,098 6 10	26,758 2 6	19 1·75	14,081 16 3	10 0·91	260 2 2	12,936 8 5
Wiluna Lode	7,772·0	218 4 0	1,044 1 6	843 7 0	2,105 12 6	5 5·01	826 15 0	589 10 3	3,521 17 9	9 0·74	2,335 18 0	6 0·12	...	1,185 19 9
Greenbushes	...	8 14 2	26 1 1	17 0 5	51 15 8	...	...	5 12 6	57 8 2	...	2 0 0	...	...	55 8 2
	35,722·25	3,629 19 8	10,023 1 8	9,033 6 2	22,686 7 6	12 8·41	3,957 11 4	3,693 9 7	30,337 8 5	16 11·80	16,419 14 3	9 2·80	260 2 2	14,177 16 4

Schedule 9.

Statement of Receipts and Expenditure for Year ended 31st December, 1922.

TAILING AND SLIME.

Plant.	Tonnage.	Management.	Wages.	Assays.	Stores.	Total Working Expenditure.	Cost per ton.	Repairs and Renewals.	Sundries.	Gross Expenditure.	Cost per ton.	Receipts.	Per ton.	Profit.	Loss.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.
Bamboo Creek ...	660	178 9 8	159 0 0	11 11 8	112 18 5	461 19 9	13 11·99	394 13 10	75 17 9	932 11 4	28 3·09	592 2 2	17 11·30	...	340 9 2
Black Range ...	1,320	111 8 6	269 15 4	23 6 5	136 17 7	541 7 10	8 2·42	122 5 4	94 2 5	757 15 7	11 5·77	600 19 11	9 1·27	...	156 15 8
Boogardie	2,166	166 10 7	385 8 1	47 8 1	278 14 6	878 1 3	8 1·29	90 0 10	141 8 9	1,109 10 10	10 2·92	1,144 17 7	10 6·86	35 6 9	...
Coolgardie	5,864	225 0 11	975 1 11	135 16 3	364 4 7	1,700 3 8	5 9·57	19 16 0	299 1 1	2,019 0 9	6 10·63	2,740 4 9	9 4·15	721 4 0	...
Cue	3,900	154 15 3	688 1 5	60 5 4	359 14 6	1,262 16 6	6 5·73	7 0 0	261 18 6	1,531 15 0	7 10·24	2,433 13 10	12 5·76	901 18 10	...
Laverton	1,180	70 12 11	191 13 6	24 5 3	117 15 6	404 7 2	6 10·24	173 19 1	68 18 11	647 5 2	10 11·64	550 1 8	9 3·88	...	97 3 6
Leonora	...	33 12 10	...	...	...	33 12 10	...	326 5 5	...	359 18 3	...	...	...	...	359 18 3
Meekatharra... ...	1,444	89 14 3	246 18 0	17 11 6	170 15 1	524 18 10	7 3·24	85 15 7	103 4 6	713 18 11	9 11·85	730 17 2	10 1·46	16 18 3	...
Niagara	1,064	126 0 5	198 5 6	15 0 8	185 3 5	524 10 0	9 10·29	20 5 3	55 12 10	600 8 1	11 3·43	341 14 10	6 5·06	...	258 13 3
Norseman	2,220	116 15 4	427 8 6	65 0 5	296 11 0	905 15 3	8 1·92	29 8 5	180 9 3	1,115 12 11	10 0·60	939 14 9	8 5·59	...	175 18 2
Payne's Find ...	2,856	172 18 10	387 10 10	82 18 9	359 17 11	1,003 6 4	7 0·31	0 8 8	221 6 9	1,225 1 9	8 6·93	946 18 10	6 7·58	...	278 2 11
St. Ives	...	...	...	2 17 1	...	2 17 1	...	...	...	2 17 1	...	...	...	...	2 17 1
Warriedar	1,130	102 9 2	224 4 10	39 6 5	291 14 5	657 14 10	11 7·69	...	144 16 8	802 11 6	14 2·44	1,614 18 0	28 6·98	812 6 6	...
Yarri	...	...	...	2 13 3	...	2 13 3	...	...	...	2 13 3	...	...	...	...	2 13 3
Youanme	430	12 18 10	55 16 6	26 2 11	77 0 2	171 18 5	7 11·95	59 3 3	35 19 10	267 1 6	12 5·06	440 7 7	20 5·78	173 6 1	...
Transferred from Revenue Suspense Account	...	...	...	...	...	...	...	...	...	...	...	6,000 0 0	...	6,000 0 0	...
	24,234	1,561 7 6	4,209 4 5	554 4 0	2,751 7 1	9,076 3 0	7 5·88	1,329 1 8	1,682 17 3	12,088 1 11	9 11·71	19,076 11 1	15 8·90	8,661 0 5	1,672 11 3
Wiluna Slimes ...	7,492	219 12 9	1,609 4 9	...	1,595 2 9	3,424 0 3	9 1·68	393 15 9	632 9 0	4,450 5 0	11 10·56	3,178 16 11	8 5·83	...	1,271 8 1
	31,726	1,781 0 3	5,818 9 2	554 4 0	4,346 9 10	12,500 3 3	7 10·56	1,722 17 5	2,315 6 3	16,538 6 11	10 5·11	22,255 8 0	14 0·26	8,661 0 5	2,943 19 4

Schedule 10.

Balance Sheet to 31st December, 1922.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Capital Expenditure—			By Batteries, Tailing and Slime Plants ..	395,144 16 5	
From General Loan Fund	303,163 14 9		„ Less Depreciation	321,354 15 11	
From Cons. Revenue ..	91,981 1 8				73,790 0 6
		395,144 16 5	By Stores		12,649 14 9
To Treasury		131,462 15 11	„ Sundry Debtors		9,499 1 4
„ Interest and Sinking Fund		308,284 16 1	„ Profit & Loss a/c		742,146 8 6
„ Sundry Creditors		3,192 16 8			
		£838,085 5 1			£838,085 5 1

Profit and Loss Account.

	£ s. d.		£ s. d.
To Expenditure—		By Revenue	1,230,853 8 7
Head Office and all Batteries ..	1,343,360 5 1	„ Loss on Working carried down ..	112,506 16 6
To loss on Working brought down ..	112,506 16 6		£1,343,360 5 1
„ Interest at 3½ per cent. and Sinking Fund at 1¼ per cent. on Capital Expenditure	308,284 16 1		
„ Depreciation	321,354 15 11		
	£742,146 8 6	By Gross Loss	£742,146 8 6

Schedule 11.

Working Profit and Loss for Year ending 31st December, 1922.

	£ s. d.		£ s. d.
To Working Expenditure—		By Revenue—	
„ Batteries & Tin Plants	30,337 8 5	„ Batteries & Tin Plants	16,419 14 3
„ Tailing & Slime	16,538 6 11	„ Tailing & Slime	22,255 8 0
		„ Loss on Year's Operations	8,200 13 1
	£46,875 15 4		£46,875 15 4

Schedule 12.

State Battery Statistics from Inception to 31st December, 1922.

Year.	Milling.				Sand and Tailing Treatment.				Slime Treatment.				Tin Treatment.				Gross Loss. ‡
	Tons.	Expenditure per ton.	Revenue per ton.	Loss.	Tons.	Expenditure per ton.	Revenue per ton.	Profit.	Tons.	Expenditure per ton.	Revenue per ton.	Loss.	Tons.	Expenditure per ton.	Revenue per ton.	Loss.	
		s. d.	s. d.	£		s. d.	s. d.	£		s. d.	s. d.	£		s. d.	s. d.	£	£
1899 ...	18,806	...	...	2,827	...	...	...	...	...	...	...	...	...	...	...	...	2,827
1900 ...	22,675	22 10·1	17 4·5	7,611	...	...	...	...	...	...	...	...	...	...	...	...	7,611
1901 ...	26,775	18 0·0	16 6·0	1,983	9,534	16 9	...	1,337	...	...	...	...	...	...	...	...	646
1902 ...	39,516	14 8·6	14 8·2	169	9,721	22 3	...	724	...	...	...	...	1,170	12 2	...	286	†269
1903 ...	49,233	13 6·8	12 10·6	1,250	33,369	7 7	...	1,442	...	...	...	...	2,009	8 2	...	153	†2,539
1904 ...	71,616	14 4·4	12 6·5	6,423	43,251	7 10	...	1,448	...	...	...	...	2,337	8 2	...	165	5,141
1905 ...	85,018	12 4·0	12 2·5	957	54,420	7 3	9 8·5	6,689	7,028	12 1	...	410	3,697	5 8	5 0·3	324	†3,342
1906 ...	95,831	12 2·0	11 3·8	4,076	65,159	7 4	9 2·1	5,549	4,737	11 8	12 1·1	†2,254	11,428	4 2	4 3·3	†156	†2,880
1907 ...	95,280	12 6·0	11 4·8	8,724	64,514	6 8·7	9 2·8	6,474	8,220	8 7·6	13 5·5	†1,983	10,496	4 4·4	4 8·8	†191	1,688
1908 ...	95,628	12 1·9	9 3·6	13,669	62,272	6 4·7	8 11·0	8,017	5,818	12 0·9	11 8·0	120	5,573	4 5·2	3 6·3	254	7,278
1909 ...	94,218	11 1·7	9 6·6	7,568	61,032	6 5·8	8 9·7	7,096	16,848	10 0·7	9 6·7	423	5,043	4 8·2	3 7·5	267	1,965
1910 ...	89,278	11 3·3	9 6·6	7,709	43,391	6 2·9	8 6·1	4,903	28,600	8 9·1	9 11·5	†1,723	3,769	5 5·5	3 4·1	401	2,365
1911 ...	59,373	12 6·9	9 10·3	8,058	27,362	6 5·9	8 9·7	3,173	28,183	10 10·5	9 5·3	1,666	6,061	4 0·3	3 4·9	188	7,490
1912 ...	56,636	12 9·2	9 8·7	8,616	18,600	8 3·5	8 8·6	397	8,085	11 8·6	10 5·2	519	5,330	4 5·1	3 7·6	210	9,786
1913 ...	60,573	12 5·6	9 5·4	9,155	31,378*	7 5·0	9 5·2	3,160	6,089	12 4·1	9 6·1	862	8,032	5 5·1	4 1·7	513	7,711
1914 ...	56,570	12 6·8	9 2·9	9,413	38,942	6 6·5	8 2·2	3,202	6,246	10 10·2	9 0·0	578	3,340	7 10·6	4 6·6	557	7,418
1915 ...	49,595	11 10·7	9 2·6	6,642	31,887	6 9·3	8 0·6	2,041	3,454	12 6·2	9 10·1	462	1,767	8 1·2	3 11·7	364	5,415
1916 ...	47,304	12 6·7	9 1·9	8,018	35,665	7 1·7	8 7·3	2,510	15,536	8 8·2	8 7·3	56	943	11 11·6	4 0·3	374	5,982
1917 ...	42,947	12 1·5	9 0·0	6,714	24,674	8 3·3	8 10·3	727	15,408	9 8·5	8 3·1	1,104	1,118	11 2·9	3 8·2	422	7,554
1918 ...	39,330	13 2·9	8 11·4	8,442	24,364	8 3·7	9 5·7	1,420	11,892	9 4·8	7 9·0	982	5,985	4 10·2	3 0·2	558	8,650
1919 ...	40,290¾	12 4·1	8 2·0	8,426	15,764	9 2·4	9 3·8	91	12,780	9 1·1	7 4·6	1,089	1,204	10 0·9	3 11·2	369	9,925
1920 ...	46,494¼	12 6·4	7 11·5	8,954	15,437	9 0·4	13 4·1	3,325	11,525	9 11·2	8 8·4	713	737	8 11·2	9 3·3	†12	6,363
1921 ...	34,761	17 3·8	9 0 7	14,361	19,763	10 0·8	17 10·0	7,677	7,370	10 11·6	8 5·7	918	54	82 0·5	8 0·4	200	7,802
1922 ...	35,722	16 11·8	9 2·3	13,862	24,234	9 11·7	15 8·9	6,988	7,492	11 10·5	8 5·8	1,271	...	...	...	55	8,200

* Tailing Treatment commenced 1913. † Profit. ‡ Details of Ore dressing and Residue Treatment not shown, but financial result included in the figure of this column.

DIVISION IV.

ANNUAL PROGRESS REPORT

OF THE

GEOLOGICAL SURVEY

FOR THE

YEAR 1922.

TABLE OF CONTENTS.

Annual Progress Report of the Geological Survey for the Year 1922.

OWING to important alterations in the constitution of the Geological Survey, its operations in certain directions have been even more restricted than had previously been referred to in the report upon the work carried out during the year 1921.

THE STAFF.

The work of the year has been carried out by six classified officers. An amalgamation was effected in the month of March of the Geological Survey Laboratory with that of the Government Analyst, the combined institution being designated the Government Chemical Laboratory, and placed in charge of Dr. E. S. Simpson, and its direct connection with the Geological Survey severed. In connection with the amalgamation of the two laboratories it ought not to be lost sight of that mineralogy is part of the functions of the Geological Survey. The Mineralogist should of necessity be an officer of the Geological Survey because (a) mineralogical work is a necessary part of its functions, (b) the geological field staff need constantly to refer to the mineralogist and *vice versa* in carrying out their respective duties, and (c) the mineralogist must be in constant touch with the Geological Survey museum and collections.

Mr. R. A. Farquharson, the Petrologist, having been appointed temporarily as Geologist to the Somaliland Protectorate, relinquished his duties in the Geological Survey on the 30th of October. The Government, in taking steps to fill the position thus rendered vacant, decided to have the petrological work carried out by Mr. C. O. G. Larcombe at the School of Mines, Kalgoorlie, where he occupies the position of Lecturer in Geology. The departmental arrangements made by the Public Service Commissioner were that the petrological work required by the Geological Survey was to be performed in Mr. Larcombe's spare time, without any addition being made to the staff of the school. This officer formally assumed his duties as Acting Petrologist on the 16th of November; it remains, however, to be seen to what extent this arrangement proves workable, for there are obviously very serious disadvantages in having this important part of the Survey's activities carried out anywhere else than at head-quarters.

Mr. T. Blatchford having been placed at the disposal of the Freney Oil Company for work in the Kimberley Division, arrangements were made whereby the field staff could be kept up to its normal strength during his absence by the appointment of Mr. A. G. D. Esson, M.A., a graduate of the University of Aberdeen.

ADMINISTRATIVE AND OTHER DUTIES OF THE GOVERNMENT GEOLOGIST.

A very large and ever-increasing portion of my time during the year 1922 was devoted to work in the office and completing the comprehensive descriptive report upon The Gold Deposits of Western Australia which forms Section I. of Chapter II.—"The Economic Geology and Mineral Resources of Western Australia"—of The Mining Handbook. In the account of the gold deposits no attempt has, for obvious reasons, been made to give any details of mining or metallurgical processes. The report has been put into type and copies should shortly be available for distribution.

Owing to the numerous calls on my time very little opportunity was afforded of personal investigations in the field during the year, the only field work it was possible to undertake being an inspection of the geological survey work carried out by Mr. Feldtmann at Youanmi on the East Murchison Goldfield. This inspection having been completed, a traverse was made between Youanmi and Merredin along the Rabbit-proof Fence, with the object of enlarging my knowledge of the geology of the State and filling in certain blanks existing on the geological map. This work occupied my time between the 15th of November and the 19th December.

During the year an effort was made by means of public lectures to give a more or less popular representation of the results of some of the activities of the Survey and the bearing of geological facts upon matters attracting a measure of public attention.

These addresses included:—

(a) The Distribution of Petroliferous Deposits in relation to Earth Movements and their Political and Commercial Significance.

In this address attention was directed to the facts that in the solid, liquid, and gaseous forms petroliferous deposits were the most widely distributed of all substances, though their occurrence in exploitable quantities was restricted; the world's supply of rock oil was limited, and a natural reservoir of petroleum having been depleted it could not be replenished; and the discovery of any fresh oil field depended on accurate deductions resulting from detailed geological surveys, coupled with well directed investigations into all the conditions which rendered the formation, migration, retention and accessibility of petroliferous deposits possible.

(b) The Mineral Wealth of the Kimberley and North-West Divisions.

During the course of this address it was pointed out, *inter alia*, how mineral deposits have at all times played and are still destined to play a very important part in the economy and industrial development of the country. Emphasis was also laid upon the fact that no country was self-sufficient in its supply of all minerals, and owing to this important and often over-looked reason that mineral commodities entered so largely into international trade. Assuming a food supply, modern industry was more fully dependent upon mineral deposits than upon any other natural group. When viewed in the light of its structural geology, coupled with the variety of its mineral deposits, these northern divisions rank amongst the most remarkable of the mineral regions on the Australian Continent. Their actual and potential mineral wealth deserves to rank amongst the most important of its industries, whilst their fertile and

healthy uplands are capable of supporting a considerable population on their agricultural and pastoral merits alone. Over £17,000,000 worth of mineral products were won from the portion of the State referred to; these served not only as the basis of manufacturing industries, but also for purposes of exchange. Whenever mining settles down to a steady industry as distinct from a feverish quest for rapid wealth there will probably not be very much necessity for looking beyond this portion of Western Australia for more than a very few mineral products.

(c) The Later Mesozoic and Tertiary Geological History of the Southern Portion of Western Australia and some of its Problems.

This address, which was delivered to the members of the University Natural History Society, dealt with the geological features and history of that portion of Western Australia which, owing to the valuable and varied nature of its mineral deposits as well as its animal and vegetable life, has long aroused the keenest interest amongst geologists and naturalists of all nations. An endeavour was made in the course of the lecture, by taking the southern portion of Western Australia as an example, to show that geological science, one of the very best grounds for training the faculty of observation and the power of reasoning, was essentially a history of the earth, and how such was of importance because the events in its history shaped its subsequent career, and how a thorough investigation of the rocky framework was a matter of considerable importance in a State such as Western Australia where science, the inspiring muse of industry, was slowly but surely making its influence felt. Especial attention was directed to the volcanic activity which took place in Miocene Tertiary times, the evidences of which are to be found in the western portion of the South-West Division. The basic lavas, with their original horizontality of bedding but slightly disturbed, covering an area of about 3,000 square miles, remain as a fragment of the enormous flows which spread over the extreme south-west portion of Western Australia and probably over a much larger portion now buried under the Indian Ocean and the sea along the South Coast. Until these lava flows have been dissected by the weather there is very little visible evidence of the masses of basic rocks which almost certainly lie below the surface and constitute the magma from which the basalts emanated. Dykes have been noticed traversing the Tertiary sediments near Albany, and it is likely that some of those scattered veins and dykes of very fresh dolerite occurring at Norseman and elsewhere may represent the intrusive phase of these eruptions. The newest igneous rock on the Dundas Goldfield is the remarkably fresh intrusive norite which has been followed across country for a distance of at least 12 miles in an east and west direction. The Norseman norite and its congeners may possibly belong to the same period of Tertiary igneous activity as the basaltic lavas. A suggestive feature in connection with this norite dyke is that its southern margin on the western side of Lake Cowan has changed towards a peridotite. In the country at the northern end of Lake Cowan there are olivine-dolerite dykes in a remarkably good state of preservation, which may also represent smaller satellitic intrusions related to the Norseman norite, which has been found to extend to the northern end of the Frazer's Range. Serpentines, the alteration products of peridotites, are of frequent occurrence in the country surrounding the area occupied by the Miocene sedimentaries; the serpentines contain veins and masses of dazzling white magnesite and chalcedonic silica. It has already been pointed out that one of the outstanding features in the geology of Western Australia is the great similarity both in structure and constitution to that of India and the countries bordering the Indian Ocean, and it is quite possible that the suggested connection between the Western Australian Tertiary basaltic lavas and those olivine-dolerite dykes and masses of serpentinised magnesite-bearing peridotites may find their parallel in the ultra-basic relatives of those basic lavas which constitute such an important feature in Indian geology. In India, besides those great lava flows, known collectively as the Deccan Traps, there are other intrusive and extrusive basic and ultra-basic rocks of late Tertiary age, some of which now remain as conspicuous masses of serpentine containing magnesite and the valuable mineral jade.

FIELD WORK.

The attached table shows the distribution of the field work during the year and the names of the officers, together with the different districts in which they were engaged:—

Table showing the Distribution of Field Work during the Year 1922.

Goldfield or Land Division.	F. R. Feldtmann.		A. G. D. Esson.	
	No. of days in the field.	Percentage of working days.	No. of days in the field.	Percentage of working days.
South-West Division	...	...	43	14·1
Yalgoo Goldfield	...	...	102	33·4
East Murchison Goldfield	201	55·0	46	15·1
Total	201	55·0	191	62·6*

Mr. T. Blatchford, Assistant Geologist, having been employed as geologist to the Freney Oil Exploration Company, was not available for departmental geological survey work, neither was Mr. R. C. Wilson, Field Geologist, who was deputed to act as Assistant to the State Mining Engineer, a position for which his qualifications and subsequent experience in active practical mining operations fitted him.

F. R. Feldtmann, Field Geologist.

The early portion of the year up to the 18th of May was devoted by Mr. Feldtmann to multifarious office work connected with the report on the mining centre of Gibraltar on the Coolgardie Goldfield, which, *inter alia*, included the preparation of the geological maps, underground plans, and sections in illustration of the text. The period intervening between the 25th of May and the 10th of December was spent in a detailed geological examination and survey of the gold deposits and their surroundings of the mining centre of Youanmi, on the East Murchison Goldfield. Mr. Feldtmann spent 201 days in the field, all of which were in the East Murchison Goldfield.

A. G. D. Esson, M.A., Temporary Field Geologist.

Mr. Esson joined the staff of the Geological Survey of Western Australia early in the year and commenced duty on the 2nd of March as Temporary Field Geologist. During his term of service in 1922 Mr. Esson was engaged in examining and reporting upon various districts throughout the State, viz.:—

1. Alluvium and laterite in the vicinity of the Helena River.

* Represents percentage of a possible 305 working days, Mr. Esson having been appointed on 2nd of March, 1922.

2. An investigation into the basic dykes, Wongong Brook Weir Site.
3. Field work at Melville (Noongal), Yalgoo, and Mugga Mugga, Yalgoo Goldfields.

On 20th July Mr. Esson proceeded to Yalgoo to await my arrival, during which time an examination in a broad and general way of the country in the vicinity of Yalgoo was made.

Acting upon instructions Mr. Esson proceeded to Noongal (Melville), 14 miles north of Yalgoo, for the purpose of completing the work and filling in the blanks on the maps begun by Mr. E. de C. Clarke, late Field Geologist in the Geological Survey of Western Australia, and referred to in the Annual Report for the year 1919. On 27th October, in accordance with instructions, Mr. Esson left Melville for Youanmi, where he collaborated with Mr. Feldtmann in his work at that centre. During his stay at Youanmi a preliminary reconnaissance was made of the country south of Youanmi to Curran's, which lies about 14 miles distant. In the main, the country is greenstone intruded by granite and obscured by alluvium. In some of the shafts at Curran's shearing has taken place and, broadly, the geology is very similar to that at Youanmi. Probably they both form part of the same belt of disturbance. On 1st December Mr. Esson left Youanmi in the company of the Government Geologist upon a trip by horse from Youanmi to Merredin, going first to the 206-mile post on Rabbit-proof Fence No. 1, thence along the fence southwards to the 49-mile post, and thence to Merredin by Muckinbuddin and Nungarin. Altogether during the year 1922 191 days were spent in the field out of a possible 305 days, *i.e.*, 62.6 per cent. In the interim, whilst at the head office, Mr. Esson was engaged preparing maps and plans and collecting information connected with the various reports, as well as compiling the several reports themselves. In addition he carried out various duties deputed to him.

PRINCIPAL RESULTS OF THE YEAR'S FIELD OPERATIONS.

1.—THE YOUANMI GOLD-MINING CENTRE, EAST MURCHISON GOLDFIELD.

(F. R. Feldtmann.)

Geography.

Location.—The Youanmi gold-mining centre is situated in the Black Range District of the East Murchison Goldfield, approximately 52 miles SSW. of Sandstone, the centre of the district, and about 19 miles E. of No. 1 Rabbit-proof Fence, which forms the western boundary of the goldfield. It is 71 miles (79 miles by road) SE. of Mount Magnet on the Geraldton-Meekatharra Railway. A mail motor-car runs twice a week between Mount Magnet and Youanmi.

The main mining area is situated from three-quarters of a mile E. to a mile N. of the township. Two other small groups of leases, the Commonwealth and Golden Crown, are situated respectively 1½ miles NNW. and about three-quarters of a mile S. of the township.

Topography.—The country north and west of Youanmi is undulating, but the area is one of comparatively low relief, there being no hills of any size near the town. The most conspicuous hill in the district is Trig. or Bald Hill, a conical shaped hill about 5½ miles E. of Youanmi.

West of the town, a succession of small laterite hills and breakaways mark the level of the former plateau. Of these, the nearest and one of the most prominent is an abrupt little hill on the Rifle Range Reserve. North of the town are a number of low ridges, the backbones of which are formed by jaspers.

The chief drainage channel of the centre is a broad ill-defined creek, which runs in a southeasterly direction between the town and the mining area, passing to the south of the Yuanmi Mine, whence it runs slightly south of east.

Geology.

The rocks of this area are much obscured both by weathering and by superficial deposits. In common with most mining centres of the goldfields the auriferous area lies in a belt of greenstones enclosed by granite, the greenstones near the margin being cut by numerous tongues of granite which run in from the main mass.

The full extent of the greenstone belt has not yet been determined, but it is probably more than 20 miles in length, extending for some miles north of Youanmi and beyond Curran's Find, 14 miles south.

The greenstones are separable into three main types including: (a) a very fine-grained schistose rock, representing a fine-grained doleritic epidiorite, now largely chloritised and in places carbonated, which forms the main country rock of the lodes; (b) a medium to coarse-grained epidiorite from a gabbro or coarse dolerite; and (c) a very fine-grained massive amphibolite or epidiorite, with scattered hornblende phenocrysts and occasional small areas of a pegmatitic facies with hornblende crystals up to three inches in length.

But little information is available as to the relative age and relationships of these three types. What appears to be a dyke of the coarser-grained type occurs, however, in the fine-grained schistose rocks in G.M.L. 731B, near the northern end of the main group of leases, both rocks being cut by granite dykes, and it is probable that the fine-grained schistose rocks correspond to the Older Greenstones of Kalgoorlie, the coarser gabbroid rocks to the Younger Greenstones.

The fine-grained massive amphibolites of type (c) may represent a still later doleritic intrusion. They are, however, cut by acid dykes and therefore do not belong to the youngest series of basic dykes found on the goldfields.

The older schistose rocks occupy the eastern portion of the belt. Outcrops of these rocks are, with but few exceptions, completely weathered, and much of the area occupied by them is covered by detrital deposits. The gabbroid rocks appear to occupy a large part of the western portion of the belt; a few outcrops are found to the west of the Cemetery.

The only occurrence observed of the fine-grained massive amphibolites was at a point about a quarter of a mile west of the Anketell telegraph line, and about four miles north of Youanmi, where they form a small, low knoll.

The granite mass east of the mining area is composed of rock differing from the normal biotite granite of the goldfields. Biotite is almost absent, the rock consisting of quartz, felspar—probably a soda-bearing variety—and muscovite. In grain the rock ranges from coarse to fine.

The margin of the granite forming the eastern boundary of the greenstones runs in a general north-northwesterly direction, through the main group of

leases, a little to the east of the lode channels, but is very irregular, and, as stated, numerous tongues run from it into the greenstones. North of the mining area, the boundary, so far as examined—a distance of about four miles—is approximately parallel to, and a short distance east of, the telegraph line to Anketell Siding.

The dykes running from the main granite mass into the greenstones are composed, for the most part, of rock very similar to that of the main mass. In a few, however, biotite is present in fair amounts. The smaller dykes are usually fine in grain, and in some a gneissic structure, probably original, is present.

The strike ranges from northwest to northnorthwest and the dip, as a rule, is southwest at angles ranging from 65 deg. to 75 deg. From their marked parallelism and the very acute angle they make with the margin, the dykes evidently occupy lines of shearing in the greenstones, formed prior to or during the intrusion of those rocks by the granite. The dykes are older than the lodes, but cause a certain amount of deflection and impoverishment in them.

A series of dykes somewhat different from those mentioned occurs in the main workings of the Yuanmi Mine at the Nos. 5 and 7 levels. These are usually of a pinkish or reddish colour and range in texture from fine-grained, almost felsitic, to coarse pegmatitic, with large pink or pale-red orthoclase crystals. Fluorite, in small quantities, and small veins of red and white carbonates are associated with these dykes.

Jaspers are not so well represented in this as in most other centres of the Murchison and East Murchison Goldfields. A number of bars, mostly of no great length, occur along a general line which runs in a northnorthwesterly direction through the Golden Crown and Commonwealth groups of leases, respectively south and northnorthwest of the town, and extends for some miles to the north. In the main group of leases, only a few short bars, mostly striking eastnortheast, occur. A few of these penetrate the granite for a short distance, but most stop short at the margin. Owing to subsequent intense shearing, including that immediately preceding ore deposition, several of these bars are now represented only by a few disconnected short lenses.

In the Commonwealth group, the ore bodies, which appear to be very short, are closely associated with the jaspers, which have evidently influenced the deposition of the gold.

The principal lodes of this centre occur in the greenstone schists as a series of elongated lenses in a comparatively narrow zone of highly sheared rock along the margin of the granite. They strike approximately parallel to, or, if anything, slightly more northerly than the general strike of the margin, but as that is very irregular, run into the granite in places to die out a short distance from the margin. So far, auriferous bodies have been found to occur in the contact zone over a length of about 1¼ miles, but a number have not proved to be payable for any length. The average strike of the lodes is a few degrees west of north; the dip ranges from about 55 deg. W. to vertical.

Auriferous reefs of any size are not common in this area, but numerous small quartz veins of a granitic type and carrying little or no gold are common in the sheared zone, along the granite margin. There are a fair number of buck reefs, mostly in the granite. Most of these strike approximately east, the dip, so far as could be determined, being to the south at a steep angle.

In addition to the older lines of shearing occupied by the granite dykes, jaspers, and lodes, there is evidence of intense shearing at several periods subsequent to gold deposition. Shear zones and planes belonging to several series younger than the lodes occur in the contact zone. These have shattered or faulted the lodes in places, seriously affecting the continuity of the ore shoots.

At least three series of these later shear zones have been recognised in the Yuanmi Mine, namely:—(a) One striking a few degrees east of north and dipping west at angles ranging from about 45 deg. to 55 deg.; (b) One striking approximately parallel to the lodes, but, as a rule, straighter and also steeper, the dip ranging from 64 deg. W. to vertical, and averaging between 70 deg. and 80 deg.—the shear zones of this series are said to be highly carbonated in places and to contain barren sulphides, and in the oxidised zone may easily be mistaken for true lodes; and (c) a third striking approximately N. 60 deg. W. and dipping SW. at about 70 deg.

A large proportion of the shear zones belonging to these series are said to occur in portions of the main workings of the Yuanmi Mine, which were inaccessible during my survey, and the information as to their occurrence was supplied by Mr. L. B. Williams, until recently manager of the Yuanmi Gold Mines Ltd. With the exception of those of group (c), which appear to be confined to a small area at the southern end of G.M.L. 863B, where the workings were inaccessible, my observations in those portions of the mine which were accessible, and along the belt north of the Yuanmi Mine, confirm those of Mr. Williams.

Of the three series (a) appears to be the oldest—it is best represented at the northern end of the Yuanmi Mine. The relative age of (c) is uncertain; Mr. Williams is inclined to regard it as younger than (a), but its relationship to (b) is obscure.

In addition to the above, a number of fault planes, striking approximately N. 30°—40° W. and dipping southwest at a shallow angle, affecting the granite dykes and quartz veins, were observed in the east crosscut off the south drive from Prospect Shaft.

There is not much evidence of transverse faulting in this area, the only place where it appears to have taken place being along a large buck reef, striking a few degrees north of east, at the southern end of G.M.L. 770B, Hill End. Along this reef the granite boundary, which here strikes about northnorthwest, shows an apparent horizontal displacement of 160 feet—the displacement being to the west, going north. About 140 feet farther NNW. along the granite boundary is what appears to be a subsidiary parallel fault, a small jasper being displaced for a horizontal distance of about 12 feet. In this case, however, the faulting may be due to a northward-striking shear zone.

The Lodes.

As stated, the main ore bodies of this centre occur in a zone of highly sheared rock along the margin of the granite forming the eastern boundary of the greenstones. Although auriferous deposits occur over a length of about one and a quarter miles in this zone, only those in the southern portion have proved payable for any length, the continuity of the ore bodies being much affected by granite dykes and by later shear zones.

Mineral composition.—Owing to the inaccessibility of the deeper workings of the Yuanmi Mine it is

impossible to give a detailed description of the lodes in the sulphide zone. Representing zones of intense shearing in the greenstones, they are highly schistose, but in places the schistosity is partly obscured by silicification. The ore contains much finely granular pyrite, but some of the densest pyrite seems to be associated with the steeper series of later shear zones and is therefore barren. The presence of stibnite and arsenopyrite in large quantities in the Yuanmi main lode has greatly increased the difficulty and cost of treatment. In the P Shaft Lode stibnite is present but arsenopyrite is said to be practically absent. According to Mr. Williams there is some evidence for regarding the stibnite as associated with the steeper shear zones. As a general rule carbonates appear to be absent from the lode or present only in small quantities, their occurrence being associated with the steeper shear zones and the pink granite. The Yuanmi mine is also characterised by the presence of very finely granular magnetite in large quantities, usually outside the lode channel; it appears to have been formed prior to ore deposition and is possibly connected with the jaspers.

Occurrence.—The most important lodes in this area are those of the Yuanmi Mine, which includes G.M.Ls. 863B, 864B, 865B, and 866B—the outcrops of the lodes so far discovered being confined to the first two leases—and those of G.M.L. 886M, United, and G.M.L. 770B, Hill End.

The lodes of the Yuanmi Mine include the Main Lode, West Lode, East Lode, Prospect Shaft Lode, and P (Pollard) Shaft Lode. Of these the most important is the Main Lode which has been proved for nearly a length of 1,000 feet—extending from a point a little north of No. 1 Shaft, about 420 feet from the northern boundary of G.M.L. 863B, to the southern end of a large open cut, about 150 feet north of the south boundary of the same lease. The lode has been proved to a depth of 778 feet (No. 7 level) below the collar of the main shaft. The ore shoots, however, were not by any means continuous over this distance, being broken by the later shears, and by poor zones where the lode shear cut through granite dykes, into a series of lenses of varying length. The greatest length of ore in the sulphide zone occurred at the 558 feet and 657 feet levels. At the 778 feet level the ore body was much broken owing to the presence both of shear zones of series (a) and (b) and of granite dykes. The average dip of the lode is stated by Mr. Williams to be 58°. The average width was about 4½ feet.

It has been generally assumed on the mine that the main lode has been faulted transversely at a point about 100 feet north of the southern boundary of G.M.L. 863B and that Prospect Shaft Lode was the faulted portion.

Other than a small eastward-striking quartz vein, of which a trace is visible at the surface, no sign of any transverse line of weakness was seen, and, moreover, so far as can be judged, the granite boundary to the east has not been faulted, at any rate to any appreciable extent. I am, therefore, inclined to regard the trace of lode matter cut at the junction of the northeast crosscut from V shaft with the southwest crosscut from Prospect Shaft as the southerly continuation of the Main Lode.

The West Lode outcrops a few feet east of the Main Shaft but has not been worked at the surface for any distance. It has been driven on at the 66 feet, 162 feet, and 300 feet levels, the greatest length of driving being at the 162 feet level where the lode was followed for about 400 feet. The drives, however, disclosed but little payable ore. From the direction of the southern end of the drive at the 162 feet level and the low assay values, it is possible that the lode was disturbed by a shear zone of series (a). The formation followed for a short distance from V shaft is possibly the southerly continuation of this lode.

The East Lode outcrops about 160 feet east of the northern portion of the Main Lode and is only a few feet from the granite boundary, horses of granite being enclosed in the lode in places. It has only been followed for short distances at the 40 feet and 100 feet levels from two small shafts. At a shallow shaft a little to the south of those mentioned, the lode is affected by a shallow-dipping shear zone.

The East Lode is on the same line as Prospect Shaft Lode and the two may prove to be continuous, but owing to the proximity of the granite, any intervening ore shoots are likely to be of no great length.

The Prospect Shaft Lode has only been followed for 130 feet north of that shaft by a drive at a vertical depth of 50 feet—the face of the drive was said to be in granite. South of the shaft it is disturbed by two large and several small granite dykes and apparently also by one of the shallow-dipping shear zones. The probable southerly continuation of this lode was cut in the east crosscut off the south drive from Prospect Shaft, but at this point it cuts a small granite dyke.

The most important lode in the southern portion of the mine is the P Shaft Lode. This lode has been worked for a total length of about 900 feet and to a vertical depth of about 300 feet. The ore shoots are somewhat broken owing to the presence of granite dykes, including one very large dyke in which the north drive at the 300 feet level ends, and to faulting by nearly vertical shear zones. At the upper levels the lode appears to split on reaching the large dyke and to continue northwards as two bodies, of which the more westerly, which has not been followed for any distance, appears to be on the line of Prospect Shaft Lode, of which it may be the southerly continuation. At the surface P Shaft Lode appears as a series of detached lenses, of which the southernmost has a marked easterly dip, and as a whole this lode dips more steeply than the Main Lode. The best shoot in this lode extended from about co-ordinate 1,050 feet south (the main shaft being taken as the datum) to about 1,250 feet south, but was somewhat patchy.

Two lodes have been worked in the United and Hill End leases, which are north of the Yuanmi Mine, but separated from it by G.M.L. 873B. The more easterly lode of the two outcrops in the Hill End lease approximately parallel to, and about 50 feet east of, the western boundary, the strike being nearly due north. The lode has been worked in an open cut close to the southern end of the lease and from shafts in the United lease, into which it dips, and G.M.L. 873B to the south. It has not been worked to any extent below water-level, the flow of water being too great for the prospectors to handle, but a considerable tonnage of oxidised ore has been extracted. At its southern end the lode is much disturbed and has apparently been faulted along the westerly continuation of the large buck reef previously mentioned as occurring at the southern end of the Hill End. At its northern

end the lode runs into the main granite mass and dies out close to the margin.

The second lode is situated in the northern portion of the United lease. It strikes approximately north-northwest. At the surface it is separated into two portions by a long wedge of granite which has been dragged back along the lode channel. The western branch consists mainly of greenstone schist, the eastern in part of granitic material.

The lode has been worked for a length of about 280 feet, chiefly from a large but shallow open cut and from a shaft about 140 feet deep, 350 feet south-west of the northeast corner of the lease. At the southern end of the open cut the lode appears to be narrowing. The lode probably dies out to the north, in granite, near the northern boundary of the lease. As with the previously mentioned lode a fair amount of oxidised ore has been extracted, but little work has been done below water-level, which is said to be at about 100 feet in the shaft.

Summary and Conclusions.

The Yuanmi mining centre is situated near the eastern margin of an extensive greenstone belt, enclosed by granite, and comprising rocks of three types and of two, possibly three, ages.

The eastern portion of the belt consists of fine-grained schistose epidiorites, largely chloritised, probably corresponding in age to the older fine-grained greenstones of Kalgoorlie; the western of coarse-grained gabbroid or doleritic epidiorites similar in appearance to certain of the younger Kalgoorlie greenstones. The third type, which is possibly younger than either, is a massive fine-grained amphibolite occurring about four miles north of Youanmi.

The eastern portion of the belt is cut by numerous granite dykes.

The principal ore bodies are situated in a comparatively narrow zone of intense shearing in the older fine-grained greenstones along the granite margin. They include the lodes of the Yuanmi Mine, of which the most important are the Main Lode in G.M.L. 863B and P Shaft Lode in G.M.L. 864B, and those of the United and Hill End leases.

The continuity of the ore shoots is much affected by the presence of numerous granite dykes, causing impoverishment at the point of intersection, and by a number of later shear zones of several series, which have shattered and dissipated the ore bodies in places. Of these the most serious are the steeply-dipping shear zones owing to their strike being practically identical with that of the lodes and to their great width in places.

The Yuanmi Main Lode has been worked to a depth of 778 feet, the P Shaft Lode to a depth of about 300 feet. That payable ore bodies occur below these depths there is little doubt, but to predict the positions of such ore bodies at any given depth, accurate projections of the dykes and shear zones encountered at the levels above would be necessary. At a level put in from the main shaft at a depth of 880 feet the Main Lode would probably be free from the steeper shear zones that affected it at the 778 feet level, but would be affected at intervals by those of the flatter series—a less serious matter—and to some extent by granite dykes.

2.—ALLUVIAL AND LATERITE DEPOSITS OF THE HELENA RIVER, BETWEEN DARLINGTON, BOYA, ZIG-ZAG, EAST GUILDFORD, SOUTH-WEST DIVISION.

(Alex. G. D. Esson, M.A.)

Upon March 9th, 10th, 20th and 23rd, 1922, a reconnaissance was made of the valley of the Helena River for the purpose of plotting the Helena alluvial deposits from a point on the river bearing about 207 deg. from Darlington Station, down to East Guildford, where Morrison's bridge crosses the river. I also made an examination of the laterite deposits at Boya and near to the Zig-Zag, on the Canning Jarrah Timber Company's railway line.

1. *Helena Valley Alluvium*:

It is to be noted that the term alluvium has two applications. It may be applied to river deposits, which, in the case of the Helena, would be largely flood deposits or flood plains. On account of the economic importance of these, I have taken this application of the term in making this report.

Alluvium is deposited on the old worn-out valley of the Helena, a valley cut out when the river was much younger and probably flowed faster. In places a difference of eight or ten feet in the height of the two banks was noticed. This could probably be explained as being due to the fact that the river when younger deposited an alluvial plain consisting largely of sand and clay. The river then cut into this plain, forming a fairly wide, new bed, upon one side of which it again deposited alluvium at a much lower level than the older plain. In some places a difference in the deposits on either bank can be seen, although both are distinctly alluvial.

In no case does the alluvium extend to more than ten or twelve chains from the river, and in places lateritic ironstone and granitic rocks border the present bed of the river.

Economically, these alluvial flats are of great importance, on account of their depth and productiveness, especially in connection with intensive agriculture or market gardening. I am informed by a resident of one of the flats that the depth of alluvium varies from twenty-seven or thirty feet in the middle of the valley to nothing on the extreme edge. The alluvium is largely good loam, very finely divided. In places, however, it seems to be composed mostly of clay.

In some places it is possible that the deposit is covered by æolian deposits of dune sand and in such a case, in the short time available, it was impossible to estimate exact boundaries.

(2.)—*Laterite Deposits*:

It was impossible to make more than a superficial examination of these. I examined them:

(a) *On Greenmount Hill, from Boya Siding.*—Here the deposits seem to begin at a height of forty feet or less from the summit and extend all over the hill top. They are highly ferruginous.

A distinct difference in the character of the vegetation on and off the laterite deposits was noticed.

Lower down the hillside, the rock was more or less weathered granite, while, lower down still, everything was covered with the detritus from this weathering.

(b) *Boya Quarries.*—Granite and diorite are quarried here from the sides of small spurs of Greenmount Hill. The diorite seems to be intrusive into the

granite and is used with the granite for road-making material. The granite is a grey, close-grained variety and should make excellent building stone. Near the surface the lateritic weatherings were observed, but in this case they differed from those on top of the hill in being kaolinised and stained with ferruginous matter.

(c) *Ironstone Deposit on Canning Railway, running from Ridge Hill to the Helena.*—This seems to be a concretionary stone, which is probably lateritic. It is ferruginous and is economically of no value, further than in road making. It is a fairly extensive deposit, which crosses the Helena Valley, and on the opposite side of the river from the Canning Railway, it has been weathered to produce a heavy, rusty, clayey loam.

3.—THE BASIC ROCKS OF THE WONGONG BROOK WEIR SITE, SOUTH-WEST DIVISION.

(Alex. G. D. Esson, M.A.)

In accordance with official instructions, a visit was paid to Wongong Brook, a tributary of the Canning River, and a geological survey of the surroundings of the proposed weir site and of the basic dyke system in its vicinity made. A map (21 A.1), showing the geological relations was prepared and a series of photographs (1770-3) taken of the dyke, through which the centre line of the proposed weir site passes.

Geology.—In this report the geology is briefly dealt with: (1) generally, and (2) particularly—in regard to its bearing upon the proposed weir.

The geological relations are somewhat obscured by débris and floaters, but field investigations show that the country is of igneous origin and consists of granite, threaded by fairly wide greenstone dykes. These greenstone dykes are joined to each other by narrow stringers and also by fairly wide dykes.

The greenstone is a hard epidiorite, which ranges in grain from fine to medium. It is younger than the granite, which is of the biotite-microcline variety, ranging from a medium to a coarse grain. In some places the granite becomes so coarse in texture as to resemble a pegmatite. The rock is largely decomposed on the surface and to some depth below, as we can see from the fact that one shaft had to be dug 40 feet before coming on to granite that was solid.

It is to be noted that although there has been a certain amount of metamorphism in the granite, in only two places has there been found evidence of fissuring, caused, probably, by the intrusion of the greenstone. In most cases the changes are due to weathering.

It may be concluded that the greenstone is intrusive and younger than the granite. There is no evidence of sills. Hence the surface of the original greenstone may have been much weathered in turn and worn down to its present levels. There is thus to be seen on the surface to-day what is probably a section of the old dyke system.

The soil produced by the weathering of the greenstone is a heavy clay loam which is extremely productive and admirably suited for intense horticulture. This, mixed with greenstone floaters, covers the lower slopes and obscures the geological relations.

The greenstone dykes can be divided into two main groups: (a) *main parallel dykes,* and (b) *connecting dykes.*

(a) These main dykes form the crests of the ridges and are more than 250 feet in width. They run roughly parallel to each other in a north and south direction.

(b) The connecting dykes join the main dykes and seem to run along any transverse line of fracture. They vary in direction but they run roughly east and west.

At present it is not at all clear whether the two types of dykes are of the same or of different geological ages, a point that is extremely difficult to determine especially as geological relations are by no means absolutely clear. It is generally recognised that when one dyke crosses another, that which has its fine-grained edge unbroken is younger than the other. Unfortunately, definite evidence of this kind was unobtainable.

All the dykes observed seemed to be of the same composition. In some cases the grain was finer than in others, but in the same dyke could be found both fine and coarse grained material quite close to each other. It was observed that the broader and longer a dyke, the coarser the grain.

In places inclusions of the felsitic material from the surrounding granite was found incorporated with the greenstone. This occurred near the edge of a dyke usually when the adjacent granite was found not to be much decomposed.

In shaft "f" the granite was found running up the side of the nearest dyke and giving evidence of being subjected to pressure from below.

The site marked out for the proposed weir is situated in a gorge, forming part of the valley of Wongong Brook and having very steep sides. On account of the steepness the bed of the brook is littered with loose boulders of granite and greenstone.

Upon arriving at the site of the proposed weir it was found that a number of shafts had been made under the direction of the Engineers of the Metropolitan Water Supply Department. Each of these shafts was carefully examined, and where necessary a number of them were extended and deepened on to solid bottom. In addition a few more shafts were sunk with the object of discovering any fissures which might be a danger to the weir or which might contribute to loss of water by seepage. Each shaft has been designated by a letter, thus, a, b, . . . z, and a description is dealt with in proper order.

Shaft

a. 5 feet deep on solid greenstone.
b. In this shaft there is a junction of the granite and greenstone. The edge of the latter seems to run at about 85 deg. from the horizontal. Here the granite shows slight indications of fissuring.
c. 22 feet deep on to a solid greenstone lying almost level.
d. This consists of a series of shafts lying in line and bearing 351 deg. and connected by drives, etc. All give granite at the bottom at about a depth of 12 feet.
e. 17 feet deep on to solid granite. Costeening has been commenced towards the solid greenstone dyke which outcrops solidly on the surface 35 feet from the edge of this shaft.
f. This consists of a long open cut, 13 feet deep. At 16 feet from the 100 foot peg there is a junction between the greenstone and the granite. Here the granite seems to have been subjected to some pressure and it runs up the side of the greenstone somewhat.
g. 10 feet 6 inches deep on solid granite. At the bottom there is a drive towards the south to the greenstone reef and this it meets at 7 feet from the shaft.

h. 9 feet 6 inches deep on to granite.
i. 12 feet deep on to granite.
j. 11 feet deep on decomposed granite. Work was discontinued here on account of the incoming of water.
k. 5 feet deep on greenstone.
l. 7 feet deep on greenstone.
m. Obtuse angle trench with dyke crossing it in two arms of the trench.
n. 2 feet 6 inches to 5 feet deep. At its south end the greenstone and granite meet.
o. 12 feet deep on granite.
p. 11 feet 6 inches deep on greenstone.
q. 9 feet 6 inches deep on granite. There is a junction here on the north end of the shaft.
r. 6 feet deep on solid granite.
s. 7 feet deep on granite.
t. 23 feet deep on granite dipping about 45 deg.
u. 10 feet 6 inches deep on granite. There is a junction on the north side of the shaft.
v. 17 feet deep on to granite.
w. 23 feet deep on to solid granite dipping 45 deg.
x. 35 feet deep on to solid granite.
y. 40 feet deep on to granite wash. This and "z" are old shafts.
z. Old shaft on to decomposed granite.

In most cases the shafts bottoming on granite have had the granite covered up with greenstone floaters and pug. In shafts "b" and "f" there is slight evidence of fissuring.

The centre line of the proposed weir passes through various portions of a narrow winding dyke connecting up two main dykes which form the crests of the ridges making the watershed at that point.

Conclusions.—Observations have shown that in this district there is a somewhat complicated system of greenstone dykes which intrude the much older granitic rocks. On the higher slopes at about 700 or 750 feet above sea-level we find the laterite commencing and obscuring the dyke systems. On the lower slopes alluvial soil has been deposited, and this, when formed from greenstone, is very productive, and less so when formed from granite. Soil formed from the laterite generally consists of an ironstone gravel which is of little value in growing crops.

Although no evidence of the occurrence of gold and other useful minerals was detected, it is understood that they have been found in the district.

I am much indebted to Mr. Lawson, the Engineer for Metropolitan Water Supply, and the late Mr. Hillman, his assistant, for their courtesy and assistance in supplying maps and in lending me two of their most capable miners, McGuigan and Sandercott.

4.—NOTES ON YALGOO, NOONGAL AND MUGGA MUGGA, YALGOO GOLDFIELD.

(Alex. G. D. Esson, M.A.)

Yalgoo.—In the main the country to the south of Yalgoo is obscured by recent superficial deposits. In places there are outcrops of the underlying rocks and these, combined with other observations, lead one to conclude that in this district there is a junction between the acid granite rocks and the basic greenstones.

In the area examined—from Yalgoo about 9 miles south and about 3 miles on either side of Rabbit-proof Fence No. 2—practically the same main types of rocks were found as at Melville later on. From Morrissey Creek, which runs south in a line somewhat west of the town of Yalgoo, crush-quartzite specimens [1/3452] were obtained forming the bed of the creek. A quarter of a mile eastwards of the creek shearing was again observed. It is probable that the creeks follow zones of shearing in this district.

No indications of metalliferous deposits were noted, although gold has been found farther southeast at the Joker, a prominent hill southeast of Yalgoo, where (*vide* Woodward, Appendix 2, Annual Report, Department of Mines, 1895) "A series of rich veins strike off from a large dyke." This working was abandoned by the company and apparently did not prove of any great value.

Noongal.—Noongal is one of the earlier abandoned mining centres of the Yalgoo Goldfield. A draw well with a good supply of fair water is located in the townsite near to the hotel, but otherwise potable water is hard to obtain except in a good season.

Up to December, 1921, the total amount of gold produced was 2,146.54 ounces, which includes alluvial, dollied and specimen gold, and the total tonnage of ore treated up to that date was 3,380.70 tons (of 2,240 lbs.). A slight revival occurred in 1921. A small 5-head battery has been established by Messrs. Neville and it is probable that this action may induce more prospectors to go to the district. The highest gold output is 571 ounces in the year 1897 and the bulk of that came from the Victorian United vein. Between 1915 and 1918, 1,932½ lbs. of bismuth, of a value of £472, were produced and marketed.

Generally, it can be said that Noongal lies upon an extremely rugged junction of acid and basic rocks. In the north, the acid intrusives have caught up large fragments of greenstone and occasionally have in part assimilated these. In the south the granites have intruded into the greenstones in the form of dykes and veins. In addition in the south there are many jasper bars which also have been intruded by porphyries. The whole centre then is a zone of contact between the acid and basic rocks and this zone constitutes the basis of deposition of gold and other minerals such as pyrites, molybdenite, scheelite, and bismuth.

The gold deposits, as would be expected, are patchy and do not seem to have any great continuity, but, where found, they seem to give fair values.

The rocks of Noongal are igneous in origin in the main, but there are also a number of superficial deposits which may have been originally lateritic and which are sometimes consolidated.

The igneous rocks are subdivided into acid and basic rocks. The basic rocks can be subdivided into greenstones and gabbroids. Mr. Farquharson, commenting on the basic rocks, says that the gabbros are metamorphosed forms of either basaltic dolerites with amphibolised augite or micropegmatitic quartz epidiorites. The greenstones are:

(a) metamorphosed dolerites, quartzose, granulated or foliated;
(b) metamorphosed gabbros;
(c) tremolite chlorites.

The acid rocks are various phases of biotite microcline granite. The intrusive dykes and veins take the form of quartz porphyries, granite porphyries, pegmatites and quartz.

The whole mass of greenstones has a dip westwards, which varies from 30° to 70°, and the strike is approximately north and south.

As has already been stated the minerals found are gold, bismuth ores, molybdenite, scheelite, pyrites, and also lepidolite.

On account of the irregular patchy nature of the deposits money should only be expended in judiciously trying to pick up continuations of the rich patches, for payable results can only be expected as the result of prospecting on a moderately small scale. The lepidolite deposits may prove worthy of the consideration of prospectors on account of the lithia contents, as well as the scheelite and bismuth deposits on and around the old Harrison's Reward Lease.

That part of the area to the southwest of the townsite about two or three miles should also be worthy of investigation by prospectors, especially where porphyries intrude the jaspers.

Mugga Mugga.—Opportunity was availed of to make a short reconnaissance of Mugga Mugga, a low belt of greenstone hills lying south of Gullewa and formerly on the boundary of the Yalgoo Goldfield.

Granites form the main country rock as far as Gullewa from some miles south of Yalgoo. These granites run more or less continuously as far as Gullewa and at this point greenstones take their place, continuing southwards as far as Mugga Mugga at least. From Yalgoo south to Mugga Mugga the country is largely obscured by lateritic and superficial deposits.

At Mugga Mugga quartz veins intrude the greenstones, and seen from the tops of the hills these appear to be lying more or less parallel in an east and west direction. There is also another series lying approximately north and south. A number of these reefs were examined and in the main were found to be barren although in places indications of copper staining, probably by malachite, were noted. On the level country to the east of the hills a small pocket of fairly rich copper ore was found, but, judging from a cursory examination, this would be of no great extent. The ore was a quartz carrying malachite, and Mr. Larcombe, Acting Petrologist, commenting on it says it is somewhat brecciated white glassy quartz, siliceous iron-stained with particles of malachite. The greenstone is a medium-grained epidiorite which has been largely epidotised.

PETROLOGICAL WORK.

During the year the time of Mr. Farquharson, the Petrologist, was occupied in the multifarious petrographical work required in connection with the routine duties of the Survey.

A good deal of time was devoted to an examination of the cores from the bores which were put down at Boulder with the view to testing the possibility of the extension of the group of lodes to the south-east.

Owing to Mr. Farquharson's departure from the State for service in British Somaliland, no report upon the year's work was received from him.

GEOLOGICAL SURVEY MUSEUM AND COLLECTIONS.

No progress has been found possible in the reorganisation and expansion of the Geological Survey Collections for the reasons which have already been set out in previous Annual Reports.

The additions to the Geological Survey Collection during the year 1922 amounted to 174, bringing the total number of minerals, rocks, and fossils registered up to 17,493. The number of micro-sections prepared amounted to 351, of which 112 have not been registered, thus bringing the total number of slides entered in the books of the Department up to 4,568.

A number of photographs of special geological interest, which have been taken by the members of the Geological staff in the ordinary course of their duties, have been added to the departmental collection.

Special mention is made of the following additions to the geological collections:—

Reg. No.	Specimen.	Locality.
1/3320 to 1/3335	Asbestos ...	Pilbara and West Pilbara Goldfields.
1/3367	Bore Core, No. 2 Bore	Williams Bore, Lease 5083E, Boulder.
1/3368	Bore Core, No. 3 Bore	do. do.
1/3369	Bore Core, No. 4 Bore	do. do.
1/3371	Joadja Shale ...	New South Wales (Mr. Le Mesurier.)
1/3373	Bore Core, No. 1 Bore	Boulder (Golden Ore Channel Company).
1/3374	Bore Core, No. 2	do. do.
1/3375	Bore Core, No. 3	do. do.
1/3376	Bore Core, No. 2 Deflected Bore	do. do.
1/3413	Muscovite Mica ...	Lyons District, Morrisey Creek, N.W. Division (Mr. Buckland).
1/3415	Crocidolite ...	Robertstown, South Australia. S.A. Geological Survey.
1/3430	Impsonite ...	Oakes Find, Negri River, Kimberley Division (Mr. Strevens).
1–3431	Opals and Opalised shells	Stuart Range, South Australia (Mr. O'Neil).
1/3437	Gypsum	2m. N. of Hines Hill, Avon District, S.W. Division (Mr. W. E. Sharp).
1/3438	Anthophyllite Asbestos	Moora (Mr. Le Mesurier).
1/3446	Muscovite Mica ...	Coolgardie (Mr. McPherson).
1/3448	Bore Core ...	British Flag Lease, Boulder (Dr. Laver).
1/3452	Epidote crystals	Roebourne, West Pilbara G.F. (Mr. H. J. Watson).
1/3464	Basalt with Bitumen	Madrid, Orange Free State, South Africa (Geological Survey of South Africa).
1/3490	Breccia	Balline Station, 40m. N.W. of Northampton, Victoria District, S.W. Division (Mr. C. H. Counsell).

LIBRARY.

The Library of the Geological Survey has received by way of exchange 783 publications from other cognate institutions throughout the world, and 147 volumes were added by purchase during the year.

PUBLICATIONS.

The only publication issued during the year 1922 has been the Annual Progress Report for the year 1921.

The publications in accordance with the list on pages 59 and 60 of the Annual Report for the year 1921 yet remain to be printed.

A. Gibb Maitland

Government Geologist.

Geological Survey Office,
Perth, 10th April, 1923.

INDEX.

DIVISION V.

SCHOOL OF MINES OF WESTERN AUSTRALIA.

School of Mines,
Kalgoorlie, 2nd February, 1923.

The Under Secr etary for Mines.

I beg to forward, for the information of the Hon. the Minister, my report for the year 1922.

The number of individual students in attendance at the School of Mines during 1922 was less than in the previous year. The disturbed condition of the mining industry, which caused many families to leave the district, was responsible in some measure for the decreased attendance, and the regulation which came into force at the beginning of 1922, under which students of 21 years of age and over were required to pay class fees, had the effect of keeping away some who otherwise would have attended classes. On the other hand, students took an increased amount of classwork, and the examination results at the end of the year were above the average. Approximately 30 per cent. of those in attendance were over 21 years of age.

The scales of fees at the School of Mines and at the Perth Technical School have recently been made uniform. This will remove certain anomalies without appreciably affecting either the revenue or the attendance at classes.

The classwork in all sections of the school in 1922 followed the ordinary routine.

There were the usual large classes in the preparatory subjects, particularly in Mathematics, Chemistry, Physics and Drawing, and students received a good grounding in preparation for the more advanced classes of the regular courses. The slight reduction in the Junior Staff and rearrangements in the conduct of the Mathematics classes made early in the year have proved sufficiently satisfactory to justify their continuance.

Although the classes in Mining and Surveying were not large, students worked steadily and made good progress. In the past, those who had gained a Mine Surveyor's Certificate have been very successful in securing good positions, many of them outside the Commonwealth; but lately the decreased activity in mining operations has diverted students from these classes and caused them to devote their attention to other subjects such as Chemistry and Engineering, which open up more chances of obtaining suitable employment.

Preparatory Geology attracted a fair number of students, but the attendance at the more advanced classwork in Geology, Mineralogy, and Petrology was small.

The various classes under the control of the Lecturer in Engineering were well patronised. The students were particularly regular in their attendance and made good progress with their studies.

For several years past, the gas engine and indicator classes have been the means of acquainting a large number of men with the principles underlying the construction and operation of gas engines, and have been specially valuable to those whose duties have taken them into the out districts. Owing to the demand for this type of instruction having been to a large extent temporarily satisfied, the attendance at the 1922 classes was less than in previous years, but the high standard of instruction was well maintained. As it has now been made compulsory for drivers of gas engines over a given size to hold a certificate, an increased attendance may be expected in the near future, and the school may be asked to consider the question of increasing the class hours of instruction and of providing additional equipment.

In Engineering Chemistry the special attention paid to the chemistry of materials and their analysis and testing proved of great value to the chemistry and metallurgy students. It is proposed to divide the second course of this subject into sections, so that by specialising in selected groups the students may gain an intimate knowledge of those portions of the subject which have a particular bearing upon their future work.

The museum has been kept open to the public each day throughout the year. As it is now fully stocked, the addition of new samples can be made only by the removal of others. The chief additions this year were the excellent sets of specimens prepared by the Lecturer in Geology to illustrate (1) the Geology of Kalgoorlie; (2) the Geology of the Golden Mile; (3) the Geology of the North End. These should prove of especial value to all interested in the geology of the goldfields. The Lecturer in Geology has been appointed Acting Government Petrologist. During the vacation he will be stationed in Perth, but will resume his ordinary duties at the school when classwork recommences in February.

Owing to the limited classroom accommodation considerable difficulty was experienced in arranging the time table of class hours, and some members of the staff conducted their lectures under adverse conditions. Plans have been prepared for various alterations which will remedy this and at the same time make provision for a common room for the students.

It has been a matter for regret that, year after year, many students in daily employment, whose attendance at the evening classes of the school has extended over several years, have had to leave the district before completing the full course for their Associateship. This has now been remedied to some extent by the establishment of several short courses which have enabled a considerable number of students to gain a Course Certificate. As proof of the completion of a prescribed course of study these will have a definite value, and the students appreciate the concession that has been granted.

During the year, the Metallurgical Laboratory was completed sufficiently to allow several experiments to be carried out by the students in Metallurgy. The experimental plant erected in the eastern angle of the school grounds is a wood and iron building with concrete floor, 40 feet by 45 feet, and equipped with machines and appliances for the conduct of experimental tests on various classes of ore by different metallurgical processes. The machines have been installed as separate units without regard to a fixed scheme of ore treatment, so that any number of them may be utilised in the manner found most suitable to formulate a flow sheet for the treatment of the particular ore under investigation.

The Metallurgical Laboratory is intended to serve two main purposes:—

1. To familiarise students with the construction and operation of metallurgical appliances and to instruct them in the methods of conducting tests on various metallurgical processes.
2. To enable investigation and experimental research to be conducted on established processes and to enable suitable methods to be devised for the extraction of minerals and metals from their ores.

The equipment is as follows:—

The main crushing and grinding machines are driven by a 14½ H.P. motor, which can also be used to drive some of the concentrators.

The smaller machines are driven by three ½ H.P. motors.

The Magnetic Concentrator has its own motor, forming an integral part of the machine.

Sampling appliances. These consist of storage bins, an Avery platform weighing machine, an iron sampling floor, and a power-driven Braun automatic sampler.

Crushing and grinding machines. These consist of a rock-breaker and rolls (by May Bros., Gawler), a Braun planetary pulveriser, a charge ball mill, a three-stamp Fraser and Chalmers battery, a grinding pan, a berdan pan, and a six-jar Abbé pebble mill. These appliances supply products similar in character to those resulting from the methods of crushing and grinding adopted in ordinary mill practice.

Concentrators. Three distinct types of concentrating appliances have been installed:—

1. Gravity concentrators, comprising a Wilfley table with two interchangeable decks, a three-spigot Richards vortex classifier, a Hartz jig, and a Richards pulsator classifier jig.
2. Flotation units comprising a Ruth spumer cell, a minerals separation type cell, and a Callow flotation unit. The last-named consists of a rougher and a cleaner cell, an air lift, and a Pachuca (Brown tank) agitator. The air for this unit is supplied by a small Root's blower.
3. Magnetic concentrator. The rapid magnetting machine of the Thompson Davies pattern is driven by its own motor and is arranged to yield five distinct products.

Hydrometallurgical appliances. These comprise a small cyanide plant complete with precipitation boxes and sump, an A.Z. agitator, a laboratory filter-press, and a small Merrill precipitation press which may be used either for filtration or for precipitation.

Grading appliances. These consist of a revolving trommel and a complete set of I.M.M. standard screens for sizing tests.

An endeavour will be made to secure a variety of ore samples so that experimental work may be conducted continuously throughout the year, either by the staff or by the students working under the direction of the Lecturer in charge of the plant. The Lecturer in Chemistry and his assistant will control the work and conduct the experiments. The students will assist in various operations as opportunity arises, and they will be required to carry out experiments in ore treatment as part of their regular classwork. Since July, 1922, students have conducted experiments in sampling, grading, fine grinding, gravity concentration, and flotation and cyanidation, and have appreciated the value of the experience gained. Towards the end of the year the Assistant in Chemistry conducted an investigation in connection with the process of Copper Separation, Ltd., and was successful in demonstrating to the satisfaction of the company the possibilities of oil flotation for the recovery of the precipitated copper.

The Bailey Cement Testing Machine kindly supplied by the Hon. the Minister for Public Works has been installed in position and will prove a useful adjunct to the experimental plant.

By furnishing reports as to assay values and by indicating means of utilising and disposing of base metal ores, every effort has been made to give prospectors information likely to be of assistance to them. During 1922 the volume of public assay work was above the average. 658 free assays and mineral determinations were made for prospectors of material from Crown lands not held under lease for mining purposes, as follows:—

Assays for gold and silver	582
Assays for copper	10
Analyses	4
Determinations of rocks, minerals, etc.	62
Total	658

The statistics dealing with the enrolment of students, examination results, etc., are forwarded herewith.

F. B. ALLEN,
Director, School of Mines.

SCHOOL OF MINES OF WESTERN AUSTRALIA.

EXAMINERS.

The following Examiners conducted the Examinations in November, 1922:—

Subject.	Examiners.
Preparatory Mathematics ...	F. B. Allen, M.A., B.Sc., R. Davis, B.Sc., and E. Illidge, B.Sc.
Preparatory Chemistry	A. S. Winter.
Preparatory Physics and Electricity	C. Cecil.
Preparatory Geology	C. O. G. Larcombe, B.Sc., F.S.T.C., F.G.S.
Preparatory Mechanical Drawing	C. Cecil.
Mathematics I.	E. H. Illidge, B.Sc., and R. Davis, B.Sc.
Mechanics—Theoretical	R. Davis, B.Sc., and E. H. Illidge, B.Sc.
Physics I.	R. Davis, B.Sc., and D. McDougall, A.I.E.E.
Chemistry I.	A. S. Winter and R. R. Baxter, B.Sc.
Engineering Chemistry I. and II.	L. W. Phillips, B.Sc., and B. H. Moore, B.E., F.S.A.S.M.
Assaying I.	A. S. Winter, and G. S. Compton, A.W.A.S.M.
Assaying II.	B. H. Moore, B.E., F.S.A.S.M.
Metallurgy I. and II. ...	G. S. Compton, A.W.A.S.M.
Petrology	C. O. G. Larcombe, B.Sc., F.S.T.C., F.G.S., and G. S. Compton, A.W.A.S.M.
Mineralogy	
Geology	
Mining Geology	C. O. G. Larcombe, B.Sc., F.S.T.C., F.G.S.
Practical Mathematics	E. H. Illidge, B.Sc.
Mechanical Drawing I. and II. ...	J. H. Tate.
Applied Mechanics	B. H. Moore, B.E., F.S.A.S.M. and J. H. Tate.
Mechanical Engineering I. and II.	J. H. Tate and T. Butement, A.O.U.S.M.
Surveying I. and II. ...	T. Butement, A.O.U.S.M.
Mining I. and II. ...	
Electrical Engineering I. and II.	D. McDougall, A.I.E.E.
Fitting and Turning I. and II ...	J. White.
Engine Driving I. and II. ...	C. C. Meredyth.
Gas Engine	A. R. E. Bosustow.
Indicator	

JUNIOR SCHOLARSHIP.

Subject.	Examiners.
English	B. H. Moore, B.E., F.S.A.S.M.
Physical Geography	C. O. G. Larcombe, B.Sc., F.S.T.C., F.G.S.
Mathematics	F. B. Allen, M.A., B.Sc.

W.A. SCHOOL OF MINES, KALGOORLIE.

ATTENDANCES, 1922.

Subject.	Effective Enrolment.		
	1st Term.	2nd Term.	3rd Term.
Elementary Mathematics (Monday) ...	34	28	21
Elementary Mathematics (Thursday) ...			
Preparatory Mathematics (Monday) ...	52	44	35
Preparatory Mathematics (Tuesday) ...	6	8	6
Preparatory Drawing (Thursday) ...	24	19	13
Preparatory Drawing (Friday) ...	45	41	34
Preparatory Physics	43	34	27
Preparatory Chemistry	58	47	36
Preparatory Geology	17	14	9
Mathematics—First Course	21	19	17
Theoretical Mechanics	5	4	3
Physics—First Course	13	9	9
Chemistry—First Course	20	17	15
Engineering Chemistry I.	7	7	7
Engineering Chemistry II.	4	4	4
Assaying—First Course	6	6	6
Assaying—Second Course	4	4	5
Metallurgy—First Course	1	1	1
Metallurgy—Second Course	1	1	1
Mineralogy	3	3	3
Petrology	2	2	2
Mining and Economic Geology	2	2	1
Mining I.	2	2	2
Mining II. (Mine Sampling)	1	1	...
Mining II (Ore Sampling)	1	1	1
Surveying I.	2	2	2
Surveying II.	3	3	3
Mechanical Drawing I.	16	14	12
Mechanical Drawing II.	5	6	6
Machine Design	5	5	5
Building Construction	12	11	11
Applied Mechanics	1	1	1
Mechanical Engineering I.	6	6	6
Engine Driving I.	5	5	3
Engine Driving II.	6	5	4
Electrical Engineering I.	6	6	6
Electrical Engineering II.	4	4	4
Fitting and Turning I.	14	14	13
Fitting and Turning II.	8	8	8
Gas Engine	16	13	10
Practical Mathematics	4	5	5
	485	426	357

	1921.			1922.		
	1st Term.	2nd Term.	3rd Term.	1st Term.	2nd Term.	3rd Term.
Total Enrolment	507	445	385	485	426	357
Individual Students	205	181	163	179	160	133

EXAMINATION RESULTS, 1922.

The following table shows the passes obtained by students of the Western Australian School of Mines, Kalgoorlie, at the Annual Examinations held in November, 1922, including the Supplementary Examinations held in February, 1922.

	Class of Pass.		
	Credit.	Pass.	Total.
Elementary Mathematics	4	7	11
Preparatory Mathematics	1	13	14
Preparatory Mathematics, Arithmetic ...	...	12	12
Preparatory Mathematics, Algebra ...	...	6	6
Preparatory Mathematics, Geometry ...	1	9	10
Preparatory Mechanical Drawing ...	8	24	32
Preparatory Chemistry	2	26	28
Preparatory Physics	4	13	17
Preparatory Geology	1	2	3
Mathematics I.	...	2	2
Mathematics I., Algebra	...	2	2
Mathematics I., Trigonometry	...	2	2
Mathematics I., Geometry	...	7	7
Theoretical Mechanics	...	1	1
Physics	1	3	4
Chemistry I.	...	12	12
Engineering Chemistry I.	1	6	7
Engineering Chemistry II.	2	1	3
Assaying I.	...	6	6
Assaying II.	3	2	5
Metallurgy I.	...	1	1
Metallurgy II.	...	1	1
Mineralogy	2	1	3
Petrology	...	2	2
Mining and Economic Geology	...	1	1
Mining Geology (Surveyor's)	...	1	1
Mining I.	...	2	2
Mining II. (Mine Sampling)	1	...	1
Mining II. (Ore Dressing)	...	1	1
Surveying I.	1	1	2
Surveying II.	5	1	6
Mechanical Drawing I.	6	7	13
Mechanical Drawing II.	4	2	6
Applied Mechanics	1	...	1
Mechanical Engineering I.	1	5	6
Mechanical Engineering I. (Gas Engine)	2	6	8
Mechanical Engineering I. (Indicator) ...	1	5	6
Building Construction	4	8	12
Engine Driving I.	1	...	1
Engine Driving II.	2	1	3
Electrical Engineering I.	...	4	4
Electrical Engineering II.	...	3	3
Fitting and Turning I.	...	13	13
Fitting and Turning II.	1	6	7
Machine Design	4	2	6
Practical Mathematics	1	2	3
	65	232	297

ASSAYER'S CERTIFICATES.

The following have gained Certificates:—

Adams, H.	P.T.S.	March, 1904.
Adams, P.	P.T.S.	February, 1905.
Beech, S. J.	K.S.M.	November, 1906
Brown, T.	P.T.S.	November, 1906
Brooking, J.	P.TS.	November, 1906
Hutchinson, D. M.	K.S.M.	November, 1906
Banks, R.	K.S.M.	November, 1908
Gabel, J.	K.S.M.	November, 1908
Pike, R. W.	P.T.S.	November, 1908
Baxter, R. R.	P.T.S.	November, 1909
Bradley, W. S.	K.S.M.	November, 1909
Burrows, M. F.	P.T.S.	November, 1909
Compton, G. S.	P.T.S.	November, 1909
Cook, H. J.	P.T.S.	November, 1909
Klem, L. G.	P.T.S.	November, 1909
Fraser, W.	K.S.M.	November, 1910
Rowledge, H. P.	P.T.S.	November, 1910
Benjamin, L. R.	P.T.S.	November, 1911
Jackson, L. T. C.	P.T.S.	November, 1911
Leevers, J. C.	K.S.M.	November, 1911
Lapsley, R. G	P.T.S.	November, 1912
Kurth, E. E.	K.S.M.	November, 1913
Grace, J. N. A.	P.T.S.	November, 1916
Noall, J. C.	K.S.M.	November, 1917
Cecil, Clyde	K.S.M.	November, 1918
Terrell J. H.	KS.M	November, 1918
Nairn, T. W.	K.S.M.	November, 1918
Roberts, T. J.	K.S.M.	November, 1919
Chapman, F. E.	P.T.S.	November, 1920
Lethlean, H. V.	K.SM.	November, 1921
Carrigg, C. G.	K.S.M.	November, 1922
Greer, J. H.	K.S.M.	November, 1922
Mundle, E. B.	K.S.M.	November, 1922

INDUSTRIAL CHEMIST'S CERTIFICATES.

The following have gained Certificates :—

Cecil, C.	K.S.M.	November,	1921.
Chapman, F.	P.T.S.	November,	1922.
Carrigg, C. G.	K.S.M.	November,	1922.
Esdaile, A. N.	K.S.M.	November,	1922.

MINE SURVEYOR'S CERTIFICATES.

The following have gained Certificates :—

Peat, J.	K.S.M.	November,	1909.
Adams, H.	K.S.M.	November,	1910.
Banks, R.	K.S.M.	November,	1911.
Gabel, J.	K.S.M.	November,	1911.
Pike, R. W.	K.S.M.	November,	1912.
Godden, F. W. R.	K.S.M.	November,	1915.
Mundle, E. B.	K.S.M.	November,	1915.
Leevers, J. C.	K.S.M.	November,	1916.
Crutchett, I. A.	K.S.M.	November,	1920.
Powell, T.	K.S.M.	November,	1921.
Agnew, R. J.	K.S.M.	November,	1922.
Crutchett, E. G.	K.S.M.	November,	1922.
Davies, I.	K.S.M.	November,	1922.
Eddy, J. T.	K.S.M.	November,	1922.

DRAUGHTSMAN'S CERTIFICATES.

The following have gained Certificates :—

Galt, W.	K.S.M.	November,	1915.
Butement, J. C.	K.S.M.	November,	1915.
Edmondson, F. C.	K.S.M.	November,	1915.
Lang, J. H.	K.S.M.	November,	1915.
Davies, W.	K.S.M.	November,	1917.
Weselman, C.	K.S.M.	November,	1917.
Thompson, E. P.	K.S.M.	November,	1920.
Gill, L. J.	K.S.M.	November,	1921.
Macbeth, R. A.	K.S.M.	November,	1921.
Rosenberg, J. M.	K.S.M.	November,	1921.
Spalding, J.	K.S.M.	November,	1922.
Taylor, H.	K.S.M.	November,	1922.

ELECTRICIAN'S CERTIFICATES.

The following have gained Certificates :—

Galt, W.	K.S.M.	November,	1915.
Butement, J. C.	K.S.M.	November,	1915.
Edmondson, F. C.	K.S.M.	November,	1915.
Lang, J. H.	K.S.M.	November,	1915.
Davies, W.	K.S.M.	November,	1917.
Weselman, C.	K.S.M.	November,	1917.
Thompson, E. P.	K.S.M.	November,	1920.
Gill, L. J.	K.S.M.	November,	1921.
Macbeth, R. A.	K.S.M.	November,	1921.
Rosenberg, J. M.	K.S.M.	November,	1921.

DIPLOMAS.

The following Students have gained Diplomas :—

Beech, S. J. (K.S.M.), Diploma in Metallurgy, November, 1906.
Adams, P. (P. and K.), Diploma in Metallurgy, November, 1907.
Adams, H. (P. and K.), Diploma in Metallurgy, November, 1908.
Banks, R. (C. and K.), Diploma in Metallurgy, November, 1910.
Burrows, M. F. (P. and K.), Diploma in Metallurgy, November, 1910.
Compton, G. S. (P.T.S.), Diploma in Metallurgy, November, 1910.
Cook, H. J. (P.T.S.), Diploma in Metallurgy, November, 1910.
Gabel, J. (K.S.M.), Diploma in Metallurgy, November, 1910.
Gabel, J. (K.S.M.), Diploma in Mining, November, 1911.
Pike, R. W. (P. and K.), Diploma in Metallurgy, November, 1911.
Galt, W. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1915.
Butement, J. C. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1915.
Edmondson, F. C. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1915.
Lang, J. H. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1915.
Grace, J. N. A. (P.T.S.), Diploma in Metallurgy, November, 1915.
Bradley, W. S. (K.S.M.), Diploma in Metallurgy, November, 1915.
Kurth, E. E. (K.S.M.), Diploma in Metallurgy, November, 1916.
Getty, A. (K.S.M.), Diploma in Metallurgy, November, 1916.
LeMesurier, C. R. (K.S.M.), Diploma in Metallurgy, November, 1916.
Leevers, J. C. (K.S.M.), Diploma in Mining, November, 1916.
Davies, Watcyn (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1917.
Weselman, Carl (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1917.
Nairn, T. W. (K.S.M.), Diploma in Metallurgy, November, 1919.
Mundle, E. B. (K.S.M.), Diploma in Mining, November, 1920.
Thompson, E. P. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1920.
Gill, L. J. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1921.
Macbeth, R. A. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1921.
Rosenberg, J. M. (K.S.M.), Diploma in Mechanical and Electrical Engineering, November, 1921.
Rowledge, H. P. (P. and K.), Diploma in Metallurgy, November, 1922.

ENGINE-DRIVER'S CERTIFICATE.

The following Students of the School of Mines passed Examinations held by the Chief Inspector of Machinery, during 1922, for various Engine-drivers' Certificates :—

Fairley, T. C.
Lang, J. H.
Marshman, H. F.
Oldfield, D. H.
Rasmussen, L. P.
Thrupp, T. W.
Turner, B. L.
Willmott, E.
Williams, A. F.

SCHOLARSHIP EXAMINATIONS, 1922.

Junior Scholarship.

Candidate.	District.
Ditchburn, J.	Boulder.
Bell, C. H.	Kalgoorlie.
Woodrow, F. T.	Kalgoorlie.
Norris, C.	Kalgoorlie.
Cotterell, L. L.	Boulder.
Huntley, S.	Boulder.

J. Ditchburn, C. H. Bell, and F. T. Woodrow gain Junior Scholarships.

Entrance Scholarship.

Candidate.	District.
Manners, G. S.	Kalgoorlie.
Illig, H. M. F.	Boulder.
Golding, H. D.	Kalgoorlie.
Denman, R. H.	Kalgoorlie.

G. S. Manners gains the Entrance Scholarship.

Senior Scholarship.

Candidate.	District.
Doyle, J. F.	Trafalgar.

Scholarship not awarded.

Chamber of Mines Scholarship in Mechanical Drawing.

Candidate.	District.
Hopkins, A. J.	Boulder.

Scholarship not awarded.

THE CRITCHLEY PARKER PRIZE.

The following has been recommended for the Prize offered by Critchley Parker, Esq., Melbourne :—

R. C. Ehlers—The Industrial Australian and Mining Standard 1923.

SCHOOL OF MINES BURSARY.

(For Third Year Students).

Sinclair, R. J., has been recommended.

MECHANICS' INSTITUTE (KALGOORLIE).

Free Membership Prize.

The following have been recommended :—Baldock, R. R.; d'Almeida, J. M. B.; Denman, R. H.; Golding, H. D.; O'Keefe, K. P.; Thomson, J. R.; Vincent, J.; Wilson, C. H. D.

SCHOOL OF MINES OF WESTERN AUSTRALIA.

ANNUAL EXAMINATIONS, 1922.

† denotes terminal Pass only.

PREPARATORY CHEMISTRY.

Credit—
Murray, Francis J.
Manners, George S.

Pass—
Ede, James M.
Glendinning, Angus R.
Fels, Leslie H.
Dighton, Charles A.
Golding, Hollis D.
Doig, Miss O. M.
Doig, Miss D. G.
O'Keefe, Kevin P.
Marshall, Aubrey R.
Head, Bert
McInerney, Brian
Starr, Bertram
Lowry, Leonard G.
d'Almeida, Joseph M. B.
Thomson, John R.
Illig, Herbert M. F.
Wilson, Clarence H. D.
Baldock, Robert R.
Denman, Reuben H.
Cogan, Leonard J.
Smith, Edgar A.
Conroy, John F.
Hilditch, Athel S.
Healey, George C.

PREPARATORY MECHANICAL DRAWING.

Credit—
Manners, George S.
Golding, Hollis D.
Illig, Herbert M. F.
Sansom, Jack
Ferguson, John W.
Smith, Edgar A.
Dighton, Charles A.
Lowry, Leonard G.

Pass—
Ede, James M.
d'Almeida, Joseph M. B.
Wilson, Clarence H. D.
Robertson, William A. H.
Thompson, Arthur F.
Berry, Jack R.
Hodgson, Leslie S.
Carter, Arnold J. (T)
Macgregor, Kenneth R.
Perriman, William T.
Whitney, Thomas
Dighton, Frederick H. (T)
Denman, Reuben H.
Loxton, Bruce (T)
Johnson, Harold E.
Kellow, Stephen M.
Conroy, John F.
Edmonds, Arthur H.
O'Keefe, Kevin P.
Marshall, Aubrey R.
Baldock, Robert R.
Starr, Bertram
Thomson, John R.

PREPARATORY PHYSICS.

Credit
Vincent, Jack
Manners, George S.
Illig, Herbert M. F.
Dighton, Charles A.

Pass—
Golding, Hollis D.
Thompson, Arthur F.
Marshall, Aubrey R.
Conroy, John F.
Smith, Edgar A.
Thomson, John R.
d'Almeida, Joseph M. B.
Lynch, Thomas
O'Keefe, Kevin P.
Edmonds, Arthur H.
Lowry, Leonard G.
Baldock, Robert R.
Perriman, William T.

PREPARATORY GEOLOGY.

Credit—
Manners, George S.

Pass—
Golding, Hollis D.
Denman, Reuben H.

PREPARATORY MATHEMATICS.

Credit—
Manners, George S.

PREPARATORY MATHEMATICS—*continued.*

Pass—
Illig, Herbert M. F.
Dighton, Charles A.
Lowry, Leonard G.
Vincent, Jack
Baker, Stanley
Fels, Leslie H.
Smith, Edgar A.
Morrow, Arthur E.
Golding, Hollis D.
Edmonds, Arthur H
Glendinning, Angus R.
Murray, Francis J.
Sansum, William A.

PREPARATORY MATHEMATICS.

ARITHMETIC SECTION.

Pass—
Denman, Reuben H.
Hilditch, Athel S.
Thompson, Arthur F.
Marshall, Aubrey R.
Casey, Gavin S.
Healey, George C.
Taylor, Arthur L. F.
Sansom, Jack
Meacham, Peter S.
Gibbs, Albert E. G.
Lynch, Thomas

ALGEBRA SECTION.

Pass—
Berry, Jack R.
Hilditch, Athel S.
Taylor, Arthur L. F.
O'Keefe, Kevin P.
Thompson, Arthur F.
Cogan, Leonard J.

GEOMETRY SECTION.

Credit—
Newman, Henry B.

Pass—
O'Keefe, Kevin P.
Lynch, Thomas
Rowe, John S.
Marshall, Aubrey R.
Lloyd, Robert F.
Miller, Charles C.
Berry, Jack R.
Cogan, Leonard J.
Sansum, William A.

ELEMENTARY MATHEMATICS.

Credit—
Robertson, William A. H.
Dighton, Frederick H. (T)
Wilson, Clarence H. D.
Kellow, Stephen M.

Pass—
Loxton, Bruce
d'Almeida, Joseph M. B.
Binet, Robert
Perriman, William T.
Macgregor, Vincent R.
Baldock, Robert R.
Hamence, Walter A.

MATHEMATICS.

FIRST COURSE.

Pass—
Yews, Douglas C.

MATHEMATICS.

FIRST COURSE.

ALGEBRA SECTION.

Pass—
Hopkins, Arthur J.
Fulcher, James H. E.

MATHEMATICS.

FIRST COURSE.

TRIGONOMETRY SECTION.

Pass—
Johns, Edward N.

MATHEMATICS.

FIRST COURSE.

GEOMETRY SECTION.

Pass—
Hopkins, Arthur J.
Ede, James M.
Conroy, John F.
Davidson, William G.
Downie, James H.
Parker, Stanley C.

PHYSICS.

FIRST COURSE.

Credit—
Meredyth, Cyril C.

Pass—
Hopkins, Arthur J.

CHEMISTRY.

FIRST COURSE.

Pass—
Hilbery, Reginald W.
Eddy, John T.
Williams, Victor L.
Hopkins, Arthur J.
White, Daniel C.
Martin, Henry R.
Doyle, John F.
Cullen, George C.
Fulcher, James H. E.

ENGINEERING CHEMISTRY.

FIRST COURSE.

Credit—
Brown, Charles W.

Pass—
Scott, Thomas C. (Junior)
Davidson, William G.
McDermott, James J.
Manners, Joseph E.
Powell, Thomas
Scott, Thomas C. (Senior)

ENGINEERING CHEMISTRY.

SECOND COURSE.

Credit—
Lethlean, Hedley V.
Esdaile, Alex N.

Pass—
Carrigg, Clifford G.

ASSAYING.

FIRST COURSE.

Pass—
Williams, Victor L.
Hilbery, Reginald W.
Cullen, George C.
Davidson, William G.
Powell, Thomas
Cribb, Arthur H.

SECOND COURSE.

Credit—
Greer, Jack H.
Carrigg, Clifford G.
Paterson, Arthur V.

Pass—
McDermott, James J.
Mundie, Edward B.

METALLURGY.

FIRST COURSE.

Pass—
Paterson, Arthur V.

SECOND COURSE.

Provisional Pass pending Thesis—
Carrigg, Clifford G.

MINERALOGY.

Credit—
Agnew, Rudolph J.
Greer, Jack H.

Pass—
Paterson, Arthur V.

PETROLOGY.

Pass—
Agnew, Rudolph J.
Carrigg, Clifford G.

MINING AND ECONOMIC GEOLOGY.

Provisional Pass pending Thesis—
Agnew, Rudolph J.

MINING GEOLOGY.

SURVEYOR'S COURSE.

Pass—
Mileson, Albert

MINING.

FIRST COURSE.

Pass—
Rosenbrock, Ernest L.
Manners, Joseph E.

SECOND COURSE.

Mine Sampling.

Credit—
Davies, Idris

SECOND COURSE.

Ore Dressing.

Pass—
Paterson, Arthur V.

SURVEYING.

FIRST COURSE.

Credit—
Greer, Jack H.

Pass—
Moody, Charles O. V.

SECOND COURSE.

Credit—
Agnew, Rudolph J.
(Written examination, 1921; Plan now accepted.)
Eddy, John T.
(Written examination, 1920; Plan now accepted.)

Pass—
Davies, Idris
(Written examination, 1920; Plan now accepted.)

Provisional passes pending Plan—
Rosenberg, Julius M.
Rosenbrock, Ernest L.
Mileson, Albert

MECHANICAL DRAWING.

FIRST COURSE.

Credit—
Esdaile, Alex N.
Crutchett, Edgar G.
Hopkins, Arthur J.
Morrow, Arthur E.
Sansum, Harold A.
Newman, Henry B.

Pass—
Vincent, Jack
Lloyd, Arthur C.
Glendinning, Angus R.
Doyle, John F.
Rowe, John S.
Hilditch, Athel S.
Murray, Francis J.

SECOND COURSE.

Credit—
Duke, Ronald A.
Sinclair, Robert J.
Baker, Stanley
Moody, Charles O. V.

Pass—
Downie, James H.
Lloyd, Robert F. P.

APPLIED MECHANICS.

Credit—
Carrigg, Clifford G.

MECHANICAL ENGINEERING.

FIRST COURSE.

Credit—
Agnew, Rudolph J.

Pass—
Duke, Ronald A.
Moody, Charles O. V.
Fulcher, James H. E.
Gibbons, Leo P. J.
Downie, James H.

GAS ENGINE.

Credit—
Ehlers, Charles R.
Carter, Arnold J.

Pass—
Marshman, Harold F.
Mitchell, Frank
Casey, Henry
Loxton, Bruce
Clark, Francis H.
Macgregor, Kenneth R.

ANNUAL EXAMINATIONS—*continued.*

T denotes terminal Pass only.

INDICATOR.

Credit—
Ehlers, Charles R.

Pass—
Carter, Arnold J.
Marshman, Harold F.
Mitchell, Frank
Macgregor, Kenneth R.
Loxton, Bruce

BUILDING CONSTRUCTION.

Provisional passes pending Thesis—
Carrigg, Clifford G.
Thrupp, Thomas W.
Cecil, Clyde
Sinclair, Robert J.
Blurton, Norman C.
Rosenbrock, Ernest L.
Duke, Ronald A.
Ehlers, Charles R.
Johns, Edward N.
Dingle, Mervyn M.
Gibbons, Leo P. J.

Pass—
Taylor, Harry
(Written Examination, 1920; Thesis now accepted.)

ENGINE DRIVING

FIRST COURSE.

Credit—
Yews, Douglas C.

SECOND COURSE.

Credit—
Thrupp, Thomas W.
Smythe, Thomas P.

ENGINE DRIVING, SECOND COURSE—*continued.*

Pass—
Rasmussen, Lauritz P.

ELECTRICAL ENGINEERING.

FIRST COURSE.

Pass—
Fulcher, James H. E.
Moody, Charles O. V.
Leslie, Bernard H. P.
Lloyd, Robert F. P.

SECOND COURSE.

Provisional passes pending Thesis—
Blurton, Norman C.
Dingle, Mervyn M.
Sinclair, Robert J.

FITTING AND TURNING.

FIRST COURSE.

Pass—
Ferguson, John W.
Johns, Edward N.
Thompson, R. M.
Kellow, Stephen M.
Vincent, Jack.
Hopkins, Arthur J.
Lloyd, Arthur C.
Dighton, Frederick H.
Doyle, John F.
Conroy, John F.
Hooker, George C.
Sansum, Harold A.
Jolly, Leslie M. G.

SECOND COURSE.

Credit—
Blurton, Norman C.

FITTING AND TURNING, SECOND COURSE—*continued*

Pass—
Sinclair, Robert J.
Thrupp, Thomas W.
Sansum, William A.
Moody, Charles O. V.
Fulcher, James H. E.
McLean, Charles E.

MACHINE DESIGN.

Pass—
Taylor, Harry
(Written examination, 1920; Thesis now accepted.)

Provisional passes pending Thesis—
Ehlers, Charles R.
Sinclair, Robert J.
Thrupp, Thomas W.
Blurton, Norman C.
Dingle, Mervyn M.

PRACTICAL MATHEMATICS.

Credit—
Blurton, Norman C.

Pass—
Taylor, Harry
Ehlers, Charles R.

SUPPLEMENTARY EXAMINATIONS, HELD IN FEBRUARY, 1922.

PREPARATORY CHEMISTRY.

Lapham, E. M.
Sansum, W.

PREPARATORY DRAWING.

Murray, F. J.

PREPARATORY MATHEMATICS.

Arithmetic Section.

Lloyd, A. C.

MATHEMATICS.

FIRST COURSE.

Algebra Section.

Moody, C. O. V.

Trigonometry Section.

Moody, C. O. V.
Gibbons, L. P. J.

Geometry Section.

Esdaile, A. N.
Moody, C. O. V.

THEORETICAL MECHANICS.

Ehlers, C. R.

PHYSICS.

FIRST COURSE.

Eddy, J. T.
Manners, J. E.

CHEMISTRY.

FIRST COURSE.

Scott, T. C.
Manners, J. E.
Lloyd, R. F.

DIVISION VI.

OPERATIONS UNDER "THE INSPECTION OF MACHINERY ACT, 1904," UP TO JULY 2nd, 1922, AND "THE INSPECTION OF MACHINERY ACT, 1921," FROM JULY 3rd, 1922.

Annual Report of the Acting Chief Inspector of Machinery and Acting Chairman of the Board of Examiners for Engine-drivers, for the Year ending 31st December, 1922, with Statistics.

Office of the Chief Inspector of Machinery,
"The Barracks," St. George's Terrace,
G.P.O. Box 158,
Perth, 2nd March, 1923.

The Under Secretary for Mines.

Sir,

I have the honour to submit, for the information of the Hon. the Minister for Mines, the following report on the operations of "The Inspection of Machinery Act, 1904," up to 2nd July, 1922, and "The Inspection of Machinery Act, 1921," from 3rd July, 1922, in the districts proclaimed thereunder, together with statistical tables, for the year ending 31st December, 1922.

The report is divided as follows:—

(1) Inspection of Boilers.
(2) Explosions and interesting defects.
(3) Inspection of Machinery.
(4) Prosecutions under the Act.
(5) Accidents to persons caused by machinery.
(6) Engine-drivers' examinations and kindred matters.
(7) General.

DIVISION I.

Inspection of Boilers.

The number of useful "boilers" on the register at the end of the year was 3,073, as against 2,892 at the end of 1921, showing an increase of 181 "boilers." There were 209 new registrations during the year.

Three boilers which had been used as air receivers, one used as a tank, and seven which formerly worked under 10 lbs. pressure, all of which were exempt under the 1904 Act, have now been brought under provisions of the 1921 Act. As against this there were 16 permanently condemned and 22 were transferred to the Eastern States.

The increase in the number of "boiler" registrations is almost entirely due to air receivers and steam-jacketed pans.

Operations in the various Districts.

The following return shows the operations in the various proclaimed districts in connection with boilers as compared with 1921:—

Return showing operations in the proclaimed districts (boilers only) during the year ended 31st December, 1922.

	Totals.	
	1922.	1921.
Total number of boilers registered and capable of being used as steam generators	3,073	2,892
New registrations during the year ...	209	33
Boilers reinstated	11	5
Inspections for year—Thorough ...	1,513	1,433
Working ...	189	186
Boilers condemned during year—		
Temporarily	89	70
Permanently	16	22
Boilers converted into tanks, air receivers, etc., during year	...	4
Boilers transferred beyond the jurisdiction of this Act	22	14
Number of notices issued for repairs during the year	480	465
Number of certificates issued (including those issued under Section 30) during the year	1,537	1,454
Number of useful boilers out of use at end of the year	1,442	1,366

	Totals.	
	1922.	1921.
	£ s. d.	£ s. d.
Total amount of fees for 1922 ...	3,425 14 0	...
Total amount of fees for 1921 ...	...	3,063 5 6
Total number of Inspectors ...	8	8

The number of thorough and working inspections was 1,513 and 189 respectively, making a total of 1,702, showing an increase of 80 thorough inspections and 3 working inspections.

In the South-Western District 1,272 inspections were made, or over 74 per cent. of the total number made in all districts. The inspections made in this district show an increase of 106 as against 1921.

In the Kalgoorlie group 330 inspections were made, being 19.3 of the total inspections. The inspections in this district showed an increase of 12.

In the North Coolgardie and Mount Margaret districts 61 inspections were made, or 3.58 per cent. of the total number. The inspections showed on increase of 3.

In the East Murchison and Murchison and Yalgoo districts 47 inspections were made, or 2.76 per cent. of the total number, and the inspections showed a decrease of 30.

The following table shows the number of boilers temporarily or permanently condemned, as a percentage of inspections made, since the inception of the Act controlling boilers:—

Number of temporarily and permanently condemned boilers per 100 *inspections made since* 1899.

Year.	Temporarily.	Permanently.
	per cent.	per cent.
1899	2·64	1·42
1900	2·21	·498
1901	4·34	·511
1902	5·00	·958
1903	2·43	·697
1904	3·08	·389
1905	2·84	·388
1906	3·98	·960
1907	4·36	·802
1908	3·18	·599
1909	2·89	·797
1910	4·49	1·382
1911	3·54	8·070
1912	3·93	2·471
1913	2·64	2·431
1914	2·97	2·178
1915	4·72	1·538
1916	3·97	1·456
1917	3·19	1·301
1918	3·25	1·563
1919	3·14	3·547
1920	3·28	2·171
1921	4·33	1·358
1922	5·22	·940

Many boilers have had to be very extensively repaired during the year. Fortunately, new material is now available, so that the repairs are much more satisfactory than in late years when much second-hand material had to be used.

It is curious that contrary to expectations, there has been quite a marked drop in the number of boilers (16) which were permanently condemned during the year. There are, however, many old boilers in the State which are rapidly nearing the stage when useful repairs will be no longer possible. When this time arrives it is to be hoped that owners will see the advisability of replacing such boilers by *new* ones, and thus secure themselves against irritating repair bills of frequent occurrence.

DIVISION II.

Explosions and Interesting Defects.

It is satisfactory to be able to again report that no explosion has occurred in connection with any boiler under the jurisdiction of the Act. This is the more satisfactory when it is remembered that large numbers of old second-hand boilers were dumped into this State many years ago, and that in some of the goldfields districts in particular the only available feed water can only be characterised as very definitely bad.

The departmental inspectors have done good work in, so far, avoiding any serious accident.

The past year has, as far as boilers are concerned, been singularly uneventful. No defect of any particular interest has been noted. and all repairs ordered have been carried out in such a way as to, as far as possible, restore boilers to their original strength.

A point which boiler owners do not appear to generally realise is the damage that can occur, in sometimes a very short time, through small neglected leakages at fittings, man and mudhole doors, etc. Hundreds of absolutely unnecessary patches have been ordered owing to the wasting of plates from this perfectly avoidable cause. Owners should keep in mind that they *cannot afford* to neglect a leakage however small, and should also remember that, though it is generally a very simple matter to stop a leakage when it first occurs, it becomes increasingly difficult if neglected.

DIVISION III.

Inspection of Machinery.

The following return shows a classification of the power-driven machinery in the proclaimed districts. The number of groups driven by oil engines (including kerosene, petrol, and benzine engines) has been greatly reduced by exemptions under the 1921 Act. In July, after the proclamation of the Act, 2,290 plants driven by oil engines and owned by agriculturists were written off in accordance with the provisions of the Act. Several others have since been similarly dealt with. The number of groups registered at end of year driven by oil engines was only 879, as against 3,183 at end of 1921.

Electrically driven groups now number 2,656, showing an increase of 250 during the year. Steam driven groups have decreased from 1,266 to 1,161, showing a decrease of 105. Suction gas groups remain as in 1921, viz., 222; ordinary town gas groups have decreased from 16 to 14; hydraulic groups are the same as last year, viz., 10; and compressed air groups have decreased from 38 to 36.

Return showing classification of various sources of power-driven machinery in use or likely to be used again in proclaimed districts during the year ended 31*st December*, 1922.

Classification.	Totals.	
	1922.	1921.
No. of groups driven by—		
Steam engines	1,161	1,266
Oil engines	879	3,183
Ordinary Gas engines	14	16
Suction Gas engines	222	222
Compressed Air engines	36	38
Electric motors	2,656	2,406
Hydraulic pressure	10	10
Totals	4,978	7,141

The following table shows the number and description of all the lifts in this State:—

Passenger lifts:	
Electrically driven	67
Hydraulically driven	—
Goods lifts:	
Electrically driven	83
Hydraulically driven	9
Belt driven	9
Hoists	48
	216

Only one new passenger lift was erected during the year.

The number of goods lifts driven by electricity has been reduced from 99 to 83, owing to 16 of these being now classified as "hoists." The total number of lifts and hoists has increased from 185 to 216.

The following return shows the work done in connection with machinery inspections:—

Returns showing operations in the proclaimed districts (machinery only) during the year ended 31st December, 1922.

	Totals.	
	1922.	1921.
Total registrations of useful machinery	4,978	7,141
Total inspections made	3,838	4,889
Certificates bearing fees	3,327	4,259
Certificates (steam) without fees ...	511	630
Notices issued "Machinery dangerous"	260	522
Total amount of fees for 1922 ...	£1,572 8s.	...
Total amount of fees for 1921 ...	...	£1,523 9s.
Number of Inspectors	8	8

The total number of registrations shows a severe drop, viz., from 7,141 to 4,978, or 2,163. The new Act provides for the exemption of all oil engines of 6 H.P. and under used by agriculturists, pastoralists, or pearlers; and, as explained above, 2,290 of such registrations were written off in July last. Subsequently an Order in Council was made exempting electric motors used exclusively by agriculturists, pastoralists, orchardists or dairymen, used for irrigation or dairy purposes only, and this caused many other registrations to be written off.

The majority of the exempted plants were situated in the South-Western District, and in spite of there being 405 new registrations in this district the numbers have, of course, been seriously reduced.

In the Kalgoorlie groups the number of registrations has decreased by 169, and in the Geraldton groups it increased by four.

In all districts the number of inspections made was 3,838, as against 4,889 in 1921. This shows a decrease of 1,051, which, considering the number of exempted plants, is very satisfactory.

Only one accident to machinery, of any interest, occurred during the year, viz., to a winding engine on the Golden Horseshoe Gold Mine, Kalgoorlie.

The driver, after warming up the engine, commenced to lower one of the tanks to bailing level. The engine is fitted with steam released gravity brakes, and foot brakes. The tank was, in accordance with the usual practice, lowered with the foot brake down to 1,000 feet; when this level was reached the steam in brake auxiliary engine was released in order to apply the gravity brake. This brake failed to act, or at least acted only to a very slight extent, and the foot brake was not sufficient to arrest the tank until it struck the water. By this time the tank stopped. All the rope was wound off the drum but not detached, and no damage whatever was done.

The accident was due to the failure of the gravity brake. A pin which couples the weight rod to the piston rod of brake engine was found to have worked out. This was not noticed on account of the weight pit being full of water and oil. The accident points to the importance of constant inspection of such parts, and also to the fact that weight pits should be properly drained so as to facilitate inspection. It is more than possible that the cause of the pin working out was the jar caused by the sudden cushioning of the weight on the water.

DANGEROUS MACHINERY.

The number of notices to provide guards, etc., dropped from 522 in 1921 to 260 for 1922, being 6.77 per cent. of the number of inspections made.

There appears to be a general tendency on the part of owners when erecting new plants to provide more efficient guards, thus rendering notices from inspectors less necessary and numerous.

No case of seriously dangerous machinery or arrangement of machinery has come under my notice during the year. By "arrangement of machinery" I mean that the proximity of a machine to another one, or that the peculiar arrangement of its driving belting, etc., often renders a machine dangerous, when, if differently erected, it would be perfectly safe.

Belting and counter shafting should, if possible, always be either overhead or below the floor of any factory or room where machinery is installed.

It is not infrequent to find counter shafting fixed a foot or two above a floor, and all belting from it to machines at about same level. This constitutes a grave danger, and it also wastes a large amount of valuable space that could be put to better use. A little forethought when erecting a plant saves much subsequent trouble and expense.

DIVISION IV.

Prosecutions under the Act.

No prosecution in regard to boilers or machinery was instituted during the year.

DIVISION V.

Accidents to Persons caused by Machinery.

During the year accidents to 30 persons were reported, including one which ended fatally. This shows a decrease of 41 in the total number, and a decrease of nine fatal, as compared with 1921. There has been a decrease of 16 in the number of accidents in the goldfields districts, and a decrease of 25 in the South-Western District, as against the year 1921.

The following table shows the number of accidents and the percentage of these, based on the total number recorded, caused by the various kinds of machinery mentioned:—

No. of Accidents.	Class of Machinery.	Percentage of total Accidents.
8 (1)	Circular Saws	30
1	Buzzer	3·33
1	Shaper	3·33
2	Belting	6·66
2	Tinsmiths' Press	6·66
2	Fibre Teasing Machines	6·66
1	Rope Making ...	3·33
1	Chaffcutter ...	3·33
1	Printing Machine	3·33
1	Machine Tools ...	3·33
1	Gas Producer ...	3·33
1	Hydraulic Goods Lift	3 33
1	Passenger Lift ...	3·33
2	Scalds	6·66
1	Steam Engine ...	3·33
1	Belt Conveyor ...	3·33
1	Shafting	3·33
1	Pump	3·33
29 (1)	... ...	Total 30

The accidents from circular saws are again at the head of the list, and account for 30 per cent. of the whole number.

The one fatal accident was caused by a circular saw. The back of the saw picked up a piece of timber and hurled it forward, hitting deceased under the eye.

Many of the other accidents consisted of cut fingers and bruises, and most of them were due to carelessness or momentary absent-mindedness.

Three of the accidents resulted in broken arms, and, curiously, were in each case due to very much the same cause, viz., carrying bundles of loose tow or fibre too close to a machine. In two of these cases the machines were very well enclosed, there being only about 1½ inch of a smooth spindle projecting through the guard. This, however, was sufficient to catch a few loose fibres and wind up the whole bundle, including the injured persons arms. Too great care cannot be exercised in handling such material. It seemed almost impossible that so short a length of smooth spindle could have caught and wound up the material, and no one concerned anticipated the possibility of such a thing.

I wish to again call attention to the inexplicable objection certain operatives have to guards of any kind. Inspectors report that it is quite common practice to remove guards as soon as they leave the premises, but prior to their next visit (the date of such visit being generally known beforehand) guards are replaced, and often are so spotlessly clean that they tell their own story.

The removal of guards from machines in motion constitutes a breach of the Act, and it is hoped that owners will co-operate with the Department to a greater extent than has hitherto been customary, in keeping guards in their proper places.

DIVISION VI.

Engine-drivers' Examinations and kindred matters.

During the year three examinations were held in Perth, two in Kalgoorlie, two in Bunbury, and one in Albany. Examinations were advertised to be held at Southern Cross, Leonora, Mt. Magnet, and Geraldton, but fell through owing to the necessary number of candidates not being forthcoming.

The following table shows the certificates granted under the 1904 Act up to July, and also those granted under the 1921 Act between July and December 31st:—

Return showing total number of engine-drivers' and boiler attendants' certificates (all classes) granted in 1922, compared with 1921.

Class of Certificate.	Number Granted.	
	1922.	1921.
Winding Competency (including certificates issued under Regulation 40 and Section 60 of the 1921 Act)	2	...
First Class Competency (including certificates issued under Regulation 27 and Section 63 of the 1904 Act)	2	1
First Class Competency (including certificates issued under Regulations 40 and 45 and Sections 60 and 63 of the 1921 Act)	1	...
Second Class Competency (including certificates issued under Regulation 27 and Section 63 of the 1904 Act)	25	25
Second Class Competency (including certificates issued under Regulation 40 and Section 60 of the 1921 Act)	14	...
Third Class Competency (including certificates issued under Section 63 of 1904 the Act)	36	54
Third Class Competency (including certificates issued under Regulation 45 and Section 63 of the 1921 Act)	4	...
Locomotive Competency (under the 1904 Act)	5	8
Locomotive Competency (under the 1921 Act)	2	...
Traction Competency (under the 1904 Act)	6	12
Traction Competency (under the 1921 Act)	5	...
Internal Combustion Competency ...	3	...
Internal Combustion Service	166	...
Crane and Hoist Competency	...	...
Crane and Hoist Service	37	...
Boiler Attendant's Competency ...	8	...
Boiler Attendant's Service	135	...
Interim	8	6
Copies	4	12
Transfers	114	...
Totals	577	118

In all, during the year, there were 626 applications received, and of these 577 were granted certificates. These numbers are the largest dealt with since 1905, immediately after the inception of the 1904 Act. The applications in 1922 closely approximate to those of 1905 (there being one less); the number of certificates granted exceeds that of 1905 by 118. This excess, however, is almost entirely accounted for by the issue of 114 Transfer Certificates.

The revenue produced from application fees, and fees for granting certificates, was £668 2s. 6d., exceeding the revenue from this source for 1921 by £504 2s. 6d. Of course, this is abnormal, and is largely accounted for by the rush of applicants to secure regraded certificates under the new Act.

The work in connection with this branch was very heavy for the last six months of the year, new forms, new sets of examination papers, and new certificates having to be prepared, and both the Board and the clerical staff were kept very fully occupied.

It will be noted that there was one examination less than usual held in Perth in July. The Act had only just been proclaimed, and the Regulations were

not completed, so it was decided to postpone the July examination till October.

It was hoped, as a result of the conference between Chief Inspectors and similar officers, held in Sydney, in December, 1919, with a view to securing uniformity in Engine Drivers' Certificates, Examinations, etc., that the other States would have introduced legislation on the lines agreed on at the conference. Nothing has as yet been done except by this State, the new 1921 Act and Regulations embodying, as far as possible, the matters decided on by the conference.

Inquiries, Prosecutions, etc.

During the year it has not been necessary to take proceedings against any engine-driver for a breach of the Act, or to hold any inquiry with regard to overwinds, runaways, etc., which could reasonably be put down to carelessness on the part of a driver. This result is most satisfactory.

DIVISION VII.

General.

In the Annual Report for the year ended 31st December, 1921, reference was made to the new Inspection of Machinery Bill, which finally became law at the end of the 1921 Session. The new Act is known as the "Inspection of Machinery Act, 1921." It was proclaimed in *Government Gazette* of 1st July, and came into operation on 3rd July, 1922.

The scope of the Act was fully dealt with in the last Annual Report, where it was explained that all boilers working above atmospheric pressure, air and gas receivers above a certain minimum capacity, and all steam jacketed vessels are now brought under the provisions of the Act. During the six months ended December 31st 1922, 90 Air and Gas Receivers, 85 Steam Jacketed Vessels, and 7 boilers working at pressures under 10lbs. (which were formerly exempt on account of a provision in the 1904 Act), were inspected and certificated.

The condition of many of these vessels fully warranted their inclusion under the provisions of the Act.

There are several new provisions in the Act which should be noted by those interested, *e.g.*:—

(a) Section 16 (2) requires all suppliers of electric current for power purposes to notify quarterly all new connections made for the purpose of working machinery.

(b) Section 34 provides that any *intended* repairs to a boiler not ordered by an Inspector shall be notified.

(c) Section 35 deals with illegally increasing the pressure in any boiler, and also with knowingly concealing defects or bad workmanship.

(d) Section 45 provides that persons selling or letting on hire, any boiler or prime mover shall notify the Department of their intention.

The same section provides that manufacturers or their agents shall furnish the Chief Inspector with a Maker's Test Certificate, and a sunprint of every new boiler intended to be used in this State.

In sub-section (4) of same section, owners are required to notify the Inspector for the District of any accident to a boiler or machinery of such a nature as to necessitate structural alteration or extensive repairs.

(e) Section 50 deals with notification of injury to persons caused by boiler explosions, or by machinery, and intimates that for the purposes of this section "Serious bodily injury" shall be such as results in the injured person being disabled from following his or her ordinary occupation, etc., for a period of *two weeks* or more. The time of disablement is now the same as in Mines Regulation Act, and will prevent a number of very trivial accidents being reported and inquired into.

(f) Section 52 makes certain very necessary provisions in connection with Coronial Inquiries, and confers upon Inspectors of Machinery the right of calling witnesses, examining them, and giving evidence themselves at such inquiries.

Owners, dealers, and others interested in machinery would find it greatly to their advantage to obtain a copy of the Act and Regulations, and make themselves acquainted with them.

Early in the year Regulations under the new Act were framed. These were gazetted on 1st July, and took effect as from 3rd of same month.

The regulations relating to certain charges were objected to by the Legislative Council, and were disallowed on 18th September. New regulations to take the place of those disallowed were framed and gazetted on 29th September, and were duly laid on the Table of the House.

On the 24th October it was moved that—

> "The whole of the amended Regulations laid upon the Table of the House on 10th October, 1922, be disallowed";

and an amendment to this motion was subsequently added to the effect that—

> "Fresh Regulations be made fixing the fees at not less than 30 per cent. below those set out in the disallowed schedule."

New Regulations were gazetted on 24th November, were duly laid on the Table of the House for the required period, and are now in force.

The new regulations contain provisions for certain fittings and appliances in connection with winding engines, and make it obligatory to provide an engine room record book for every engine room, in which accidents, defects, or any noticeable peculiarities in running shall be entered up by the engine-driver in charge of each shift. The book should be examined daily by the manager or engineer. If this is conscientiously kept and examined it should prove the means of preventing many avoidable accidents to plants. Owners will find it to their interest to see that the regulation is carried out properly.

The regulations in regard to lifts should be carefully read by owners, engineers, and architects.

It is now necessary to notify the Chief Inspector of all lifts about to be erected or re-erected, and to submit plans and specifications of such lifts and their enclosures. When plans are approved a permit to erect is issued.

The fact of the plan having to be approved of *before erection* should save owners considerable expense, as it gives the Department a chance to point out errors of design, etc., which if not detected before erection starts, would necessitate expensive alterations being made before the lift could be certificated.

It is also necessary to supply for the original and all subsequent wire ropes used on lifts a specification of the rope, giving particulars prescribed in the regulations and the maker's test certificate of breaking strain.

When printing the regulations it was thought desirable to append a few notes on the duties of boiler attendants, and some hints on first aid in the case of electric shock and poisoning by producer gas or ammonia fumes.

It is hoped that the notes on boiler attendants' duties may prove interesting to both owners and firemen, and that possibly the first aid hints may do good service in case of accidents, such as referred to, occurring.

In conjunction with the proclamation of the Act, the various districts in which it operates were proclaimed.

Several of the boundaries of the existing districts were slightly adjusted, and a new district was added, viz., Carnarvon. The new district is bounded by the coast line on the west, and by a line drawn from C. Farquhar (at its most northern point) to Bompas Hill, its most easterly point, and thence along the Murchison River back to the coast.

No work was done in the new district of Carnarvon during the year under review. The district will, however, be visited early in 1923.

The number of boilers out of use in the various districts is large, viz., 1,442. Many of these boilers, though still useful at comparatively low pressures, will probably never come into use again. Some of them are so situated that they would scarcely pay for transportation.

The number of boilers out of use is not altogether a fair criterion of the state of industries in this State, as though many mines have been closed down, many others are now working with suction gas plants instead of the boilers formerly used.

The year has been a very busy one as regards boiler repairs. For months at a time about 14 men have been occupied in repair work in the South-Western district alone. In some cases boilers have been so much repaired that little of their original structure remains. Inspectors always aim at having repairs executed in such a way as to restore the repaired part as far as possible to its full original strength. Nevertheless, as I have remarked previously, the time is rapidly coming when some of these old boilers can no longer be economically repaired.

As conditions are now becoming more normal, there will not be the necessity for patching up old boilers, that existed during the years of the war. Both complete boilers, and plates for their manufacture, are now coming into the State fairly freely.

During the latter part of the year the engineers' strike has caused inconvenience to owners in the matter of delay to repairs of boilers.

By judiciously reducing pressures it has, however, been possible to keep going in most cases.

Up to the end of the year, strange to say, no case of breakdown to engines of sufficient importance to cause stoppage of the works had occurred since the commencement of the strike, so that fortunately the services of the men on strike were not urgently required for repair work of this kind.

In the South-West land-clearing operations are in full swing for the Group Settlement Scheme. About 10 traction engines are in use in connection with this work.

The timber trade is still depressed, many mills being closed, and others are working with reduced staffs.

Coal mining has been well maintained, most of the mines being constantly at work.

The tin mining industry is unfortunately much depressed, and many of the plants are idle, and will be until the tin market improves.

On the Goldfields many plants are idle owing to the mines on which they are erected having ceased operations. This is very marked in the Murchison and East Murchison districts. There are, however, several new finds at present in the prospecting stage, and it is hoped that the coming year will see much of the idle machinery absorbed by such new finds.

I understand that the Sons of Gwalia G.M. have decided to erect a 25-head battery, which will replace about half of the plant which was so unfortunately destroyed by fire.

This mine has also installed an electric arc welding set in addition to the oxy-acetylene plant already in use, and are getting good results. They have also a pneumatic chipping hammer for boiler-cleaning purposes which the District Inspector reports is proving very successful, as by its aid "practically every part of a Lancashire boiler can be reached." He also remarks that it removes the scale completely and without marking the surface of the plates, which is a very strong point in its favour.

The developments at Gibraltar have been so satisfactory as to decide the management of the Lloyd George G.M. to erect a 10-head battery. It is to be hoped that this mine will live up to its expectations, and that it and other new finds may soon take the place, and utilise some of the machinery, of mines that have unfortunately had to close down.

No new industry of any importance has started during the year, though many new plants have been installed, the majority of them being run by electricity. The number of registered plants driven by this power increased from 2,406 in 1921 to 2,656 in 1922. It is no doubt the power of the future for industries situated within the reach of a power station.

WORK DONE FOR OTHER DEPARTMENTS.

During the year several other Departments took advantage of the expert mechanical knowledge of inspectors to have special inspections and valuations made of plant either being purchased or with a view of disposing of it. For work of this kind no statutory charge can be made, but the Department is generally recouped as far as expenses are concerned.

INSPECTORIAL STAFF.

The number of inspectors during the year was the same as during the previous year, viz., eight.

On the 31st January Inspector D. F. Booth was retired after 13 years of useful work with this De-

partment, and Inspector P. H. Wright was appointed to fill the vacancy as from 1st February. The work at the end of the year was well in hand, and the staff, as usual, have shown a keen interest in their work, and have kept up the record of the Department.

CLERICAL STAFF.

This remains as in 1921. Owing to the introduction of the new Act, etc., the year has been an exceptionally busy one for the staff, which responded well to the extra demands made on it.

REVENUE.

The total revenue from all sources during the year was £5,925 12s. 10d., made up as follows:—

	£	s.	d.
Fees for boiler inspections ..	3,425	14	0
Fees for machinery inspections	1,572	8	0
Engine-drivers' fees	668	2	6
Incidentals (being fees for special inspections, expenses, etc.)	259	8	4
	£5,925	12	10

The revenue for the year shows the very satisfactory increase of £944 12s. 7d. against that of the year 1921.

The increase is made up as follows:—

	£	s.	d.
Boiler fees (increase on 1921) ..	362	8	6
Machinery fees (increase on 1921)	48	19	0
Engine-drivers' fees (increase on 1921)	504	2	6
Incidentals	29	2	7
Total increase	£944	12	7

The following is an analysis of the increases and decreases in fees for boilers and machinery in the various districts, and also shows the increase due to engine-drivers' fees:—

	Increase.			Decrease.		
	£	s.	d.	£	s.	d.
S.W. group	262	13	1			
Kalgoorlie group	169	11	6			
North Coolgardie and Mt. Margaret	52	17	1			
East Murchison and Murchison and Yalgoo ..	..			44	11	7
Engine-drivers' fees ..	504	2	6			
	989	4	2	44	11	7
	44	11	7			
Total increase ..	£944	12	7			

It will be seen that there was a good increase in every district except East Murchison and Murchison and Yalgoo.

The loss of revenue to the Department incurred by not charging fees for boilers and machinery belonging to Government non-trading concerns was £52 12s. 6d., and the expenses connected with such inspections (exclusive of salaries) amounted to £11 5s. 2d.

During the year the amount written off as bad debts was £1 6s., being rather less than .022 of the total revenue.

The amount is the smallest which has been written off in any one year since record of this item has been kept, and is evidence of good work in connection with revenue due to the department.

Under the latest regulations the revenue will, of course, be reduced considerably below that anticipated under the original regulations, and it will, I fear, be found impossible to make revenue and expenditure balance, as was hoped when the original regulations were framed.

Every effort to keep down expenses is being made In the metropolitan district a motor cycle is being used for all outlying work and is proving most useful and very economical. It was purchased on 16th August. The total costs from this date to 31st December, including oil, petrol, etc., amounted to £2 5s. 5d. In all, 715 miles were covered and 244 inspections made with the aid of the cycle, the cost per mile being .762d., and the cost per inspection 2.24d. Unfortunately a motor cycle has only a limited sphere of usefulness, and the hire of cars necessary to work country districts will continue to be the largest item in our incidental expenses.

MILEAGE.

The total distance travelled by inspectors during the year was 46,176 miles, of which 20,764 were by rail, 25,402 by road, and 10 by water. The distance travelled shows a decrease of 5,031 miles as against 1921, with a decrease of 968 in the number of inspections made. The average miles travelled per inspection was 8.33, showing an increase of .47 miles per inspection as against last year. The reduction in the number of inspections is due to the large number of plants exempted under the provisions of the 1921 Act.

CONCLUSION.

In conclusion, I wish to tender my thanks to the inspectors and the office staff for the generous support they have accorded me during the time I have held the position of Acting Chief Inspector (during the absence of the Chief Inspector on long service leave). My thanks are also due for assistance rendered by officers attached to the Crown Law, Police, and Postal Departments in various districts in connection with the administration of the Act.

I have the honour to be,
Sir,
Your obedient servant,
H. L. GILL,
Acting Chief Inspector of Machinery and
Acting Chairman of the Board of Examiners.

DIVISION VII.

ANNUAL REPORT OF THE CHEMICAL BRANCH, MINES DEPARTMENT, FOR THE YEAR 1922.

The Under Secretary for Mines.

I beg to submit, for the information of the Hon. the Minister, my report for the year 1922.

ADMINISTRATION.

Prior to the year 1922, and up to 29th February of that year, the chemical work for the various Government Departments was carried out in three separate laboratories attached to three different branches of the Service. All investigations of minerals and mineral products were carried out in the Geological Survey Laboratory in Museum Street, Perth, under the direction of the Government Mineralogist and Chemist. The work required by the Railway Department was done in the Railways Laboratory, at Midland Junction, attached to the Railway Department. All investigations of organic materials and such other chemical work as was required by the Agricultural, Police, Health, and Water Supply and Sewerage Departments were made in the Government Analyst's Laboratory in Wellington Street, under the Government Analyst and Chief Inspector of Explosives.

On the 1st March, 1922, the Geological Survey and Government Analyst's Laboratories were merged into a new Chemical Branch of the Mines Department, and the writer was placed in control of it under the title of Government Mineralogist and Analyst. When reorganisation was completed, it was confidently expected that this new arrangement would lead to increased efficiency and economy. The new branch covers the activities previously distributed, in most parts of Australia, over separate Health, Agricultural and Mineral Laboratories. It has been found convenient to transfer to another branch of the Mines Department the administration of the Explosives Act, any analytical work required in connection with it being referred to the Chemical Branch.

An essential step in the organisation of the new Branch was the housing of the whole staff under one roof. After lengthy discussion of available sites and estimates of cost, it was decided to make such additions to the Wellington Street Laboratory as would accommodate the staff previously housed in the Geological Laboratory in Museum Street. This site is far from an ideal one, being on a busy and ofttimes dusty road, within reach of the smoke from three factories, and subject to vibration from passing trams and nearby heavy machinery. Financial considerations for the present debarred consideration of the ideal, viz., a laboratory situated amidst the green lawns and trees of some public reserve, as far as possible from street dust, smoke and ground tremors. This ideal should not, however, be lost sight of. The additions to the Wellington Street Laboratory were begun in July, 1922, but are still (February 1923), far from completion, owing to difficulty experienced from time to time in obtaining building material or building tradesmen. Until the new building is completed, and the two staffs housed under one roof, the amalgamation of the two laboratories can never be completely effective.

No one professional officer could keep in personal touch with every detail of the technical work involved in a Branch covering such a wide range of applied chemistry and physics as this Branch does. After three months' experience, therefore, of the scope and volume of the work, and the capabilities of the Staff, the Branch was entirely reorganised on the professional side. The staff, which now includes sixteen professional officers, was divided into three sections of approximately equal size, and responsible officers were placed in control of each section, viz.:—

1. Toxicology, foods and drugs—Mr. C. E. Stacy, Assistant Government Analyst and Toxicologist.
2. Mineralogy, Mineral Technology and Geochemistry—Mr. H. Bowley, Assistant Mineralogist and Chemist.
3. Agriculture, Water Supply and Sewerage—Mr. S. C. Palmer, Assistant Agricultural Chemist.

In the latter part of this report will be found notes by these officers on the work done under their direction.

SWAN RIVER POLLUTION.

Serious consideration was given throughout the year to the reports of the growing pollution of the Swan River. A similar trouble has arisen in the case of almost every river in the world upon the banks of which cities have grown rapidly. It would be hopeless to expect that the Swan, which, owing to climatic conditions, has no continuous outward flow throughout the year, should remain in the same condition when 150,000 people are living along a short stretch of its banks, as when 15,000 only were there. Pollution is inevitable, but minimisation of the pollution is feasible, and should be the object of all concerned. During the Spring, Colonel Longley—an expert officer of the Rockefeller Foundation—was invited to visit the State and report upon the matter. He was prevented from reaching any practical conclusion owing to the almost total absence of scientific data of the most fundamental nature, no one in the past having had either the time or funds to study the varying biological, chemical and tidal conditions of the river.

After Colonel Longley's departure, a Committee of investigation was appointed, consisting of the Com-

missioner of Public Health, Medical Officer of Health, Engineer for Metropolitan Water Supply and Sewerage, Government Analyst and Professor Nicholls (Professor of Biology, University of W.A). As no special funds, however, have been made available to this Committee, only such limited investigations have been possible as could be done with the funds, staff, and time at the disposal of already fully occupied departments.

Increased pollution of the river water arises chiefly from one or more of the following causes:—

1. Direct access to the river in increasing quantities of putrescible organic matter, the waste products of human and animal life and activities;
2. Access to the river in increasing quantities of plant foods, which may be themselves non-putrescible, but which stimulate the growth of water weeds (algæ), which, in their turn, die and putresce.
3. Unusually favourable conditions of tides, temperatures and salinity, leading to temporary increase of pollution during particular seasons.

Investigation is obviously needed of the nature and composition of the various solid and liquid matters reaching the river in appreciable quantities, particularly in regard to their content in putrescible matter and plant foods; also of the nature of the river flora and of its changing environment, with a view to determining the most favourable and least favourable conditions of growth.

In the Chemical Branch, it has been found possible to make—

1. Continuous observations on a limited scale of the composition of the river water at one point, viz., Mends Street Jetty;
2. Comparative analyses of the waters of several of the larger swamps in the city area.
3. Continuous analyses of the effluent flowing into the river from the main sewage works, which are of the septic tank-filter bed type.
4. Single analyses of each of the main factory effluents running into the river.

With regard to the composition of the river water, it has been found that whilst there is a good flow of fresh water down to the lower reaches during and after the winter rains, in the summer time very little fresh water comes down, and alternations of the tide rapidly make the water as far up as Perth Causeway almost as saline as the open ocean. In the past twelve months, the extremes of composition six inches below the surface at Mends Street Jetty, in Perth Water, were:—

——	River. Maximum Salinity.	River. Minimum Salinity.	Ocean. Water Average.
Date	16-4-22	4-8-22	
Density at 15°C. ...	1·0261	0·9999	1·0263
	Grams per 100 c.c.		
Total solids	3·5285	0·1340	3·5645
Chlorine (Cl)	1·9814	0·0726	1·9730
Sulphate ion (SO_4) ...	·2736	0·0075	·2759
Carbonate ion (CO_3) ...	·0069	0·0030	·0075

Phosphorus and nitrogen being probably the most active plant stimulants in this case, determinations of these are being made as opportunity occurs. On the 25th June, 1922, the figures obtained for the river water at Mends Street were:—

Total solids—2.3818 gms. per 100 c.c.
Phosphorus—0.12 parts per million.
Nitrogen—0.36 parts per million.

The nitrogen in five samples taken in March at other parts of the river was much higher, viz., 2.22 to 5.75 parts per million; the highest figure, however, obtained within a mile of the sewage works.

In comparison with these figures, the average of 23 samples of effluent from the Burswood plant taken throughout the year was:—

Nitrogen—39.0 parts per million.

whilst three determinations of phosphorus in the same gave a mean of—

Phosphorus—4.1 parts per million.

Nine trade effluents running into the river at Perth and Fremantle showed—

Nitrogen—5.3 to 195.6 parts per million.
Phosphorus—1.8 to 36.0 parts per million.

The two worst of these effluents are of comparatively small volume, viz.: 1,000 and 200 gals. a day.

The investigations made this year show that in the lower Swan, as in most tidal rivers, there is a marked stratification in the water, the surface being always less saline than the bottom. The increase in salinity from top to bottom is regular and progressive, and particularly well marked from July to October when the rain water is coming freely down the river. The following figures obtained on 2nd October, 1922, are typical:—

Position:

Barrack-street Jetty.		Crawley Bay.		Off Armstrong Spit.	
Depth.	Salinity. Cl per million.	Depth.	Salinity. Cl per million.	Depth.	Salinity. Cl per million.
feet.		feet.		feet.	
1	2,126	1	5,296	1	7,278
5	12,683	5	13,331	10	16,718
8	15,601	10	17,258	20	18,375
		15	18,195	30	18,952
		18	18,447	42	19,024

Pure ocean water averages 19,730 parts of chlorine per million.

Further investigation is in progress.

INDUSTRIES.

Not the least important part of the work done in the Government Laboratory is that which lends assistance to the establishment and extension of primary and secondary industries.

As regards primary industries, mining is materially assisted by making free determinations and assays of minerals running into several hundreds in each year; by making control assays for the State Batteries; by making experimental tests on local ores of new processes of treatment; by finding markets for local minerals, and in numerous other ways. Soil, water, and fertiliser analyses, made at much less than cost, are a great help in settling the country, and the opportunity of having them carried out

is very freely accepted, an unusual number of soils, stock waters and irrigation waters having been submitted during the year. The experimental testing of wheats, especially in connection with the Royal Agricultural Show, assists the wheat grower to decide the most profitable variety to grow in each district. Assistance is also given to the fishing and forestry industries.

In a State in such an early stage of development as Western Australia, great assistance can be given by a well-equipped chemical and physical laboratory to the secondary industries. The stock-taking of our mineral resources, which has been going on for many years past in the Mineral Laboratory, has already proved of immense value to manufacturers, the basis of whose business is an ample supply of raw material of known chemical and physical properties. It was hoped that the Federal Forest Products Laboratory would carry out a similar stocktaking in its special domain, but as there has been a practical suspension of all useful activities on its part, it will devolve upon the State laboratory to take up, as opportunity offers, this very necessary work. Already, attention has been given to the investigation of the products of destructive distillation of several local woods, no previous data being available.

In addition to finding for the manufacturer suitable sources of raw materials, assistance is being given in the early stages of new industries by advice regarding the handling of materials, etc. Further, close touch is kept with many new industries for which financial assistance is required from the Government under the Industries Assistance Act, and on which it is necessary to have a technical report.

The exhibition of local industries maintained in the City by the Council of Industrial Development was assisted during the year by a display of local raw materials for the ceramic industry. They included specimens of various types of local clays, each accompanied by trial briquettes, showing their behaviour when burnt at various temperatures. In addition, accessory minerals were shown, such as felspars, "flints," and flint substitutes, also specimens of various trade articles burnt in the experimental kiln at the Mineral Laboratory. This exhibit attracted a great deal of public attention.

WATER SUPPLIES.

The water supplies of the metropolis and of various country towns are under regular observation with a view to checking any injurious pollution. The metropolitan water supply is one of the most complex to be found anywhere. Originally supplied with water of excellent quality from a dammed-up stream in the Darling Ranges, the rapid growth of the city and immense demands upon the public purse for country development necessitated repeated augmentations of the supply at a minimum cost. As Perth is situated in the centre of an artesian basin, it was natural that the artesian supplies should be drawn upon in these circumstances. Each bore, unfortunately, yields only a comparatively small volume of water, so that to serve the needs of the community, quite a number of bores are being drawn upon at various times, according to the demand upon the system. Finally, a second hills reservoir (Mundaring) has recently added its quota to the city needs. The city supply is, therefore, a mixture in varying quantities of several types of water possessing different initial temperatures and of divergent chemical composition. Under such circumstances, it is not surprising that sediments are formed in the service reservoirs and pipes, which reach objectionable amounts at times in certain portions of the area served. It is impossible to avoid this completely, so long as the present multiple supply is retained, the only finite solution of the trouble being the provision of a sufficient supply derived solely from streams in the hills. Waters from several available streams were analysed during the year.

Three main types of water are being used at present, viz.:—

1. Upland stream water from Victoria and Mundaring reservoirs. These have a low temperature. Common salt is the chief impurity, the water being otherwise soft and pure, and carrying no free carbonic acid or hydrogen sulphide. Total solids 12 to 25 grains per gallon (0.017 to 0.036 grms. per 100 c.c.).
2. Shallow bore water from metropolitan area. Depth, 550 to 800 feet. The chief impurity in these, again, is common salt, but the total solids are always much higher than the hills water, and being heavily charged with carbonic acid, the waters carry more lime and magnesia and unusual amounts of iron carbonate in solution. Hydrogen sulphide is often present in small amount. Total solids 25 to 60 grains per gallon (0.036 to 0.086 grms. per 100 c.c.) The temperature is low, 75° to 81° F.
3. Deep bore water from metropolitan area. Depth, 1,000 to 2,100 feet. In these, again, common salt is the chief impurity and total solids are high. Carbonates are again marked but are of a different nature to those in the shallow bore waters, practically no iron being present, and but little lime and magnesia. On the other hand, sodium carbonate is prominent, running from 4 to 12 grains per gallon. Traces of hydrogen sulphide are rare. Total solids 45 to 90 grains per gallon (0.064 to 0.128 grms. per 100 c.c.). The temperature is high, 89° to 106° F.

Brown ferric hydroxide being the most objectionable constituent of the sediment in the water supply, consideration has been given, in conjunction with the Engineer for Metropolitan Water Supply, to means for its elimination. The chief source of the iron is the water from the shallow bores, and the surfaces of the reticulation pipes. A very thorough system of aeration now introduced at the bore heads should oxidise most of the dissolved ferrous carbonate and precipitate the iron before it gets into the mains. At the same time, hydrogen sulphide is given every opportunity to escape from the water, thus removing an objectionable but not injurious odour. Carbonic acid is removed by the same process of splashing and exposing the water in thin sheets to the air, so that the water is rendered less capable of holding its original iron in solution or of picking up new iron from the pipes.

In addition to the metropolitan supply, attention has been given during the year to the town supplies for Fremantle, Meekatharra, Kalgoorlie, Katanning, Collie, and Mornington Mills. The Meekatharra water is unusual in that it carries appreciable amounts of nitrates, viz., 22 to 33 parts per million of NO_3. This is a feature of almost all the waters in the Murchison division of the State, and is in no way due to organic pollution, but is due to the mineral nitrates present in the virgin soil.

Private water supplies were mainly from the agricultural areas, and are dealt with under New Settlement.

NEW SETTLEMENT.

The active opening up of new agricultural areas and subdivision or intensified use of older settled districts has kept the Agricultural Staff of the laboratory very busy. A prime necessity in connection with all new settlement is the acquisition of knowledge regarding available water supplies. It is essential that the water from each new well or trial bore put down should be tested as to its value for domestic, stock and irrigation purposes, since outside the 20-inch rainfall line an appreciable number of new bores or wells are found to tap waters too saline to use for one or all of these purposes. Within the same region, however, fresh waters are usually obtained within practical reach by continued search. If the key could be found to the relative distribution of salt and fresh water over the agricultural areas it would be of the greatest benefit in their development, and save both old and new settlers a great amount of time and money at present spent in locating suitable water supplies for their use. Data are being steadily accumulated with this end in view, and it appears probable that this key will be found.

Analyses of several waters of unusual interest will be found in Mr. Palmer's report hereunder.

A large number of soils from new settlements have been analysed. The system of mechanical analysis adopted is that recently laid down by Whittles in the "Journal of Agricultural Science," 42, 166. As regards chemical composition, the standard of comparison is Hilgard's. Such unsatisfactory samples of soil are constantly sent in for analysis that a pamphlet giving directions for taking samples was prepared and printed for distribution.

DRUGS.

Twelve samples of drugs were submitted for analysis by the Health Department. Of these only six complied in all respects with the British Pharmacopœia standards. Two of the others were slightly under strength, two far below standard strength, and two were of good quality but for the presence of small quantities of disallowed constituents. It is evident that more attention might well be given to the drug supply.

OIL PROSPECTING.

The search for natural oil was pursued with vigour during the year, from one end of the State to the other, in regions both possible and hopelessly impossible, areas of granite and archæan schists being as keenly in demand as oil prospecting areas as were those of various sedimentary formations.

Important indications of oil have been found in three localities, all of them in the Kimberley Division. These are—

(1) Texas Station, East Kimberley. A hard asphaltum of the impsonite type, forming small veins and amygdaloids in a weathered basalt.

(2) Price's Creek, Rough Range. Constant traces of free oil in cores from all depths in a bore in Carboniferous sediments.

(3) Mt. Wynne, West Kimberley. Natural gas coming from a hot spring, and asphaltum of two types at a depth of 120 feet in a bore.

The Texas Station occurrence was described in my annual report, as Government Mineralogist and Chemist, for 1921.

At Mt. Wynne, on the north side of the Fitzroy River, a bore in search of oil is being put down not far from a hot spring which is bringing up a notable volume of marsh gas from the underlying Carboniferous sediments. A section of an 11-inch core from a depth of 120 feet in this bore was forwarded to the laboratory for report. It consisted of a firm white sandstone, thickly bedded and traversed by a number of roughly vertical as well as inclined joints. Nothing resembling bitumen has impregnated the sandstone, but in most of the joints were dendritic and irregular films and coatings up to nearly an eighth of an inch in thickness of black and brown organic matter, as well as kaolin and occasional small masses of pyrite.

The carbonaceous matter was of two kinds, viz.:—

(a) A brilliant black plastic asphaltum confined to a few exposed joints and continuations of them into the solid core.

(b) A brown porous and fragile material of asphaltic affinities, widely distributed in the joints.

(a) *Black Material.*—The black asphaltum was confined to the fissures, and occurred within them as thin dendritic masses, or thicker discontinuous masses of irregular outlines. It was impossible to scrape off material completely free from adhering kaolin and quartz grains, but some of the purest material obtainable was analysed with the following results:—

SOFT ASPHALTUM, MT. WYNNE.

Proximate Analysis (after deducting ash):—		
Bitumen { Petrolene* ...	86·45	per cent.
Bitumen { Asphaltene† ...	12·93	„
Non-bituminous organic matter	·62	„
	100·00	„
Ultimate Analysis:—		
Carbon	80·05	per cent.
Hydrogen	10·04	„
Sulphur, oxygen, and nitrogen ...	9·91	„
	100·00	„

*Soluble in hexane. †Soluble in carbon bisulphide.

Ash.—27.85 to 39.09 per cent; mean 33.47 per cent. The solution of the petrolene in hexane was distinctly fluorescent.

This asphaltum was plastic at 20°C. and melted completely below 100°C. On dry distillation, it yielded a large volume of dark brown oil.

The chemical and physical properties of the substance agree in all respects with a true petroleum residue of the "soft asphaltum" type. This is usually looked upon as an indication of the comparatively recent presence of an asphaltic oil in the near vicinity.

(b) *Brown Material.*—This material was more abundant than the black asphaltum, but was similarly distributed, being absent from the solid rock, but present in nearly all the fissures, though never completely filling them.

It had very little resemblance at first sight to a petroleum residue, being light brown in colour, porous and fragile, readily crumbling to a powder. On heating in a closed tube over a flame, however, most fragments of it melted readily to a black pitch, and all gave a considerable amount of brown oil similar in appearance to that yielded by the black asphaltum.

A proximate analysis showed:—

BROWN ASPHALTUM, MT. WYNNE.

Bitumen { Petrolene	18·15	per cent.
Bitumen { Asphaltene	16·59	„
Non-bituminous organic matter	65·26	„
	100·00	
Ash	56·74	„

It is possibly an older asphaltum leached by a later flow of oil.

Two samples of natural gas from the hot spring, near Mt. Wynne, collected by Mr. T. Blatchford, showed, on analysis:—

NATURAL GAS, HOT SPRING, MT. WYNNE.

Lab. No.	8005E. per cent.	8009E. per cent.
Methane (CH_4)	43·90	44·33
Ethane (C_2H_6)	nil	nil
Hydrogen (H)	nil	nil
Carbon monoxide (CO)	nil	nil
Carbon dioxide (CO_2)	1·40	1·51
Oxygen (O)	nil	nil
Hydrogen sulphide (H_2S)	Trace	0·16
Nitrogen (N)	55·30	54·33
	100·60	100·33

A previous analysis of this gas (Annual Report Geological Survey, W.A., 1921, p. 50), showed small amounts of ethane and unsaturated hydrocarbons. These, however, appear to have been contaminations from a petrol drum used in the collection of the gas.

The water of the hot spring is unusually free from dissolved salts, as the following analysis shows:—

WATER, HOT SPRING, MT. WYNNE.

	Salts. Parts per cent.		Ions Parts per million.
$CaCO_3$	·0002	Cl	341
$MgCO_3$	·0010	SO_4	6
Na_2CO_3	·0244	CO_3	146
K_2SO_4	·0011	Na	327
KCl	·0002	K	6
NaCl	·0561	Ca	1
$NaNO_3$	nil	Mg	3
$Al_2O_3.Fe_2O_3$ ...	·0002	$Al_2O_3.Fe_2O_3$ ...	2
SiO_2	·0032	SiO_2	32
H_2S	·0003	H, S	3
	·0867		867

(Analyst, D. G. Murray.)

SECTION I.—TOXICOLOGY, FOODS, AND DRUGS.

(C. E. STACY.)

During the year samples were received from the following sources:—

Health Department	162
State Hotels	31
Public Works	183
Tender Board	28
Police Department	60
Forestry	9
Explosives	426
Miscellaneous	19
Licensing Commission	33
Private	47
	998

Samples were as follows:—

	Departmental.	Public Free.	Public Pay.
Explosives	122	...	...
Foods	63	...	...
Drugs	12	...	...
Spirits	63	...	...
Beers and Wines ...	47	...	...
Oils	27	1	10
Powellising	177	...	...
Milks	18	...	1
Hydrometers	...	...	7
Tallows	...	...	7
Tars	6	...	1
Cordials	5	...	...
Miscellaneous	34	...	...
Toxicological	56	11	...

An important piece of work during the year was an examination of all the beers, stouts, and wines sold in the State. This was done at the request of the Royal Commission on Licensing, sitting at the time, and before which I was called upon to give evidence. That portion of this report dealing with these samples is more or less a *résumé* of such evidence.

Ten beers, ten stouts and thirteen wines were taken from various parts of the State. The analyses of the malt liquors went to indicate that the samples were brewed from malt, sugar and hops, although those from the country breweries were of lighter character and more sugar was used in their manufacture. No bitter substance other than hops could be detected, and no injurious substances, such as picrotoxin, strychnine, arsenic, or any hot substance were present.

The beers were preservatised with salicylic acid, and only in one instance was the legal amount exceeded.

The spirit strength of the beers varied from 6.61 per cent. to 9.56 per cent. proof spirit, and that of the stouts from 8.77 per cent. to 12.12 per cent. proof spirit.

In one sample a slight amount of saccharin was suspected, and further bulk samples taken by the Health Department disclosed definite traces of this substance, which is prohibited under the regulations. The brewery in question was communicated with and admitted having used 1/36 of a grain per pint, or less than 1/4 of a grain per gallon. It is interesting to find that by careful methods and using a large sample, such a small amount can be definitely detected.

The wines were examined for adulteration by—

(1) addition of cane sugar;

(2) plastering;

(3) dilution with water;

(4) fortifying with alcohol other than grape spirit;

(5) artificial wine and artificial colouring.

No evidence of such adulteration was forthcoming, although five of the wines were "unsound," containing more than 0.18 per cent. of volatile acidity.

It was pointed out that the chief danger of "Pinky"—Australian sweet red wine—was the large quantity of alcohol purchasable very cheaply com-

pared to beer and spirits, and that nothing injurious was present in such wine, even if it were at times "unsound" and unpalatable. The advisability of reducing the strength of spirits was not favoured, and evidence put forward by the Wholesale Wine & Spirit Merchants' Association of W.A., which emphasised the point of view that the quality of spirits would deteriorate under these conditions, was agreed with.

A number of samples of cream of tartar examined were found to contain considerably more lead than is allowed by the regulations, and, as a result, over two tons were withdrawn from sale.

138 cases of tinned herrings, suspected of containing tin owing to corrosion of container, were seized by the Inspector, and in half the samples more than 2 grains per pound were disclosed by analysis. Tinned fish are not specifically mentioned in the regulations under the Health Act dealing with this matter, but 2 grains per lb. is the limit for other tinned foods.

The number of Toxicological examinations was 67, a considerable increase over the previous year, which was also a heavy one in that respect. In many cases the Toxicologist is greatly hampered by lack of information provided by the Police, or by the Medical Officer who conducts the post-mortem examinations, in spite of the fact that printed forms are supplied with directions and questions regarding symptoms and food and medicine partaken of prior to death, which, if carefully answered, would save an immense amount of unnecessary work, by enabling the chemist to search, firstly, for the particular poison indicated by symptoms, etc. In one case the stomach of the patient was washed out, and, upon death supervening, this organ, well cleansed, was submitted for analysis, and none of the stomach contents previously removed.

By far the greater number of cases of poisoning with suicidal intent were, as usual, due to "Lysol." It seems a pity that this dangerous substance can be procured so easily.

Two cases of death from paraldehyde, both suicides, occurred during the year; and two cases of poisoning from iodine. The fact is remarkable, as no case of poisoning by either substance has been previously recorded in the department, and serves to emphasise a circumstance previously noted on many occasions, that poisons are employed in cycles, most probably by force of example.

426 samples of explosives were examined during the year, consisting of 119 fuse and 307 nitro-glycerine explosives.

177 samples of powellised timber and powellising solutions were examined during the year, and the penetration of the preserving materials was found to be satisfactory. Abnormal results, which occurred in some instances, were obviously due to lack of care in taking the samples, some of which were visibly contaminated with "sludge" (arsenical precipitate from the solution vats).

SECTION II.—MINERALOGY, MINERAL TECHNOLOGY AND GEOCHEMISTRY.

(H. Bowley.)

During the year 1,799 samples, involving the total number of 2,489 determinations for various metals, etc., were received from the following sources:—

Mines Department—	
Minister and Under-Secretary ...	10
State Mining Engineer	226
Geological Survey	62
Mineral Laboratory	46
State Batteries	734
State Prospecting Party ...	50
Agricultural Department	2
Health Department	2
Lands Department	1
North-West Department	3
Premier's Department	1
Railway Department	3
Water Supply Department	7
Works and Trading Department ...	8
Prospectors	558
Public Pay	86
	1,799

The samples received were classified under the following heads:—

Gold Ores	1,091
Minerals (miscellaneous)	163
Manganese Ores	64
Mineral Oils	56
Clay	43
Water	43
Iron Ores	41
Lead Ores	40
Gypsum	36
Copper Ores	33
Felspar and Micas	22
Ochres	19
Coals	17
Magnesite	17
Asbestos	17
Graphite	15
Sand	14
Limestone	14
Metallurgical Products	10
Soils	9
Rocks	9
Alunite and Jarosite	7
Metallurgical Tests	6
Bitumen	5
Gemstones	3
Miscellaneous	5
	1,799

Oil Prospecting:

Considerable activity still exists in the search for oil, but the majority of samples received by this office gave negative results for mineral oil. Some promising samples from the Kimberley Division are dealt with by the Government Mineralogist on a previous page.

Clays:

Further examinations have been made of local white clays from various new localities. At least 43 have been tested and most of these are well suited for the ceramic industry.

Ochres:

Quite a number of ochres have been examined during the year and have been classified according to Ridgway's "Colour Standards and Colour Nomenclature."

Manganese Ores:

A large number of manganese ores were received from Horseshoe, where the lessee has resampled the two large deposits. Some of these ores were sufficiently high grade to be of value as "chemical manganese."

Analyses of two bulk samples of these ores and of a specimen of polianite from the same locality are given below:—

MANGANESE ORES, HORSESHOE.

M.L. No. ...	9742E.	9743E.	9001E.
Mark	Southern Ore Body. Bulk Sample, No. 23.	Northern Ore Body. Average Nos. 4, 5, 6, and 7.	Polianite. Southern Ore Body.
	%	%	%
Analysis:			
MnO_2 ...	84·88	83·82	92·45
MnO ...	3·50	3·84	2·40
SiO_2 ...	0·42	0·44	·54
Fe_2O_3 ...	4·56	1·54	·84
Al_2O_3 ...	0·94	2·12	·54
K_2O ...	2·00	3·32	·91
Na_2O ...	0·88	1·00	·18
CaO ...	*Nil*	*Nil*	·13
MgO ...	*Nil*	0·10	·03
CoO ...	0·35	0·32	·16
NiO ...	Min. trace	Min. trace	Trace
BaO ...	0·16	0·09	·71
TiO_2 ...	Trace	Trace	·01
P_2O_5 ...	0·04	0·02	·14
SO_3 ...	0·03	*Nil*	·02
CO_2 ...	*Nil*	*Nil*	*Nil*
As ...	Trace	*Nil*	...
CuO ...	0·012	Trace	...
H_2O +	2·64	3·14	1·60
H_2O —	0·24	·44	·05
	100·652	100·19	100·71
On dry ore:			
Mn ...	56·45	56·17	60·31
Fe ...	3·20	1·08	·59
Analyst ...	D. G. Murray.	D. G. Murray.	J. N. A. Grace.

The polianite (9001E) contained silver at the rate of 5 grains per ton and gold at the rate of 10 grains.

Asbestos:

Several samples of asbestos from Goomalling were submitted by Mr. R. G. Wilson, in order to ascertain the possibility of recovering payable fibre from the material. The samples were crushed between rolls and sifted on 10 and 30 (or 20) mesh sieves, the finely broken material passing through the finer sieve being rejected as useless. These rejects consisted of non-fibrous talc, serpentine and chlorite, together with a variable proportion of the more brittle fibre in very short lengths. Two grades of useful fibre were separated.

Grade A.—The longest fibres, which were retained on a 10-mesh sieve, consisted in each case of partly separated bundles of rather flexible fibres with a maximum length of a little over one inch, and an average of about half an inch.

Grade B.—The fibre which passes a 10-mesh sieve, but was retained on a 30-mesh (or in some cases, a 20-mesh), was of the nature of a fibrous meal.

An examination of all the specimens received recently from Goomalling indicates that the asbestos is a secondary mineral, derived from a subfibrous grey anthophyllite. This mineral, of which an analysis is given in Col. 1. of the Table, is a species of the amphibole group, having the formula $4(Mg,Fe)O.4SiO_2.H_2O$. It alters readily to talc, the formula of which is $3(Mg,Fe)O.4SiO_2.H_2O$. The primary anthophyllite is too brittle and coarsely fibrous to be of value as a commercial asbestos, but in the initial stages of alteration into talc the mineral may be rendered much more finely fibrous, whilst still retaining a flexibility and tensile strength lacking in pure talc. It is this intermediate mineral which forms the better quality asbestos of Goomalling, which, though very promising in quality, is still inferior to good chrysotile. The best of the A grade fibre should be quite suitable for the manufacture of fibro-cement articles. It would certainly be well suited for insulation purposes, for which grade B. might be added to it. All of it might well be used as a substitute for cowhair in wall plasters. The colour varies from almost pure white through shades of cream to buff, the darker coloured ones being ironstained owing to weathering.

Details of the individual samples are as follow:—

E. C. ROBERT'S P.A.

L. No. 9856E.—"Dump Sample."

Yield Grade A (over 10 mesh) ...	12·5	per cent.
Grade B (over 30 mesh) ...	24·2	„
Total fibre	36·7	„

The fibre was of a cream colour, slightly flexible, but of low tensile strength. Most of the A grade was from ½ to 1 inch long. An analysis showed that it was anthophyllite, partly altered to talc, the figures being given in Col. II. of the Table.

L. No. 9857E—"Dump Sample."

Yield Grade A (10 mesh) ...	59·1	per cent.
Grade B (30 mesh) ...	26·2	„
Total fibre	85·3	„

The fibre was slightly darker in colour than 9856, but otherwise similar. In the original specimen, it had a maximum length of 3 inches, but in the concentrates very little of the fibre was over 1 inch in length.

THOMAS AND TRUSCOTT'S P.A.

L. No. 9858E—"Picked Sample from Dump."

Yield Grade A (10 mesh) ...	38·2	per cent.
Grade B (20 mesh) ...	10·6	„
Total fibre	48·8	„

The fibre from this sample was better than that from any other. The best of it was light cream in colour, the rest somewhat more strongly ironstained. The length of the A grade reached to 2 inches, whilst the diameter of the individual fibres was only about one-thousandth of a millimetre. All of it was soft, fine, and possessed considerable tensile strength and flexibility. Its composition is shown in Col. III. This is typical anthophyllite asbestos.

L. No. 9859E—"Main shaft, 18in. of lode."

Yield Grade A (10 mesh) ...	0·5	per cent.
Grade B (20 mesh) ...	5·7	„
Total Fibre	6·2	„

This was a poor sample consisting of talc rock with scattered fibres of anthophyllite of inferior quality.

L. No. 9860E—"Best fibre, south shaft."

Yield Grade A (10 mesh) ...	17·9	per cent.
Grade B (30 mesh) ...	29·3	„
Total fibre	47·2	„

The fibre from this was rather short (up to 3/4 inch), but fairly strong. It was of a pale cream colour.

L. No. 9861E—"Open cut, W. of Slater Street."

Yield	Grade A (10 mesh) ...	55·3 per cent.
	Grade B (30 mesh) ...	30·5 „
	Total fibre	85·8 „

This was the whitest fibre of all. It was fairly short after milling (maximum length, one inch), and of very low tensile strength. It is evidently largely altered to talc. A partial analysis showed FeO, 6.41; Fe_2O_3, 0.70 per cent.

L. No. 9882E—"Picked ore from main shaft."

Yield	Grade A (10 mesh) ...	19·0 per cent.
	Grade B (20 mesh) ...	16·6 „
	Total fibre	35·6 „

Cream coloured fibre up to 2 inches in length associated with talc rock. The fibre was strong like No. 9858.

ANTHOPHYLLITE, GOOMALLING.

	I.	II.	III.
M.L. No.	9898	9856	9858
	%	%	%
SiO_2	60·57	57·48	59·05
Al_2O_3	·23	·93	·22
Fe_2O_3	2·76	3·54	1·18
FeO	6·11	7·64	9·10
MnO	·35	·55	·37
CaO	nil	·4	nil
MgO	27·38	25·76	27·06
Na_2O	*Nil*	*Nil*	*Nil*
K_2O	*Nil*	*Nil*	*Nil*
TiO_2	trace	...	trace
H_2O + ...	3·22	4·64	2·80
H_2O —	·14		·48
	100·76	100·58	100·26
Sp. Gr.	2·96	...	3·03

(Analyst, H. P. Rowledge.)

I. Grey mineral, imperfectly fibrous.
II. Concentrate, cream coloured, highly fibrous.
III. Best concentrate, light cream coloured, highly fibrous, flexible and tough.

Metallurgical Tests and Products:

A series of tests was carried out on a local process for the extraction of copper from low grade ores with a view to its adaptability to Ravensthorpe ores, and a report was furnished to the Government.

A chlorination test carried out on a cupriferous gold ore from Kundip proved quite successful.

A number of galvanised roofing irons were submitted for examination by the Public Works Department.

Gypsum:

Continued search has been made for gypsum, suitable for making a high grade plaster of paris.

Suitable material for that purpose has been received during the year from Wubin Downs Station, Lake Cowcowing, Dukin and East Lake Brown. Gypsum suitable for agricultural purposes appears to be very widely distributed in this State.

Magnesite:

A number of samples of magnesite has been received for examination, the most promising of these coming from Coolgardie and Nungarin.

A series of magnesites collected by Mr. R. C. Wilson, at Coolgardie, gave the following figures:—

MAGNESITE, COOLGARDIE.

Clarke's P.A. 78, South side of Railway.

Lab. No. Mark.	9712E. 1.	9713E. 2.	9714E. 3.	9715E† 4.
$MgCO_3$ ...	99·38	98·41	86·20	98·18
CO_2 ...	51·86	51·35	44·98	51·23
MgO ...	47·52	47·06	41·22	46·95
Extra MgO*	·20	·71	2·22	·19
$CaCO_3$ ...	·04	nil	1·75	·04
CO_2 ...	·02	...	·77	·02
CaO ...	·02	...	·98	·02
Fe_2O_3 ...	·04	·07	1·07	·06
Al_2O_3 ...	·26	·13	·75	·50
Insoluble—				
Bases	·08	·08	1·04	·10
Silica	·24	·36	5·00	·72
	100·24	99·76	98·03‡	99·79
Analyst—	W. W. Saw.	H. P. Rowledge.	H. P. Rowledge.	H. P. Rowledge.

* Present as silicate (serpentine), etc.
† From dump of 22 tons.
‡ Contains also H_2O, Cl., etc.

No. 3 contains too much iron and lime to be used in the manufacture of sorel cement, but is the best of the three for the manufacture of refractories.

Nos. 1, 2 and 4 are all very high grade, white magnesites, unusually low in both iron and lime, and, therefore, eminently suited for the manufacture of sorel cement. They are too pure to make good refractories, for which purposes the presence of several parts per cent. of iron oxide and silica evenly distributed through the ore are desirable.

MAGNESITE, COOLGARDIE.

Camel Paddock, North side of Railway.

Lab. No. ...	9716E.	9718E.	9719E.
Mark ...	5.	7.	8.
$MgCO_3$ ...	97·54	99·04	97·47
CO_2 ...	50·90	51·68	50·86
MgO ...	46·64	47·36	46·61
Extra MgO ...	*Nil*	*Nil*	·59
$CaCO_3$ ...	·07	·39	1·68
CO_2 ...	·03	·17	·74
CaO ...	·04	·22	·94
Fe_2O_3 ...	·05	·01	·04
Al_2O_3 ...	·11	·19	·34
Insoluble—			
Bases ...	·06	·04	·10
Silica ...	·14	·12	·12
	97·97*	99·79	100·34
Analyst ...	W. W. Saw.	W. W. Saw.	A. E. M. Kildahl.

* Contains also H_2O, Cl, etc.

None of these three is well suited for refractories.

Nos. 5 and 7 are excellent magnesites for making sorel cement, and although No. 8 is a little high in calcium carbonate, it is otherwise good, and could well be mixed with Nos. 5 and 7 without ill effect, the total $CaCO_3$ being thus brought well below one per cent.

Silica Refractories:

Inquiries have been made during the year for material suitable for the manufacture of silica bricks. Two specimens of apparently suitable quartzite from the Geological Survey Collection gave the following figures on analysis:—

Description of Samples:

G.S.L. 8524E. G.S.M. 7876.—White granular quartzite, 4 miles N. by W. of Trig. B.A. 1, Billeranga Hills, Morowa.

G.S.L. 8525E. G.S.M. 1/1699.—White granular quartzite. No Tree Hill, Eyre Range.

Analysis:

Lab. No. ...	8524.	8525.
	%	%
SiO_2	99·22	99·63
Al_2O_3	·32	·16
Fe_2O_3	·12	·11
MnO	*Nil*	*Nil*
MgO	·03	*Nil*
CaO	·01	·01
Na_2O	·22	·04
K_2O	*Nil*	*Nil*
H_2O-...	·01	*Nil*
H_2O+...	·08	·06
TiO_2	·01	·05
ZrO_2	Trace	Trace
P_2O_5	*Nil*	*Nil*
B_2O_3	Trace	Trace
	100·02	100·06
Analyst ...	J. N. A. Grace.	J. N. A. Grace.

Siliceous Earth:

An interesting material occurring in a cave at Coorow consisted mainly of finely divided quartz, with a little altered felspar and mica. Owing to its very fine and angular grain, it is well suited for use in the manufacture of abrasive soaps and cleansers. It may also be used to a small extent in the pottery industry as a flint substitute, to reduce the shrinkage of a clay mixture.

Partial Analysis:

Silica, SiO_2	95·96	per cent.
Ferric Oxide, Fe_2O_3 ...	0·22	,,
Phosphoric Oxide, P_2O_5 ...	*Nil*	
Sulphur Trioxide, SO_3 ...	*Nil*	

Sizing Test:

Pass 150 mesh ...	97·76	per cent.	
Refuse 150 ,, 120 ,, ...	1·15	,,	
,, 120 ,, 100 ,, ...	·86	,,	
,, 100 ,, 80 ,, ...	·06	,,	
,, 80 ,, 60 ,, ...	·05	,,	
,, 60 ,, 30 ,, ...	·07	,,	
,, 30	·05	,,	
	100·00	,,	

Burning Test:

Shrinkage at 1150° C. ... *Nil.*

Body ... Creamy white with many minute black specks, very friable.

Mineral Notes:

Manganomossite (?), Yinnietharra.

An angular pebble, possessing a brilliant black lustre on a fresh fracture, collected by Mr. R. C. Wilson, gave on analysis, the following figures:—

	per cent.
Ta_2O_5	11·53
Nb_2O_5	34·64
TiO_2	3·92
SnO_2	nil
FeO	4·64
MnO	12·02
H_2O + ...	·26
	100·01
Sp. Gr. ...	6·21

Analyst, D. G. Murray.

Dr. Simpson considers this mineral is either the orthorhombic mangano-columbite, or, more probably, the corresponding tetragonal species, which has not yet received a name.

Muscovite—Yinnietharra:

A very pale green or smoky tinted mica with innumerable dendritic inclusions of black or dark grey magnetite, in places altered by hydration to orange coloured goethite, was collected by Mr. R. C. Wilson from Mica King M.L., Yinnietharra, where it occurs in large sheets up to 15 inches square. Some of the apparently pure mica devoid of inclusions was analysed with the following result. Analysis of the well known South Australian and Indian muscovites are given for comparison.

	Yinnietharra.	McDonnell Ra., Sth. Australia.	Bengal, India.
	%	%	%
SiO_2	45·78	45·94	45·57
Al_2O_3	33·67	33·16	36·72
Fe_2O_3	3·65	3·60	·95
FeO	1·17	1·08	1·28
MnO	·07	·02	...
CaO	·09	*Nil*	·21
MgO	*Nil*	1·15	·38
K_2O	10·58	9·75	8·81
Na_2O	·52	·76	·62
TiO_2	...	·22	·19*
H_2O+	4·68	4·44	5·05
F	·65	*Nil*	·15
	100·86	100·12	99·93
Less O = F_2	·27	*Nil*	·06
	100·59	100·12	99·87
Sp. Gr.	2·83	...	2·83
Analyst,	H. Bowley.	J. C. H. Mingaye.	S. Blau.

*Bi_2O.

SECTION III.—AGRICULTURE, WATER SUPPLY, AND SEWERAGE.

(S. C. Palmer.)

The samples received for analysis during the year totalled 923, and were received from the following sources:—

Agricultural Department ...	212
Water Supply Department	513
Health Department ...	64
Department for North-West	7
Lands Department	5
Lunacy Department ...	1
Works Department	2
Public Pay	85
Public Free	30
Miscellaneous	4
	923

Samples received were classified under the following heads:—

Soils	38
Waters	264
Fertilisers	131
Sewage	409
Wheats	82
Lime and Limestone ...	17
Fodders	2
	923

Soils:

These have formed a fair proportion of the total number of Agricultural samples received into this laboratory. In view of affording the most useful and up-to-date information to such as are settling on the land, a review of the past methods of analysis as adopted in this laboratory has been made under the direction of Dr. Simpson, in the hope that the results attained would be of still further benefit—first by expediting the work, and, secondly, to the farming community generally in simplifying the analytical reports.

Much depends upon the physical condition of the soil. In fact, however good a soil may be, so far as its fertilising constituents are concerned, if its physical condition is bad, to attempt to farm such land would end in complete failure. Information on this point is gained by mechanical analysis, for which many schemes have been proposed. The one which has now been adopted in this laboratory is that outlined by C. L. Whittles in a paper, "A note on the classification of soils on the basis of mechanical analysis."—(Jour. Agr. Sci. 1922, 12, 166.)

Below are some results of the mechanical analysis of two soils, and it is interesting to note how closely the methods of separation agree, first by decantation, and, secondly, by Schoene's elutriator.

	No. 1. From Bindoon.		No. 2. From Guildford.	
	Decantation.	Elutriation.	Decantation.	Elutriation.
	per cent.	per cent.	per cent.	per cent.
Sand ...	9	9	9	9
Silt ...	43	45	57	58
Clay ...	48	46	34	33

Mechanical analyses of five soils (on dry sample) from the Newdegate district, whose chemical analysis is given below:—

	1A. Soil.	1B. Sub.	1C. Under Sub.	2A. Soil.	2B. Sub-soil.
Sand	58	42	38	44	34
Silt ...	34	20	15	23	26
Clay	8	38	47	33	40

For the chemical analysis of soils certain variations have been made in the methods in our laboratory, and these are continually being revised so as to ensure a still greater degree of accuracy in the work. Strong hydrochloric acid is still the acid we adopt as a solvent.

Subjoined are the analytical figures for some soils from Scott River, and also Newdegate—two new areas of settlement.

ANALYSES OF FOUR SOILS FROM SCOTT RIVER, SUSSEX DISTRICT.

Lab. No.	81120.	81121.	81122.	81123.
Marks	8 Soil.	8A Sub-soil.	9 Soil.	9A Sub-soil.
	per cent.	per cent.	per cent.	per cent.
Roots	1·7	1·7	Trace	Trace
Stones	*Nil*	*Nil*	*Nil*	*Nil*
Fine Soil	98·3	98·3	100	100
Analysis of Fine Soil—				
Reaction	Acid	Acid	Acid	Acid
Apparent specific gravity	0·76	1·02	1·05	1·05
Moisture	7·27	3·46	10·96	12·76
Loss on ignition, on steam dried soil	20·48	9·85	21·55	18·13
Organic Carbon	14·88 R	5·78	7·24 R	4·87
Salt	·097	·037	·074	·076
Nitrogen	·563 R	·522	·470 R	·275
Lime as Carbonate	*Nil* P	*Nil*	*Nil* P	*Nil*
Lime as Sulphate, etc.	·49	·26	·29	·30
Potash, acid soluble	·069 L	·072	·109 L	·114
Phosphoric Oxide, acid soluble ...	·082 L	·043	·065 L	·038
Mechanical Analysis (on dry soil):—				
Sand *...	39	44	17	8
Silt	56	51	19	10
Clay	8	5	64	82

* NOTE.—A large proportion of organic matter present in each fraction of all four.

P, poor; L, low; N, normal; G, good; R, rich. (Hilgard's standards).

Analysts:—S. C. Palmer and B. L. Southern.

ANALYSES OF FIVE SOILS FROM NEWDEGATE, ROE DISTRICT.

Lab. Nos. / Marks	81336. 1A Soil, 0 — 4″.	81337. 1B Sub-soil, 4″— 12″.	81338. 1C Under Sub. 12″ — 18″.	81339. 2A Soil, 0 — 4″.	81340. 2B Sub-soil. 4″ — 18″.
	per cent.	per cent.	per cent.	per cent.	per cent.
Roots	...	Traces only.	...	...	...
Stones	3·5*	Trace	*Nil*	*Nil*	18 †
Fine Soil	96·5	100	100	100	82
Analysis of Fine Soil—					
Reaction	Faintly alkaline	Faintly alkaline	Faintly alkaline	Alkaline	Alkaline.
Apparent specific gravity	1·60	1·42	1·42	1·50	1·35
Moisture	·42	1·70	1·90	2·33	4·15
Loss on Ignition, on steam-dried soil	2·76	5·70	7·15	4·27	5·94
Organic Carbon	1·53 G	·74	·58	1·35 G	·58
Salt	·042 G	·228	·302	·040 G	·155
Nitrogen	·056 L	·039	·039	·056 L	·045
Lime as Carbonate	·013 P	·013	·006	·138 ‡ L	1·09 ‡
Lime as Sulphate	·074	·035	·028	...	...
Potash, acid soluble	·040 P	·183	·152	·356 G	·323
Phos. Oxide, acid soluble	·014 P	·012	·011	·013 P	·014
Mechanical Analysis (on dry soil)—					
Sand	58	42	38	44	34
Silt	34	20	15	23	26
Clay	8	38	47	33	40

* Sand-balls. † Nodular limestone. ‡ The CO_2 in each case was in excess of lime requirements, this excess beng in combination with magnesia and iron. P, poor; L, low; N, normal; G, good; R, rich (Hilgards standards).

Analysts: S. C. Palmer and B. L. Southern.

The two soils below, from Kukerin, contained a somewhat large excess of soluble salts, which not only would be detrimental to plant growth, but in other ways also. These soils had rapidly corroded survey pegs, and the water soluble extracts made reveal a large excess of combined salts, also an undue amount of sodium nitrate.

	Surface.	Subsoil.
	%	%
Water-soluble salts contained	·32	·22
Chloride of sodium	·092	·047
Nitrate of sodium	·061	·018
Alkalinity as $CaCO_3$	·075	·088

Waters:

Subjoined are analyses of a few waters of somewhat uncommon interest:—

No. / Locality.	1. Broome.	2. Port Hedland.	3. Jarnadup.	4. Collie.	5. Katanning.
	%	%	%	%	%
$CaCO_3$	0·0075	0·0274	0·0015	0·0005	0·0027
$MgCO_3$	...	...	·0004	·0013	·0018
$CaSO_4$	·0027	·0143	...	...	...
$MgSO_4$	·0007	·0120	·0013	·0005	·0010
Na_2SO_4	...	...	...	·0009	·0019
$MgCl_2$	·0067	·0305	·0020	...	...
NaCl	·0208	·2073	·0078	·0134	·0104
KCl	trace	·0067	·0004	·0011	·0008
Al_2O_3 (Fe_2O_3)	·0023	·0020	·0005	·0002	·0006
SiO_2	·0071	·0007	·0007	·0004	·0020
Dissolved Solids %	0·0478	0·3009	·0146	·0183	0·0212
Do. g.p.g.	33·46	210·63	10·22	12·81	14·84
Analyst—	A. J. Hoare	J. N. Grace	J. N. Grace	J. N. Grace	J. N. Grace

(1) Water from well on Buckley's Plain, 6 miles north of Broome. An excellent water.

(2) Water from well at Port Hedland. This caused the death of English planted trees. The high percentage of soluble salts, including so great a proportion of sodium chloride, is, no doubt, responsible for the damage done to the trees.

(3) Boiler water from State Saw Mills, Jarnadup. Though such a pure water, it is rendered somewhat unsatisfactory for boilers, owing to the presence of a high proportion of free CO_2.

(4) Potable water from Collie, No. 6, Allanson's Bore. This water contains 0.0058 per cent. of CO_2, also iron bacterial growths, *Leptothrix*, *Spirophyllum*, etc.

(5) Potable water from Katanning water supply. This water contained much clay in suspension, viz.: 0.0988 per cent., but analysis shows it to be an excellent water for drinking purposes after clarifying.

Fertilisers.—The work on Fertilisers in our laboratory has formed a fair proportion of the number of agricultural samples. Most of them have been sent in by the Inspectors, whose duty it is to gather representative samples from the various centres and townsites in this State for the express purpose of having them tested, to ascertain whether they are up to standard of registration. A suggestion might well be

made here with regard to the size of the samples sent. As sent in at present, they are certainly too small to form a fairly representative sample of the bulk—at least twice the present size would be better.

With regard to their physical condition, the superphosphates—with the exception of one or two cases during part of the year—have shown great evenness throughout and are free from any particles of undissolved rock phosphate, bone, etc., as also free sulphuric acid. The organic fertilisers, on the whole, have presented a good appearance, being well mixed and friable. In several cases, however, the sample analysed has shown by its composition that it was not what it purported to be—for instance, the analyses of the subjoined fertilisers bear out this fact.

No. 80108.

	Registered Composition.	Result of Analysis.
Nitrogen	4 per cent.	3·64
Phos. oxide ...	12 „	23·20

No. 81127

Nitrogen	4·5 per cent.	7·06
Phos. oxide ...	13·0 „	11·37

Such anomalies as these should be corrected, if possible.

Attention might be drawn to a fertiliser which before this last great War was much in demand in this State, viz., basic slag. ("Thomas phosphate"). That which is now manufactured in England is of a very low grade. Nearly half the total output, viz., 302,000 tons out of a total output of 701,000 tons, is under 10 per cent. phosphoric oxide, including the citric soluble. The cause of this low percentage of phosphoric oxide is "a change of composition due to the fact that in the steel industry the basic Bessemer process, of which basic slag was a by-product, has now been superseded by the basic open hearth process and the character of the by-product has been altered entirely, its phosphate content having been halved."

In view of these facts, it would be advisable for all future purchasers to take warning that any future shipments that may probably be landed in this State may be of this low grade quality.

Wheat Milling.—The samples of wheat submitted by the Royal Agricultural Society formed the chief feature of the milling operations which were carried out by Mr. Hoare, assisted by Mr. Southern, in this laboratory. Thirty-nine specimens were submitted altogether for examination, and out of these, 25 were selected by Messrs. Sutton and Wilson for milling tests. Generally speaking, the wheats were clean and true to variety, and one point of interest was particularly noticeable with regard to the specimens of "Comeback," which were far better than those submitted last year. There was also a splendid specimen of "Florence" from Kellerberrin, as shown in the analysis below. No samples of wheat from the Eastern States were entered for competition this year.

FIRST PRIZES FOR WHEATS FOR MILLING FOR THE ROYAL AGRICULTURAL SHOW, 1922.

Zone.	Class.	Variety and Locality.	No.	Rainfall, inches.	Percentage of Products.					Percentage of Gluten.			Flour strength—Quarts of water per 200lb. sack.		Marks.	Colour marks.	Total marks.	Bushel weight. lbs.	Pounds of bread per ton of wheat.
					Flour.	Bran.	Pollard.	Marks.		Wet.	Dry.	Marks.	Figures actually obtained.	Figures by Mr. Sutton's formula.					
1	1	Florence ... (Kellerberrin)	15	6·45	74·4	20·7	4·9	33·5		33·96	11·55	4·5	45·8	52·6	48·25	2	88·25	66·0	2,455
2	2	Firbanks ... (Three Springs)	30	9·00	72·2	23·4	4·4	28·0		31·24	10·56	4·25	39·7	45·6	39·5	3	74·75	63·0	2,257
3	3	Currawa ... (Katanning)	18	12·09	73·8	22·2	4·0	32·0		18·65	6·35	3·25	38·4	44·2	37·75	3	76·0	66·0	2,281
1	4	Comeback ... (Kellerberrin)	16	6·45	76·8	14·4	8·8	39·5		20·01	11·33	4·5	46·7	53·7	49·6	3	95·6	67·25	2,554 Champion
2	5	Comeback ... (Barberton)	1	16·00	76·3	19·3	4·4	38·25		29·10	11·18	4·5	46·8	53·8	49·75	3	95·5	66·5	2,540
3	6	No entries ...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...
Class 7.—Commonwealth prize:																			
1	4	Comeback ... (Kellerberrin)	16	6·45	76·8	14·4	8·8	39·5		20·01	11·33	4·5	46·7	53·7	49·6	3	95·6	67·25	2,554

NOTE.—Strength marks are given on figures obtained by using Mr. Sutton's formula, viz., readings multiplied by 1·15.

The subjoined table shows the various zones and classes into which the wheats were placed.

Zones—

(1) Ajana, Yuna, Mullewa, Dalwallinu, Wongan Hills, Goomalling, Dowerin, Kununoppin, Merredin, Tammin, Kellerberrin, Kondinin, Corrigin, Lake Grace, Cunderdin, Kukerin.

(2) Northampton, Geraldton, Mingenew, Three Springs, Moora, Bolgart, Toodyay, Northam, York, Beverley, Brookton, Pingelly, Wickepin, Dumbleyung.

(3) Narrogin, Wagin, Katanning, Tambellup.

Classes—

1. White Wheat (Soft)—1 bag grown in Zone 1.
2. White Wheat (Soft)—1 bag grown in Zone 2.
3. White Wheat (Soft)—1 bag grown in Zone 3,
4. White Wheat (Strong)—1 bag grown in Zone 1.
5. White Wheat (Strong)—1 bag grown in Zone 2.
6. White Wheat (Strong)—1 bag grown in Zone 3
7. White Wheat—1 bushel grown in Commonwealth.

The following items were taken as points in judging wheats when awarding prizes:—

Per cent. flour, flour strength, colour of flour, per cent. dry gluten, No. of lbs. of bread per ton of wheat.

EDWARD S. SIMPSON, D.Sc., B.E., F.C.S.
Government Mineralogist and Analyst.

14th February, 1923.

DIVISION VIII.

ANNUAL REPORT OF THE CHIEF INSPECTOR OF EXPLOSIVES.

Explosives Branch,

Mines Department,

Perth, 30th January, 1923.

The Under Secretary for Mines.

I have the honour to submit, for the information of the Honourable the Minister for Mines, a report on the work of the department during 1922.

On the 1st of March a reorganisation of the department of the Chief Inspector of Explosives and Government Analyst took place, in which Mr. E. A. Mann was retired from the combined position and I was entrusted with the administration of the Explosives Act.

The work was carried on in the old premises until the 14th December, when the administrative portion of the work of the Inspector of Explosives was removed to the Museum Buildings in Beaufort Street, and a disused magazine on the Explosives Reserve at Woodman's Point has been converted into a testing station, at which all tests in connection with the stability of explosives will in future be carried out.

By the above arrangements expedition and efficiency should be maintained, while at the same time risks in conveyance and testing of large quantities of explosives will be minimised, which is a distinct advantage over the procedure adopted in the past, when at times it was found necessary to have up to 100 lbs. of high explosive in the laboratory, where a big staff and some thousands of pounds worth of apparatus were housed.

Table No. 1 hereunder gives the total quantities of explosives imported into the State during the year:—

Importation of Explosives into Western Australia during 1922.

	lbs.	Value. £
Gelignite	520,000	
Gelatine Dynamite	110,200	
Blasting Gelatine	60,850	
Permitted Explosives	65,000	
Blasting Powder	45,000	
Pellet Powder	50,000	
Sporting Powder	700	
Fireworks	..	923
Explosives N.E.I.	..	2,778
	Coils.	
Fuse	213,600	
	No.	
Detonators	1,150,000	

For some time past, owing to conditions brought about by the war, considerable difficulty was experienced through explosives arriving in the State in one or two very large shipments, but during 1922, with the return of more normal shipping conditions, shipments have arrived more frequently and in smaller quantities, which makes handling easier and minimises the effect of accidents. There is every prospect of these conditions continuing, and no trouble should be experienced in the future through explosives arriving in phenomenal quantities at one time.

In April a consignment of all grades of high explosive manufactured at Deer Park in Victoria arrived in this State. With the exception of a few details in connection with the packing and marking (to which the attention of the manufacturers has been drawn) the shipment was highly satisfactory, and has been closely watched and tested, with very gratifying results. I had hopes that our total requirements would be manufactured in Australia, as the explosive is put into consumption on the mines here within six weeks from the date of manufacture and is not subjected to confinement in a ship's hold for six weeks during a trip including the tropics and constantly changing climatic conditions which tends to develop inertness; but owing to the heavy demand on the factory from the Eastern States the supplies for this State are again coming from England.

During the examination of stocks in private magazines in June, exudation was discovered in a number of cases of gelignite. On making a complete investigation it was found that the contents of about 4,000 cases were showing free nitro-glycerine, which had penetrated the wrappers and deposited on the outside of cartridges. As the exudation had apparently stopped, the stocks were brought into the Magazine Reserves at Fremantle and Kalgoorlie and there treated by removing the surplus nitro-glycerine from the cartridges by means of dusting with keisilguhr. In all, 1,845 cases were treated in this manner, and the balance, which showed only slight traces of free nitro-glycerine, were allowed to go into consumption for land clearing without treatment. The entire stocks have been used without giving any trouble.

Owing to the attacks of white ants and dry rot on the timbers of the fence surrounding the reserve at Kalgoorlie, it has been decided to remove the galvanised iron and replace with five strands of barbed wire. Each magazine which is to be used for the storage of explosives will be enclosed with a galvanised iron fence as has been done at Coolgardie.

The question of economical use of explosives in connection with clearing land for group settlements has received attention during the year, several visits

having been made to the groups in the South-West and experiments tried with the object of reducing the consumption of explosives and increasing the efficiency. The results of these experiments to date have been very encouraging, and in co-operation with the Controller of Group Settlements the question is receiving further attention, and I confidently look for good results to be the outcome of this work.

There have been no new reserves for explosives declared during the year. The number is therefore 50, with a total area of 3,051 acres. On these reserves there are erected 75 magazines owned by private firms, and three Government magazines.

The following licenses have been issued under the Explosives Act during the year:—

71 magazine licenses for the storage of explosives.
93 store licenses for the sale of explosives.
483 store licenses for the sale of fireworks only.
5 importation licenses.

During the year 156 inspections of magazines and licensees' premises were made, and as a result of these inspections it was not found necessary to take proceedings under the Explosives Act, but the following explosives had to be destroyed as being unfit for consumption:—

TABLE No. 2.

Date.	Place.	Kind and Quantity.	Remarks.
14-2-22	Moora	1lb. Gelignite	Chemical deterioration.
14-2-22	Do.	2½lbs. Gelignite	Exudation.
8-3-22	Fremantle	10lbs. Gunpowder	Absorption of moisture.
8-3-22	Do.	2lbs. Gelignite	Chemical deterioration.
14-3-22	Guildford	15lbs. Viking Powder	do.
14-3-22	Do.	3lbs. Gelignite	do.
14-3-22	Do.	5lbs. Blasting Powder	Absorption of moisture.
14-3-22	Do.	250 Cartridges	Corrosion of shells.
24-3-22	Kalgoorlie	350lbs. Gelignite	Exudation.
11-4-22	Fremantle	½lb. Gelignite	Chemical deterioration.
11-4-22	Do.	10lbs. Viking Powder	do.
9-5-22	Manjimup	4lbs. Gelignite	Owing to having absorbed moisture.
21-6-22	Fremantle	10lbs. Viking Powder	do.
22-6-22	Perth	3lbs. Gelignite	Exudation.
22-6-22	Do.	1lb. Gunpowder	Owing to having absorbed moisture.
6-7-22	Kalgoorlie	50lbs. Gelignite	Exudation.
25-7-22	Pemberton	4lbs. Gelignite	Chemical deterioration.
27-7-22	Do.	10lbs. Gelignite	Owing to having absorbed moisture.
30-9-22	Coolgardie	5lbs. Gelignite Dyn.	Exudation.

Six new explosives were placed on the authorised list of explosives to be imported, manufactured, or stored in the State.

The following analyses and tests were made in connection with the control of explosives:—

Complete analyses	10
Heat tests	307
Fuse tests	138
Velocity of detonation ..	53
A.D.C. tests	42
Miscellaneous	49
Total	599

The Magazine Keeper and staff at the Woodman's Point Explosive Reserve have given zealous and loyal service during the year, and as a result the condition of the reserve to-day is very satisfactory and the work is economically and efficiently carried out.

I beg to acknowledge the valuable assistance rendered during the year by the Commissioner of Police and his officers.

T. N. KIRTON,
Chief Inspector of Explosives.

WESTERN AUSTRALIA.

DEPARTMENT OF MINES.

MINING STATISTICS,

1922.

Q5/23.

MINING STATISTICS TO 31st DECEMBER, 1922.

TABLE OF CONTENTS.

TABLE OF CONTENTS—*continued.*

EXPLANATIONS OF SIGNS AND ABBREVIATIONS.

Gf. Goldfield.
Mf. Mineral field.
D. District.
G.M.L. Gold Mining Lease.
M.L. Mineral Lease.
Loc. Location.
L.C. Lode Claim.
Q.C. Quartz Claim
R.C. Reward Claim
M.C. Mineral Claim.
M.R.C. Mineral Reward Claim.
M.A. Machinery Area.
Mach. L. Machinery Lease.
P.A. Prospecting Area.
T.A. Tailings Area.
T.L. Tailings Lease.
W.R. Water Right.
S.L. Special License.
N.E.I. Not elsewhere included.

SUMMARY OF MINERAL PRODUCTION.

GOLD AND OTHER MINERALS PRODUCED DURING 1922, AND THE ESTIMATED VALUE THEREOF, TOGETHER WITH A COMPARISON FOR PREVIOUS YEARS, AND THE TOTAL PRODUCTION TO DATE.

	Description of Mineral.	1922.		1921.		1920.		1919.		Previously to 1919.		Total to date.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			£		£		£		£		£		£
1.	Antimony ... ... (Exported) statute tons	...	...	...	...	2½	45	...	...	86	1,698	89	1,743
2.	Arsenical Ore ... ... (Exported) do.	1,075	1,784	7	16	1,765	4,260	...	...	747	3,290	3,594	9,350
3.	Asbestos ... ... (Reported) do.	181	7,600	235	13,581	157	7,286	53	1,443	43	1,754	669	31,664
4.	Bismuth ... ... (Exported) do.	...	...	...	...	...	...	1 cwt.	15	10¾	829	11	844
5.	Coal ... ... (Reported) do.	438,443	381,555	468,817	407,117	462,021	350,346	401,713	270,355	4,207,946	2,053,556	5,978,940	3,462,929
6.	Copper { Ore ... ... (Exported) do.	352	5,519	1,040	16,153	1,511	22,467	455	9,740	69,376	825,357	72,734	879,236
	Copper { Ingot and Matte (Exported) do.	660	14,860	206	8,448	137	2,698	4	365	11,350	775,415	12,357	801,786
7.	Gadolinite ... ... (Reported) do.	...	...	...	...	...	...	...	...	1	112	1	112
8.	Gold ... (Exported and Minted) fine ounces	538,246	2,286,325	553,731	2,352,098	617,842	2,624,427	734,066	3,118,113	32,396,483	137,611,514	34,840,368	147,992,477
9.	Graphite ... ... (Exported) statute tons	*	3	...	...	13	130	...	...	52	563	65	696
10.	Gypsum ... ... (Reported) do.	63	16	665	622	...	...	...	...	...	...	728	638
11.	Ironstone ... ... (Reported) do.	...	...	...	...	...	...	...	...	57,830	36,695	57,830	36,695
12.	Lead (Ore and Concentrates) (Exported) do.	...	...	...	...	...	...	...	...	44,032	508,748	44,032	508,748
13.	Lead and Silver Lead (Ore and Concentrates) (Exported) do.	...	...	...	...	3,427	84,743	248	3,704	4,555	62,774	8,230	151,221
14.	Lead (Pig) ... ... (Exported) do.	2,796	69,528	2,156	48,863	1,930	69,136	1,780	48,462	14,370	392,358	23,032	628,347
15.	Limestone ... ... (Reported) do.	...	...	...	...	...	...	...	...	93,706	18,290	93,706	18,290
16.	Magnesite ... ... (Exported) do.	...	...	...	...	...	...	...	...	804	1,518	804	1,518
17.	Manganese ... ... (Exported) do.	...	...	16	145	...	...	...	...	2	7	18	152
18.	Mica ... ... (Exported) do.	2	60	...	...	*	120	1	514	*	663	...	1,357
19.	Molybdenite ... ... (Exported) do.	51	505	...	...	½	5	7	100	19	255	78	865
20.	Pyritic Ore ... ... (Reported) do.	3,441	4,203	6,117	7,871	6,020	7,276	4,136	4,919	54,334	21,227	74,048	45,496
21.	Silver ... ... (Exported) fine ounces	118,696	18,164	116,151	18,658	130,692	36,605	223,332	55,342	3,535,372	441,470	4,124,243	570,239
22.	Tantalite ... ... (Exported) statute tons	...	...	...	...	...	...	½	75	*	18,017	...	18,092
23.	Tin Ore ... ... (Exported) do.	110	10,930	67	6,485	243	49,449	318	47,269	14,696	1,380,838	15,434	1,494,971
24.	Tungsten Ore { Scheelite ... (Exported) do.	...	...	...	...	2½	395	6	772	12½	1,340	21	2,507
	Tungsten Ore { Wolfram ... (Exported) do.	...	...	...	...	...	...	½	15	15	1,426	15	1,441
25.	Zinc ... ... (Exported) do	...	...	...	...	...	...	...	...	184	5,437	184	5,437
	Unenumerated ... ... (Exported)	...	574	...	112	...	23	1	1	...	6,278	...	6,988
	Total Values	...	2,801,626	...	2,880,169	...	3,259,411	...	3,561,204	...	144,171,429	...	156,673,839

* Weight not stated.

The value of gold is calculated at the fixed price of £4·24773 per fine oz. Sales of gold by the Gold Producers' Association averaged £5·825 per fine oz. for the year 1920, £5·314 for the year 1921, and £4·693 for the year 1922. The amounts of £974,504, £590,428, and £239,487 should, therefore, be added to those years respectively, to make up the actual value of such gold.

AUSTRALASIAN MINERAL PRODUCTION.

COMPARATIVE TABLE SHOWING THE OUTPUT OF ALL MINERAL PRODUCTS FROM THE SEVERAL STATES OF AUSTRALIA AND THE DOMINION OF NEW ZEALAND DURING 1922.

DESCRIPTION OF MINERAL.	Western Australia.		NEW SOUTH WALES.		QUEENSLAND.		VICTORIA.		TASMANIA.		SOUTH AUSTRALIA.		NEW ZEALAND.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		£		£		£		£		£		£		£
Alunite ... ... Statute tons	...	...	185	740	...	...	...	...	...	...	95	210	...	...
Antimony (Metal and Ore) do.	...	...	...	...	...	...	1,283	22,966	...	...	...	...	...	...
Arsenical Ore ... do.	1,075	1,784	291	14,818	400	21,320	...	...	...	...	...	...	...	...
Asbestos ... ... do.	181	7,600	561	11,418	...	...	...	...	...	...	...	...	...	...
Bismuth (Metal and Ore) do.	...	...	5	939	2	586	...	...	...	...	...	...	...	...
Coal ... ... do.	438,443	381,555	10,183,133	8,507,946	958,519	840,472	651,208	675,391	69,238	61,016	...	...	1,857,819	1,857,819
Copper (Ingot and Matte) do.	660	14,860	625	36,233	5,103	321,535	...	...	5,616	391,535	1,184	73,640	...	...
Copper Ore ... ... do.	352	5,519			...	...	...	...	...	...	...	...	...	...
Gold ... ... Fine ounces	538,246	2,286,325	25,222	107,139	80,584	342,300	106,872	453,962	3,431	14,576	1,000	4,248	120,811	513,173
Gypsum ... ... Statute tons	63	16	...	...	...	...	6,945	4,662	...	...	45,241	37,650	...	...
Iron ... ... do.	...	...	54,856	248,909	...	...	...	...	...	...	...	...	81	627
Iron Oxide ... ... do.	...	...	1,381	1,745	...	...	...	...	...	...	...	...	...	...
Ironstone ... ... do.	...	...	980	1,274	...	...	...	...	...	...	51,423	58,177	...	...
Lead and Silver Lead do.	2,796	69,528	207,698	2,462,031	2,802	66,391	...	...	4,926	118,257	...	...	...	...
Limestone ... ... do.	...	...	89,484	101,923	78,186	29,247	...	...	...	...	70,243	27,080	...	...
Magnesite ... ... do.	...	...	3,370	3,231	...	...	97	291	...	...	576	951	...	...
Manganese Ore ... do.	...	...	2,398	7,194	67	352	150	930	...	...	639	4,585	...	...
Molybdenite ... ... do.	51	505	2	320	1	236	591	2,550	...	...	...	...	...	...
Osmiridium ... ... Ounces	...	...	...	...	...	...	...	...	1,174	35,512	...	...	...	...
Phosphate Rock ... Statute tons	...	...	...	...	65	279	1,096	1,096	...	...	2,715	3,678	...	...
Platinum ... ... Fine ounces	...	...	80	1,182	...	...	...	...	...	...	...	...	...	...
Precious Stones	...	...	...	16,450	...	35,862	...	...	...	...	...	...	...	...
Pyritic Ore ... ... Statute tons	3,441	4,203	...	...	...	...	...	...	...	...	...	...	...	...
Tungsten Ores: Scheelite do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tungsten Ores: Wolfram do.	...	...	...	...	4	98	...	...	19	1,024	...	...	...	...
Shale (Oil) ... ... do.	...	...	23,467	60,641	...	...	...	...	40	100	...	...	...	...
Silver ... ... Fine ounces	118,696	18,164	749,904	112,077	273,036	42,959	6,978	1,080	794,585	123,437	2,512	377	399,477	61,815
Tin (Ore and Ingot) ... Statute tons	110	10,930	1,144	154,698	419	65,811	114	12,071	679	112,407	...	...	...	...
Zinc (Spelter and Conc.) do.	...	...	363,681	1,157,458	...	...	...	...	...	...	...	...	...	...
Other	...	637	...	1,266,404	...	23,885	...	2,375	...	154,129	...	120,912	...	327,638
Total Value ...	...	£2,801,626	...	£14,274,770	...	£1,791,333	...	£1,177,374	...	£1,011,993	...	£331,508	...	£2,761,072

PART I.—GOLD.

TABLE I.

MONTHLY PRODUCTION OF GOLD, IN FINE OUNCES, SHOWING THE QUANTITY REPORTED TO THE MINES DEPARTMENT DURING 1922.

GOLDFIELD.	DISTRICT.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.	
		District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.
		ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
Kimberley ...	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pilbara	Marble Bar ...	160·04	207·74	319·77	352·92	14·00	20·00	...	5·00	82·04	92·72	259·56	272·28	178·83	338·53
Do. ...	Nullagine ...	47·70		33·15		6·00		5·00		10·68		12·72		159·70	
West Pilbara ...	... ...	...	...	...	...	...	19·66	...	...	...	4·37	...	7·10	...	59·61
Ashburton ...	... ...	...	1·65	...	...	...	...	...	·77	...	...	...	8·47	...	...
Gascoyne ...	... ...	...	...	...	...	...	1·52	...	...	...	...	...	...	...	...
Peak Hill ...	... ...	...	123·37	...	...	...	...	...	...	...	355·66	...	208·84	...	423·39
East Murchison ...	Lawlers ...	377·62	828·50	343·54	855·99	468·98	972·21	229·74	1,353·81	444·42	1,103·71	334·69	811·95	323·66	1,117·18
Do. ...	Wiluna ...	138·88		377·20		216·75		684·45		411·75		477·26		553·64	
Do. ...	Black Range	312·00		135·25		286·48		439·62		247·54		...		239·88	
Murchison ...	Cue	272·96		388·23		359·29		283·63		207·09		390·25		129·56	
Do. ...	Meekatharra...	2,882·01	3,528·79	2,746·91	3,273·36	1,927·13	2,565·33	2,329·48	2,800·85	2,442·81	3,369·07	1,703·53	2,446·72	1,698·90	1,878·80
Do. ...	Day Dawn ...	73·79		45·88		71·31		...		128·75		136·12		30·48	
Do. ...	Mt. Magnet ...	299·85		92·34		207·60		187·74		590·42		216·82		19·86	
Yalgoo	... ...	...	771·11	...	1,292·17	...	1,908·60	...	1,278·36	...	2,091·27	...	1,866·57	...	1,836·03
Mt. Margaret ...	Mt. Morgans...	105·67	1,422·55	34·94	1,258·32	268·86	2,653·32	883·24	2,738·97	332·30	1,761·79	628·75	2,624·53	350·00	1,895·35
Do. ...	Mt. Malcolm...	1,316·88		1,181·28		1,432·92		1,569·50		1,248·17		1,946·42		1,321·21	
Do. ...	Mt. Margaret	...		42·10		951·54		286·23		181·32		49·36		224·14	
North Coolgardie	Menzies ...	380·82	380·82	1,286·70	2,333·26	896·30	897·99	999·08	1,029·78	980·17	1,036·41	915·53	957·19	1,000·15	1,000·15
Do. ...	Ularring ...	...		1,036·96		...		30·70		56·24		39·17		...	
Do. ...	Niagara ...	...		9·60		1·69		...		...		2·49		...	
Do. ...	Yerilla ...	...		...		...		...		...		...		...	
Broad Arrow ...	... ...	...	...	...	19·30	...	85·02	...	577·96	...	196·61	...	...	...	159·16
N.E. Coolgardie ...	Kanowna ...	...	...	31·76	31·76	1,097·62	1,097·62	105·57	254·34	523·18	523·18	277·46	395·40	829·77	966·87
Do. ...	Kurnalpi ...	...		...		...		148·77		...		117·94		137·10	
East Coolgardie ...	East Coolgardie	28,666·63	28,666.63	30,215·61	30,230.66	32,753·18	32,793.03	28,729·53	28,729·53	31,622·57	31,669·02	33,191·73	33,217·61	30,759·19	30,811·79
Do. ...	Bulong ...	...		15·05		39·85		...		46·45		25·88		52·60	
Coolgardie ...	Coolgardie ...	468·24	1,865·93	41·88	168·44	896·97	896·97	771·67	959·46	678·51	710·94	356·76	356·76	361·80	442·77
Do. ...	Kunanalling ...	1,397·69		126·56		...		187·79		32·43		...		80·97	
Yilgarn	... ...	...	384·30	...	1,398·42	...	1,487·22	...	684·57	...	1,664·79	...	2,323·74	...	1,095·86
Dundas	... ...	...	325·22	...	286·54	...	742·32	...	1,324·05	...	5·80	...	447·73	...	...
Phillips River ...	... ...	...	43·78	...	...	...	9·71	...	55·91	...	59·44	...	30·21	...	99·57
State generally	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTAL	**Fine Ounces** ...	...	**38,550·39**	...	**41,501·14**	...	**46,150·52**	...	**41,793·36**	...	**44,644·78**	...	**45,975·10**	...	**42,125·06**
	Sterling Value	**£163,752**		**£176,286**		**£196,035**		**£177,527**		**£189,639**		**£195,290**		**£178,936**	

TABLE I.—*Monthly Production of Gold in Fine Ounces*—continued.

GOLDFIELD.	DISTRICT.	AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Total for 1922.	
		District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.
		ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
Kimberley ...	... ...	...	...	...	1·86	...	...	...	...	...	3·15	...	5·01
Pilbara	Marble Bar ...	116·78	129·50	385·88	403·75	...	15·17	689·87	689·87	572·68	572·68	2,779·45	3,100·16
Do. ...	Nullagine ...	12·72		17·87		15·17		...		...		320·71	
West Pilbara ...	... ...	...	·26	...	...	...	1·60	...	...	...	1·73	...	94·33
Ashburton ...	... ...	...	...	...	...	...	...	...	2·68	...	...	...	13·57
Gascoyne	... ...	...	...	...	...	...	...	...	...	...	...	...	1·52
Peak Hill ...	... ...	...	93·44	...	277·19	...	572·57	...	92·99	...	12·44	...	2,159·89
East Murchison ...	Lawlers	375·09		535·66		385·23		523·35		308·85		4,650·83	
Do. ...	Wiluna	307·22	819·04	296·40	1,349·71	1,030·83	1,884·00	487·71	1,123·48	403·21	831·04	5,385·30	13,050·62
Do. ...	Black Range ...	136·73		517·65		467·94		112·42		118·98		3,014·49	
Murchison ...	Cue	601·85		357·45		843·65		526·96		479·76		4,840·68	
Do. ...	Meekatharra ...	2,236·17		3,052·31		1,550·69		1,683·68		2,699·61		26,953·23	
Do. ...	Day Dawn ...	217·51	3,642·48	121·46	3,620·55	199·13	2,686·83	37·95	3,182·23	52·02	3,309·32	1,114·58	36,304·33
Do. ...	Mt. Magnet ...	586·95		89·33		93·36		933·64		77·93		3,395·84	
Yalgoo	... ...	...	1,257·88	...	1,602·54	...	1,414·49	...	733·90	...	2,079·57	...	18,132·49
Mt. Margaret ...	Mt. Morgans ...	1,715·20		975·99		933·19		667·38		872·86		7,768·38	
Do. ...	Mt. Malcolm ...	1,254·47	3,074·08	1,312·60	2,295·68	1,269·75	2,573·33	1,206·20	1,883·55	1,752·42	3,467·72	16,811·82	27,649·19
Do. ...	Mt. Margaret ...	104·41		7·09		370·39		9·97		842·44		3,068·99	
North Coolgardie...	Menzies	1,139·61		1,061·81		1,385·75		976·29		628·00		11,650·21	
Do. ...	Ularring	37·77		28·30		97·47		24·41		50·42		1,401·44	
Do. ...	Niagara	...	1,392·91	43·63	1,133·74	92·76	1,575·98	47·00	1,047·70	...	838·21	197·17	13,624·14
Do. ...	Yerilla	215·53		...		...		...		159·79		375·32	
Broad Arrow ...	... ...	...	630·07	...	295·15	...	1,187·61	...	54·39	...	423·29	...	3,628·56
N.E. Coolgardie ...	Kanowna ...	155·27	204·17	109·64	243·81	366·97	366·97	122·88	122·88	262·01	338·10	3,882·13	4,545·10
Do. ...	Kurnalpi ...	48·90		134·17		...		...		76·09		662·97	
East Coolgardie ...	East Coolgardie ...	31,971·34	32,216·06	32,016·87	32,124·79	38,634·42	38,635·80	32,658·86	32,699·27	24,537·32	24,594·50	375,757·25	376,388·69
Do. ...	Bulong	244·72		107·92		1·38		40·41		57·18		631·44	
Coolgardie ...	Coolgardie ...	1,193·35	4,837·48	713·00	829·83	1,323·37	1,816·18	1,706·02	1,890·19	1,151·11	1,395·59	9,662·68	16,170·54
Do. ...	Kunanalling ...	3,644·13		116·83		492·81		184·17		244·48		6,507·86	
Yilgarn	... ...	...	760·51	...	688·83	...	891·54	...	724·55	...	689·62	...	12,793·95
Dundas	... ...	...	653·01	...	1,238·44	...	448·29	...	787·89	...	1,784·70	...	8,043·99
Phillips River ...	... ...	...	164·19	...	12·82	...	...	...	162·48	...	50·64	...	688·75
State generally ...	... ...	...	...	...	29·01	...	53·69	...	30·91	...	30·84	...	144·45
TOTAL	**Fine ounces** ...	...	**49,875·08**	...	**46,147·70**	...	**54,124·05**	...	**45,228·96**	...	**40,423·14**	...	**536,539·28**
	Sterling value	**£211,856**		**£196,023**		**£229,904**		**£192,120**		**£171,706**		**£2,279,074**	

The total gold yield of the State is as shown at page 5, being the amount of gold exported and also that lodged at the Royal Mint, which total includes alluvial and other gold not reported to the Department.

TABLE II.

TOTAL YEARLY PRODUCTION OF GOLD, IN FINE OUNCES, AS REPORTED TO THE MINES DEPARTMENT, TO 31ST DECEMBER, 1922.

GOLDFIELD.	DISTRICT.	1922.		1921.		1920.		1919.		1918.		1917.	
		District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.
		ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
Kimberley	... ...	...	5·01	...	49·35	...	...	...	150·73	...	15·08	...	82·25
Pilbara	Marble Bar ...	2,779·45	3,100·16	2,556·95	2,626·57	3,164·15	4,052·49	2,960·51	3,421 39	2,991·73	3,748·40	2,463·66	5,406·75
Do.	Nullagine ...	320·71		69·62		888·34		460·88		756·67		2,943·09	
West Pilbara ...	... ...	...	94·33	...	67·10	...	133·91	...	95·26	...	120·37	...	304·77
Ashburton	... ...	...	13·57	...	22·31	...	...	...	...	...	...	...	6·50
Gascoyne	... ...	...	1·52	...	7·46	...	...	...	...	...	...	...	...
Peak Hill	... ...	...	2,159·89	...	1,078·53	...	1,655·71	...	2,255·38	...	1,089·31	...	1,743·72
East Murchison ...	Lawlers	4,650·83		3,008·81		2,693·15		4,951·82		4,115·55		4,784·50	
Do.	Wiluna	5,385·30	13,050·62	4,092·30	18,762·26	5,478·99	19,600·25	7,035·72	27,413·89	7,909·60	29,210·72	9,523·65	32,856·56
Do.	Black Range ...	3,014 49		11,661·15		11,428·11		15,426·35		17,185·57		18,548·41	
Murchison	Cue	4,840·68		7,186·83		9,642·63		9,020·49		10,183·75		9,689·81	
Do.	Meekatharra ...	26,953·23		30,045·77		28,163·45		35,436·80		44,119·86		44,269·00	
Do.	Day Dawn ...	1,114·58	36,304 33	726·80	41,256·53	4,671·54	46,604·07	2,383·58	50,569·85	4,176·83	63,285·43	23,746·93	82,305·83
Do.	Mt. Magnet ...	3,395·84		3,296·13		4,126·45		3,728·98		4,804·99		4,600·09	
Yalgoo	... ...	...	18,132·49	...	3,579·20	...	2,965·43	...	4,788·38	...	4,397·89	...	5,812·74
Mt. Margaret ...	Mt. Morgans ...	7,768 38		7,612·89		5,560·87		5,302·34		5,294·03		6,314·21	
Do.	Mt. Malcolm ...	16,811·82	27,649 19	8,364·49	20,803·51	42,800·83	77,335·84	49,506·74	88,151·93	46,368·64	85,346·97	59,488·04	101,874·54
Do.	Mt. Margaret ...	3,068·99		4,826·13		28,974·14		33,342·85		33,684·30		36,072·29	
North Coolgardie ...	Menzies	11,650·21		8,034·25		11,468·50		20,859·22		30,345·06		30,725·13	
Do.	Ularring ...	1,401·44		1,605·06		57·53		931·66		4,791·82		1,090·35	
Do.	Niagara	197 17	13,624·14	345·17	10,640·08	223·26	12,024·18	746·51	23,019·41	1,203·81	36,829·91	1,185·17	34,795·55
Do.	Yerilla	375·32		655·60		274·89		482·02		489·22		1,794·90	
Broad Arrow ...	... ...	...	3,628·56	...	8,875·01	...	7,445·23	...	11,728·57	...	4,125·88	...	16,518·64
N.E. Coolgardie ...	Kanowna ...	3,882 13		3,378·29		1,248·14		5,250·96		3,439·60		5,912·39	
Do.	Kurnalpi ...	662·97	4,545·10	769·69	4,147·98	490·66	1,738·80	221·12	5,472·08	260·65	3,700·25	20·78	5,933·17
East Coolgardie ...	East Coolgardie...	375,757·25		378,344·62		401,417·01		396,995·28		524,729·46		557,874·83	
Do.	Bulong	631 44	376,388 69	85·30	378,429·92	78·90	401,495·91	59·61	397,054·89	93·90	524,823·36	108·54	557,983·37
Coolgardie	Coolgardie ...	9,662 68		4,629·54		3,482·79		4,222·21		5,334·36		6,980·68	
Do.	Kunanalling ...	6,507·86	16,170·54	4,918·20	9,547·74	2,503·64	5,986·43	1,592·09	5,814·30	2,628·39	7,962·75	3,305·00	10,285·68
Yilgarn	... ...	...	12,793·95	...	19,241·50	...	37,636·51	...	54,002·74	...	70,765·88	...	78,244·77
Dundas	... ...	...	8,043·99	...	5,455·77	...	6,541·18	...	12,529·61	...	15,949·44	...	18,419·01
Phillips River ...	... ...	...	688·75	...	865·75	...	1,422·76	...	1,700·12	...	4,478·49	...	4,734·52
*Donnybrook ...	... ...	...	...	...	...	...	...	...	...	...	...	...	...
State generally ...	...	...	144·45	...	99·85	...	20·67	...	46·41	...	195·43	...	111·41
TOTAL	Fine Ounces ...	...	536,539·28	...	525,556·42	...	626,659·37	...	688,214·94	...	856,045·56	...	957,419·78
	Sterling Value	£2,279,074		£2,232,422		£2,661,880		£2,923,351		£3,636,250		£4,066,861	

* Abolished 4th March, 1908.

TABLE II.—*Total Yearly Production of Gold, in Fine Ounces, etc.*—continued.

GOLDFIELD.	DISTRICT.	1916.		1915.		1914.		1913.		Previous to 1913.		Total to December 31st, 1922.	
		District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.	District.	Goldfield.
		ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
Kimberley	... ...	...	161·91	...	144·34	...	453·29	...	...	...	17,012·75	...	18,074·71
Pilbara	Marble Bar ...	3,515·58	5,881·60	6,462·36	8,541·97	3,304·94	5,177·46	3,845·81	5,598·21	100,183·51	166,914·21	134,228·65	214,469·21
Do.	Nullagine ...	2,366·02		2,079·61		1,872·52		1,752·40		66,730·70		80,240·56	
West Pilbara ...	... ...	...	608·84	...	1,507·02	...	1,022·70	...	1,421·15	...	22,601·98	...	27,977·43
Ashburton	... ...	...	...	...	...	...	...	...	11·70	...	8,865·04	...	8,919·12
Gascoyne	... ...	...	14·48	...	80·85	...	3·76	...	31·45	...	546·00	...	685·52
Peak Hill	... ...	...	2,389·29	...	2,813·13	...	2,602·62	...	2,765·59	...	238,313·54	...	258,876·71
East Murchison ...	Lawlers	6,579·41		6,055·13		4,324·57		4,843·05		871,721·45		917,728·27	
Do.	Wiluna	14,472·13	46,811·44	6,746·78	58,082·36	6,936·34	70,008·46	7,501·11	87,977·47	29,816·33	1,397,292·39	104,898·25	1,801,866·42
Do.	Black Range ...	25,759·90		45,280·45		59,547·55		75,633·31		495,754·61		779,239·90	
Murchison	Cue	6,011·29		6,185·89		4,491·02		6,525·65		314,732·83		388,510·87	
Do.	Meekatharra ...	51,322·56	84,422·89	73,834·57	108,049·78	80,400·07	115,722·42	72,701·81	122,027·56	485,850·86	2,330,454·32	973,098·98	3,081,003·01
Do.	Day Dawn ...	18,134·71		19,168·14		18,926·64		27,126·72		1,190,859·31		1,311,035·78	
Do.	Mt. Magnet ...	8,954·33		8,861·18		11,904·69		15,673·38		339,011·32		408,357·38	
Yalgoo	... ...	...	8,194·69	...	8,841·88	...	6,025·92	...	8,163·47	...	75,350·51	...	146,252·60
Mt. Margaret ...	Mt. Morgans ...	8,439·99		7,463·52		4,880·95		1,255·47		470,322·64		530,215·29	
Do.	Mt. Malcolm ...	57,541·13	100,612·34	63,995·64	106,563·01	66,071·07	96,792·51	72,738·73	91,272·70	1,187,477·61	2,238,180·23	1,671,164·74	3,034,582·77
Do.	Mt. Margaret ...	34,631·22		35,103·85		25,840·49		17,278·50		580,379·98		833,202·74	
North Coolgardie ...	Menzies	36,756·35		49,096·24		53,789·52		44,227·89		711,541·54		1,008,493·91	
Do.	Ularring	2,989·66		2,474·10		5,026·09		7,710·48		262,940·29		291,018·48	
Do.	Niagara	1,790·01	45,146·57	3,155·13	59,513·22	6,724·42	72,188·05	6,941·08	68,526·60	479,923·41	1,625,631·06	502,435·14	2,001,938·77
Do.	Yerilla	3,610·55		4,787·75		6,648·02		9,647·15		171,225·82		199,991·24	
Broad Arrow ...	... ...	...	22,215·92	...	22,290·03	...	9,285·98	...	34,739·33	...	358,679·19	...	499,532·34
N.E. Coolgardie ...	Kanowna ...	6,392·00	6,678·02	10,077·23	10,860·98	9,560·02	10,134·10	11,133·30	12,392·88	638,242·49	664,068·39	698,516·55	729,671·75
Do.	Kurnalpi ...	286·02		783·75		574·08		1,259·58		25,825·90		31,155·20	
East Coolgardie ...	East Coolgardie	578,183·41	579,344·34	668,913·16	670,788·24	680,494·61	682,895·41	719,323·42	719,928·72	13,209,483·00	13,364,384·95	18,491,516·05	18,653,517·80
Do.	Bulong	1,160·93		1,875·08		2,400·80		605·30		154,901·95		162,001·75	
Coolgardie	Coolgardie ...	8,768·13	13,618·32	11,990·23	18,314·77	17,009·37	20,981·45	28,407·27	31,891·49	889,541·88	1,072,905·13	990,029·14	1,213,478·60
Do.	Kunanalling ...	4,850·19		6,324·54		3,972·08		3,484·22		183,363·25		223,449·46	
Yilgarn	... ...	...	87,993·68	...	91,123·57	...	88,744·72	...	82,333·96	...	407,770·49	...	1,030,651·77
Dundas	... ...	...	21,594·78	...	23,884·18	...	26,590·76	...	27,039·47	...	461,345·46	...	627,393·65
Phillips River ...	... ...	...	5,418·97	...	3,816·76	...	4,665·42	...	2,788·47	...	58,039·24	...	88,619·25
*Donnybrook ...	... ...	...	...	...	...	...	...	...	...	...	841·76	...	841·76
State generally ...	... ...	...	618·78	...	272·59	...	144·16	...	178·60	...	6,139·73	...	7,972·08
TOTAL	**Fine Ounces** ...	...	1,031,726·86	...	1,195,498·68	...	1,214,239·19	...	1,299,088·82	...	24,515,336·37	...	33,446,325·27
	Sterling Value ...	**£4,382,497**		**£5,078,156**		**£5,157,760**		**£5,518,179**		**£104,134,529**		**£142,070,959**	

* Abolished 4th March, 1908.

TABLE III.

GENERAL RETURN.

RETURN SHOWING, FOR THE RESPECTIVE GOLDFIELDS AND DISTRICTS, THE AREA IN SQUARE MILES, LEASES IN FORCE, PARTICULARS OF PLANT, MEN EMPLOYED AND DIGGERS, ALLUVIAL, DOLLIED, AND SPECIMEN GOLD AND ORE TREATED, WITH GOLD AND SILVER YIELD, IN FINE OUNCES, AS REPORTED TO THE MINES DEPARTMENT FOR THE YEAR 1922.

Goldfield.	District.	Date of Proclamation of Goldfield.				Area in Square Miles.		Leases in force, 31-12-1922		Particulars of Plant.					Average Number of Men engaged in Gold Mining.		
										Milling.		Cyaniding.			Men employed.		
		Proclamation gazetted.	To take effect from.	Latest Amendment of Boundaries gazetted.	To take effect from.	Goldfield.	District.	No.	Area in Acres.	Stamps.	Other Mills.	Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	Above Ground.	Under Ground.	Diggers.
Kimberley	...	20-5-86	20-5-86	31-10-02	1-11-02	33,833	...	...	...	...	...	...	...	...	...	...	6
West Kimberley	...	19-3-20	1-3-20	...	...	98,600	...	...	...	...	...	...	...	...	...	...	...
Pilbara	Marble Bar	1-10-88	1-10-88	1-3-07	1-3-07	32,696	25,809	30	435	48	1	10	...	...	25	35	12
	Nullagine						6,887	1	12	25	2	16	...	...	17	5	36
West Pilbara	...	20-9-95	1-11-95	1-3-07	1-3-07	10,843	...	2	12	20	1	...	...	...	1	1	6
Ashburton	...	11-12-90	11-12-90	18-10-01	14-10-01	14,230	...	...	...	...	...	...	...	...	...	...	2
Gascoyne	...	25-6-97	15-4-97	...	...	5,313	...	2	12	...	...	...	...	...	...	...	2
Peak Hill	...	19-3-97	1-4-97	13-11-14	1-12-14	23,650	...	7	69	20	3	4	...	...	32	19	4
East Murchison	Lawlers	28-6-95	28-6-95	2-2-20	2-2-20	26,058	6,691	13	212	40	3	25	...	...	52	29	1
	Wiluna						10,496	16	294	65	5	4	3	3	42	27	...
	Black Range						8,871	15	270	73	5	21	3	2	60	36	...
Murchison	Cue	24-9-91	24-9-91	28-11-13	1-1-14	25,474	8,593	18	226	68	2	30	...	...	64	20	3
	Meekatharra						12,250	48	770	77	13	16	3	3	135	151	24
	Day Dawn						896	15	228	50	9	14	8	...	28	17	3
	Mt. Magnet						3,735	21	210	20	5	19	...	3	41	41	1
Yalgoo	...	8-2-95	23-1-95	30-7-15	9-8-15	23,230	...	45	753	63	9	18	12	...	90	101	1
Mt. Margaret	Mt. Morgans	12-3-97	1-4-97	2-2-20	2-2-20	59,918	14,007	15	241	45	4	14	4	1	62	48	1
	Mt. Malcolm						6,018	30	627	65	5	6	...	1	125	34	1
	Mt. Margaret						39,893	20	364	30	18	12	7	3	38	16	...
North Coolgardie	Menzies	28-6-95	28-6-95	7-9-17	17-9-17	13,746	6,805	18	298	65	12	35	4	2	80	76	...
	Ularring						3,093	13	161	30	5	...	4	...	18	12	...
	Niagara						688	3	48	15	5	2	10	...	12	9	...
	Yerilla						3,160	6	81	20	1	...	...	...	18	12	...
Broad Arrow	...	17-11-96	20-11-96	8-6-06	1-7-06	1,038	...	26	401	35	18	7	...	2	51	44	11
North-East Coolgardie	Kanowna	20-3-96	15-4-96	27-3-08	1-4-08	20,604	1,094	20	276	40	4	...	...	...	44	35	8
	Kurnalpi						19,510	4	23	5	1	...	...	...	7	4	4
East Coolgardie	East Coolgardie	21-9-94	1-10-94	27-3-08	1-4-08	1,800	810	135	2,134	455	277	93	131	80	1,085	1,610	18
	Bulong						990	13	302	...	...	...	...	...	35	30	9
Coolgardie	Coolgardie	6-4-94	6-4-94	1-3-07	1-3-07	11,702	9,384	50	865	63	6	33	8	...	215	205	83
	Kunanalling						2,318	11	130	30	2	11	...	...	34	31	11
Yilgarn	...	1-10-88	1-10-88	28-1-16	1-2-16	17,700	...	60	1,032	145	16	58	6	3	222	133	...
Dundas	...	31-8-93	31-8-93	1-3-07	1-3-07	11,430	...	22	253	17	...	10	...	...	40	49	...
Phillips River	...	21-9-00	14-9-00	28-1-16	1-2-16	5,078	...	9	108	50	1	2	...	...	16	15	3
State generally	...	...	...	...	...	...	...	...	...	...	2	...	...	...	3	...	...
	Total	...	...	...	...	**436,943**	...	**688**	**10,847**	**1,679**	**435**	**460**	**203**	**103**	**2,692**	**2,845**	**250**

TABLE III.—*Return showing for the respective Goldfields and Districts, etc.*—continued.

Goldfield.	District.	1922 GOLD AND SILVER YIELD—DISTRICTS.						1922 GOLD AND SILVER YIELD—GOLDFIELDS.					
		Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Total Gold.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Total Gold.	Silver.
		Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.
Kimberley ...	...	...	...	...	...	...	...	5·01	...	...	...	5·01	...
Pilbara	Marble Bar ...	180·99	156·53	1,841·00	2,441·93	2,779·45	...	261·34	196·53	1,935·00	2,642·29	3,100·16	...
Do.	Nullagine ...	80·35	40·00	94·00	200·36	320·71	...						
West Pilbara ...	...	...	...	...	...	...	...	22·96	...	23·00	71·37	94·33	...
Ashburton ...	...	...	...	...	...	...	...	13·57	...	...	...	13·57	...
Gascoyne	...	...	...	...	...	...	...	1·52	...	...	...	1·52	...
Peak Hill ...	...	...	...	...	...	...	...	12·89	45·43	12,929·25	2,101·57	2,159·89	...
East Murchison ...	Lawlers ...	...	...	4,498·00	4,650·83	4,650·83	42·74	10·96	312·35	15,068·68	12,727·31	13,050·62	48·13
Do.	Wiluna ...	...	...	8,296·25	5,385·30	5,385·30	...						
Do.	Black Range ...	10·96	312·35	2,274·43	2,691·18	3,014·49	5·39						
Murchison ...	Cue	50·11	147·22	8,869·93	4,643·35	4,840·68	2·88						
Do.	Meekatharra ...	238·93	326·77	41,875·25	26,387·53	26,953·23	...	333·31	844·84	55,177·54	35,126·18	36,304·33	2·88
Do.	Day Dawn ...	27·00	146·36	1,069·75	941·22	1,114·58	...						
Do.	Mt. Magnet ...	17·27	224·49	3,362·61	3,154·08	3,395·84	...						
Yalgoo	...	...	...	...	...	...	...	117·84	27·72	20,191·31	17,986·93	18,132·49	158·06
Mt. Margaret ...	Mt. Morgans ...	10·36	35·28	16,092·32	7,722·74	7,768·38	...	14·89	175·63	19,915·61	27,458·67	27,649·19	1,804·62
Do.	Mt. Malcolm ...	3·64	79·38	2,005·92	16,728·80	16,811·82	1,804·62						
Do.	Mt. Margaret...	·89	60·97	1,817·37	3,007·13	3,068·99	...						
North Coolgardie...	Menzies ...	...	3·08	21,921·39	11,647·13	11,650·21	585·27	...	5·57	24,719·75	13,618·57	13,624·14	681·76
Do.	Ularring ...	...	...	1,853·61	1,401·44	1,401·44	96·49						
Do.	Niagara ...	...	2·49	398·00	194·68	197·17	...						
Do.	Yerilla ...	...	...	546·75	375·32	375·32	...						
Broad Arrow ...	...	...	...	...	...	...	...	17·64	238·16	3,207·78	3,372·76	3,628·56	...
N.E. Coolgardie ...	Kanowna ...	11·05	34·38	4,404·35	3,836·70	3,882·13	...	11·05	390·81	4,504·35	4,143·24	4,545·10	...
Do.	Kurnalpi ...	...	356·43	100·00	306·54	662·97	...						
East Coolgardie ...	East Coolgardie	7·61	508·10	656,235·37	375,241·54	375,757·25	87,415·72	70·97	530·07	656,420·77	375,787·65	376,388·69	87,415·72
Do.	Bulong ...	63·36	21·97	185·40	546·11	631·44	...						
Coolgardie ...	Coolgardie ...	138·94	118·91	13,847·09	9,404·83	9,662·68	9·65	138·94	296·86	15,470·59	15,734·74	16,170·54	9·65
Do.	Kunanalling ...	...	177·95	1,623·50	6,329·91	6,507·86	...						
Yilgarn	...	...	...	...	...	...	...	...	2·19	13,869·68	12,791·76	12,793·95	...
Dundas	...	...	...	...	...	...	...	...	258·04	5,562·54	7,785·95	8,043·99	...
Phillips River ...	...	...	...	...	...	...	...	...	...	1,125·66	688·75	688·75	...
State generally		...	...	...	...	...	...	...	84·53	...	59·92	144·45	7,929·36
Total for 1922 ...		...	...	...	...	...	...	**1,032·89**	**3,408·73**	**850,121·51**	**£32,097·66**	**536,539·28**	**98,050·18**

TABLE III.—*Return showing for the respective Goldfields and Districts, etc.*—continued.

Goldfield.	District.	Total Gold and Silver Yield—Districts.						Total Gold and Silver Yield—Goldfields.					
		Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Total Gold.	* Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Total Gold.	* Silver.
		Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.
Kimberley	...	...	...	...	...	...	...	3,947·46	...	17,597·50	14,127·25	18,074·71	...
Pilbara	Marble Bar ...	12,207·35	3,531·99	78,490·93	118,489·31	134,228·65	574·01	18,847·15	3,978·23	119,162·17	191,643·83	214,469·21	574·01
Do.	Nullagine ...	6,639·80	446·24	40,671·24	73,154·52	80,240·56	...						
West Pilbara ...	...	...	...	...	...	...	...	5,673·12	275·00	19,242·71	22,029·31	27,977·43	1,331·07
Ashburton	...	...	...	...	...	...	...	8,603·48	315·64	...	...	8,919·12	7,787·69
Gascoyne	...	...	...	...	...	...	...	329·18	18·51	356·70	337·83	685·52	...
Peak Hill	...	...	...	...	...	...	...	1,984·20	4,108·89	517,190·01	252,783·62	258,876·71	2,287·63
East Murchison ...	Lawlers ...	5,614·49	7,234·60	2,029,174·36	904,879·18	917,728·27	25,997·48						
Do.	Wiluna ...	95·77	197·27	205,524·00	104,605·21	104,898·25	232·00	7,198·80	23,220·30	3,421,527·40	1,771,447·32	1,801,866·42	42,730·05
Do.	Black Range ...	1,488·54	15,788·43	1,186,829·04	761,962·93	779,239·90	16,500·57						
Murchison	Cue	1,166·49	5,605·96	458,180·98	381,738·42	388,510·87	508·68						
Do.	Meekatharra ...	10,585·81	12,144·32	1,400,687·24	950,368·85	973,098·98	5,028·90						
Do.	Day Dawn ...	2,319·97	9,141·26	1,968,425·40	1,299,574·55	1,311,035·78	169,210·44	15,849·13	41,206·67	4,372,777·48	3,023,947·21	3,081,003·01	175,922·20
Do.	Mt. Magnet ...	1,776·86	14,315·13	545,483·86	392,265·39	408,357·38	1,174·18						
Yalgoo	...	...	...	...	...	...	...	1,569·13	1,853·60	202,605·70	142,829·87	146,252·60	325·46
Mt. Margaret ...	Mt. Morgans ...	1,755·83	3,796·75	967,425·65	524,662·71	530,215·29	5,775·05						
Do.	Mt. Malcolm ...	2,656·77	7,480·86	3,245,258·41	1,661,027·11	1,671,164·74	79,052·11	7,837·47	19,170·85	5,840,741·02	3,007,574·45	3,034,582·77	141,590·69
Do.	Mt. Margaret...	3,424·87	7,893·24	1,628,056·96	821,884·63	833,202·74	56,763·53						
North Coolgardie ...	Menzies ...	1,086·64	3,681·23	1,202,422·63	1,003,726·04	1,008,493·91	19,224·48						
Do.	Ularring ...	22·17	1,144·32	298,228·12	289,851·99	291,018·48	5,973·05						
Do.	Niagara ...	1,484·13	1,428·58	899,078·27	499,522·43	502,435·14	5,603·42	3,839·28	13,826·50	2,617,157·06	1,984,272·99	2,001,938·77	30,863·99
Do.	Yerilla ...	1,246·34	7,572·37	217,428·04	191,172·53	199,991·24	63·04						
Broad Arrow ...	...	...	...	...	...	...	...	19,295·62	14,072·05	851,825·69	466,164·67	499,532·34	2,181·96
N.E. Coolgardie ...	Kanowna ...	104,452·97	10,887·38	940,366·04	583,176·20	698,516·55	2,522·12						
Do.	Kurnalpi ...	11,998·75	6,099·54	5,626·91	13,056·91	31,155·20	11·22	116,451·72	16,986·92	945,992·95	596,233·11	729,671·75	2,533·34
East Coolgardie ...	East Coolgardie	27,609·22	33,217·53	29,171,808·76	18,430,689·30	18,491,516·05	1,894,457·57						
Do.	Bulong ...	26,663·28	15,012·98	154,319·24	120,325·49	162,001·75	12·92	54,272·50	48,230·51	29,326,128·00	18,551,014·79	18,653,517·80	1,894,470·49
Coolgardie	Coolgardie ...	9,087·66	11,157·31	1,540,025·22	969,784·17	990,029·14	891·44						
Do.	Kunanalling ...	731·79	5,291·78	276,676·91	217,425·89	223,449·46	48·67	9,819·45	16,449·09	1,816,702·13	1,187,210·06	1,213,478·60	940·11
Yilgarn	...	...	...	...	...	...	...	91·65	1,471·40	2,250,302·02	1,029,088·72	1,030,651·77	32,280·54
Dundas	...	...	...	...	...	...	...	2,027·12	13,851·29	901,885·49	611,515·24	627,393·65	36,392·90
Phillips River ...	...	...	...	...	...	...	...	472·20	781·93	91,994·95	87,365·12	88,619·25	15,688·17
Donnybrook † ...	...	...	...	...	...	...	...	23·24	...	1,653·30	818·52	841·76	...
State generally		...	...	...	...	...	...	124·89	294·09	27·00	7,553·10	7,972·08	17,846·35
Total to 31st December, 1922 ...		...	...	...	...	...	...	**278,256·79**	**220,111·47**	**53,314,869·28**	**32,947,957·01**	**33,446,325·27**	**2,405,746·65**

* By-product in the treatment of auriferous ore except Ashburton and State generally. † Abolished 4th March, 1908.

TABLE IV.

PRODUCTION OF GOLD AND SILVER FROM ALL SOURCES, SHOWING IN FINE OUNCES THE OUTPUT AS REPORTED TO THE MINES DEPARTMENT DURING AND THE TOTAL PRODUCTION TO DATE.

Kimberley Goldfield.

MINING CENTRE.	NUMBER OF LEASE.	REGISTERED NAME OF COMPANY OR LEASE.	TOTAL FOR 1922.					TOTAL PRODUCTION.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Hall's Creek ...	...	Voided Leases	...	...	...	...	...	...	...	423·00	477·76	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	94·55	62·68	...
Mt. Dockrell...	...	Voided Leases	...	...	...	...	...	...	...	44·00	435·93	...
Ruby Creek ...	...	Voided Leases	...	...	...	...	...	...	...	12,633·50	9,435·13	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	151·00	127·28	...
The Brockman	...	Voided leases	...	...	...	...	...	...	...	1,352·75	1,404·40	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	2,462·00	1,820·33	...
The Mary ...	...	Voided leases	...	...	...	...	...	...	...	399·00	210·03	...
The Panton ...	...	Voided leases	...	...	...	...	...	...	...	34·70	138·70	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	3·00	15·01	...
	From Goldfield generally :— Reported by Banks and Gold Dealers		5·01	...	...	...	...	3,947·46	...	...	...	...
		Total	**5·01**	...	...	...	...	**3,947·46**	...	**17,597·50**	**14,127·25**	...

Pilbara Goldfield.

MARBLE BAR DISTRICT.

Bamboo Creek	834	Bamboo Queen	...	...	22·50	24·05	...	...	...	22·50	24·05	...
Do. ...	795	Bulletin	...	...	20·00	26·57	...	...	...	85·25	181·09	...
Do. ...	819	Forrest Abbey	...	...	35·50	77·64	...	...	...	35·50	77·64	...
Do. ...	(816)	Friendly Stranger	...	...	...	...	...	...	54·05	...	...	...
Do. ...	707	Kitchener	...	...	272·25	403·00	...	...	...	3,063·00	6,436·77	...
Do. ...	(806)	Lloyd George	...	...	...	...	...	...	...	22·00	8·98	...
Do. ...	740	(Mount Prophecy)	...	...	...	...	...	...	1·11	1,040·50	1,898·07	...
Do. ...	740, 744, 794 ...	Mount Prophecy Leases ...	...	...	206·75	252·37	...	...	...	1,300·75	2,066·18	...
Do. ...	794	(Perseverance)	...	...	...	...	...	...	...	290·50	584·21	...
Do. ...	817	Prince Charlie	...	...	27·75	105·99	...	...	...	27·75	105·99	...
Do. ...	...	Voided Leases	...	...	...	...	...	...	454·61	15,146·25	23,216·65	...
Do. ...	...	Sundry claims	...	...	120·75	122·41	...	...	307·83	1,097·10	1,440·93	...

Boodalyerrie...	...	Voided leases	...	...	...	...	...	...	292·07	120·25	587·86	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	7·16	...	...	...
Breen's Find...	...	Voided leases	...	...	...	...	...	...	...	14·00	66·82	...
Elsie	...	Voided leases	...	...	...	...	...	...	...	178·00	352·06	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	10·25	58·01	...
Lalla Rookh ...	786, R.C., 112 ...	Haig	...	...	200·00	198·18	...	...	4·78	2,019·00	1,521·24	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	224·50	2,186·65	574·01
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	6,992·00	6,881·04	...
Marble Bar ...	805	Homeward Bound East ...	...	...	155·00	201·56	...	...	...	355·00	429·77	...
Do. ...	815	Ironclad	...	...	304·00	181·37	...	...	...	364·00	227·95	...
Do. ...	694	Jo Jo	...	...	115·00	210·45	...	...	33·97	2,483·00	2,761·41	...
Do. ...	(790)	Rufus Henry	...	...	117·50	138·32	...	...	...	743·25	1,154·02	...
Do. ...	(811)	Victory	...	...	...	...	...	...	...	60·00	48·10	...
Do. ...	(722)	Viking	...	...	20·00	13·75	...	...	...	1,508·25	1,620·25	...
Do. ...	...	Voided leases	...	...	...	...	...	...	147·90	16,109·95	21,281·13	...
Do. ...	...	Sundry claims	...	...	69·00	101·14	...	38·68	149·23	4,758·89	5,249·94	...
North Pole ...	...	Voided leases	...	...	...	...	...	...	...	474·00	340·75	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	50·50	69·56	...
North Shaw ...	...	Voided leases	...	...	...	...	...	7·53	...	351·45	674·72	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	567·06	...	...	...
Sharks ...	...	Sundry claims	...	...	...	...	...	145·08	19·37	24·50	93·14	...
Shaw River ...	...	Voided leases	...	...	...	...	...	...	...	101·00	49·63	...
Talga Talga ...	...	Voided leases	...	...	...	...	...	...	83·83	574·50	975·98	...
Do. ...	...	Sundry claims	...	...	...	...	...	50·26	68·99	204·65	520·25	...
Tambourah ...	835	Webb's Find	...	73·90	...	...	...	...	73·90	...	...	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	1,438·50	1,739·44	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	79·29	639·25	797·44	...
Warrawoona	...	Voided leases	...	...	...	...	...	...	16·99	10,072·80	18,136·84	...
Do. ...	...	Sundry claims	...	...	...	...	...	44·30	362·50	1,127·04	2,163·74	...
Western Shaw	...	Voided Leases	...	...	...	...	...	...	...	1,222·50	957·80	...
Do. ...	...	Sundry claims	...	...	...	...	...	12·52	67·47	...	...	...
Wyman's Well	744	Euro	...	...	155·00	151·99	...	...	...	593·00	595·67	...
Do. ...	...	Voided leases	...	...	...	...	...	...	33·55	115·04	493·98	...
Do. ...	...	Sundry claims	...	...	...	...	...	·93	18·09	355·86	592·18	...
Yandicoogina	...	Voided leases	...	...	...	...	...	...	140·76	2,733·20	5,824·23	...
Do. ...	...	Sundry Claims	...	...	...	...	...	...	238·35	103·75	120·34	...
	From District Generally :—											
	Sundry Parcels treated at :											
	State Battery, Bamboo Creek	...	...	...	233·14	...	...	...	...	...	2,637·84	...
	State Battery, Marble Bar	...	...	...	...	...	...	...	...	...	34·06	...
	Various Works	...	...	...	...	...	...	...	...	237·95	1,204·91	...
	Reported by Banks and Gold Dealers	180·99	82·63	...	...	...	11,908·05	309·13	...	...	...	
	Total	**180·99**	**156·53**	**1,841·00**	**2,441·93**	**...**	**12,207·35**	**3,531·99**	**78,490·93**	**118,489·31**	**574·01**

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

PILBARA GOLDFIELD—continued.

NULLAGINE DISTRICT.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Eastern Creek	176L	(Doherty Reward) ...	...	...	...	...	...	...	...	142·25	171·43	...
Do. ...	176L	Doherty Reward	...	...	80·00	183·41	...	...	...	1,530·00	2,938·94	...
Do. ...	176L (177L) ...	(Doherty Reward Leases) ...	...	...	...	...	...	...	...	219·00	1,007·68	...
		Voided leases	...	...	...	...	...	...	8·19	2,525·75	4,675·63	...
		Sundry claims	...	...	14·00	16·95	...	...	3·77	315·50	540·22	...
Elsie ...	...	Voided leases	...	...	...	...	...	...	...	408·25	1,323·85	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	24·00	27·48	...
McPhee's Creek	...	Voided leases	...	...	...	...	...	...	...	113·00	137·92	...
Middle Creek	...	Voided leases	...	...	...	...	...	...	...	6,211·90	8,433·68	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	286·00	408·82	...
Mosquito Creek	...	Voided leases	...	...	...	...	...	1·07	21·42	7,259·80	12,464·00	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	166·47	2,188·94	3,116·77	...
Nullagine ...	...	Voided leases	...	...	...	...	...	...	13·96	7,453·25	11,335·12	...
Do. ...	...	Sundry claims	...	40·00	...	...	...	104·70	173·14	3,984·75	9,336·03	...
20-Mile Sandy	...	Voided leases	...	...	...	...	...	...	3·20	5,093·70	7,786·99	...
Do. ...	...	Sundry claims	...	...	...	...	...	33·10	20·55	2,802·65	3,855·08	...
	From District Generally:—											
	Sundry Parcels treated at:											
	Doherty's Works	...	...	...	...	...	...	...	...	...	1,177·32	...
	Fremantle Trading Company's Works ...	...	...	...	...	...	...	...	...	...	8·29	...
	State Battery, Twenty-Mile Sandy ...	...	...	...	...	...	...	...	...	62·00	1,677·60	...
	Various Works	...	...	...	...	...	...	...	...	50·50	2,641·67	...
	Reported by Banks and Gold Dealers ...	80·35	...	...	...	...	6,500·93	35·54	...	...	...	
	Total	**80·35**	**40·00**	**94·00**	**200·36**	...	**6,639·80**	**446·24**	**40,671·24**	**73,154·52**	...	

West Pilbara Goldfield.

Croydon ...	...	Voided leases	...	...	...	...	...	...	...	8·00	5·44	...
Hong Kong ...	...	Voided leases	...	...	...	...	...	...	...	331·00	442·45	...
Do. ...	...	Sundry claims	...	...	...	...	...	21·40	·02	9·00	3·15	...

Lower Nichol ...	...	Voided leases	...	...	...	...	...	...	1·10	653·20	402·22	...
Do. ...	...	Sundry claims	...	...	...	...	...	10·44	2·71	10·00	11·51	...
Mallina ...	...	Voided leases	...	...	...	...	...	...	...	141·60	128·44	...
Nichol ...	...	Voided leases	...	...	...	...	...	...	...	30·00	11·47	...
Pilbara ...	...	Voided leases	...	...	...	...	...	...	48·12	267·00	413·59	...
Do. ...	...	Sundry claims	...	...	23·00	71·37	...	1·11	86·24	103·00	185·29	...
Roebourne ...	M.L. 174 ...	Good Fortune	...	...	...	...	...	...	...	...	3·96	112·83
Do. ...	M.L. 183 ...	Carlow Castle: Roebourne Copper Mines, Limited	...	...	...	...	...	...	...	...	6·12	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	113·36	573·91	237·91
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	108·60	93·85	96·53
Station Peak	165	(Belladonna)	...	...	...	...	...	...	17·93	943·00	262·93	...
Do. ...	...	Voided leases	...	...	...	...	...	177·74	23·44	9,993·00	11,084·49	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	37·50	48·19	...
Towranna ...	...	Voided leases	...	...	...	...	...	...	2·62	3,965·80	5,187·51	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	22·00	12·35	...
Upper Nichol	...	Sundry claims	...	...	...	...	...	...	...	6·50	2·57	...
Weerianna ...	...	Voided leases	...	...	...	...	...	...	...	2,436·15	3,079·81	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	64·00	62·90	...
Whim Creek	...	Voided leases	...	...	...	...	...	...	...	...	...	883·80
	From District Generally:—											
	Reported by Banks and Gold Dealers		22·96	...	...	...	...	5,462·43	92·82	...	7·16	...
	Total		**22·96**	...	**23·00**	**71·37**	...	**5,673·12**	**275·00**	**19,242·71**	**22,029·31**	**1,331·07**

Ashburton Goldfield.

Mt. Mortimer	...	Sundry claims	...	...	...	...	...	354·37	315·64	...	...	74·47
Uaroo ...	...	Voided leases	...	...	...	...	...	...	...	...	...	7,713·22
	From Goldfield generally:—											
	Reported by Banks and Gold Dealers		13·57	...	...	...	...	8,249·11	...	...	...	...
	Total		**13·57**	...	...	...	...	8603·48	315·64	...	...	7,787·69

Gascoyne Goldfield.

Bangemall ...	...	Voided leases	...	...	...	...	...	...	6·22	350·70	313·82	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	12·29	6·00	24·01	...
	From Goldfield Generally:—											
	Reported by Banks and Gold Dealers		1·52	...	...	...	...	329·18	...	...	...	...
	Total		**1·52**	...	...	...	...	**329·18**	**18·51**	**356·70**	**337·83**	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued

Peak Hill Goldfield.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Egerton ...	352P	Hibernian	...	...	...	...	...	...	...	4,410·00	1,659·78	...
Do. ...	...	Voided leases	...	...	...	...	...	...	·91	315·25	360·00	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	23·51	1,093·75	506·79	...
Horseshoe ...	...	Voided leases	...	...	...	...	...	...	1,962·66	728·38	1,973·46	2·00
Do. ...	...	Sundry claims	6·36	...	...	...	...	6·36	639·53	16·05	45·14	...
Mt. Fraser ...	...	Voided leases	...	...	...	...	...	...	...	389·50	320·96	...
Do. ...	...	Sundry claims	...	...	30·50	32·43	...	...	...	110·50	87·84	...
Peak Hill ...	459P	Atlantic	...	...	10·00	73·91	...	...	...	194·50	599·52	...
Do. ...	474P	Atlantic North	...	6·73	480·50	111·58	...	...	6·73	491·50	119·97	...
Do. ...	(462P)	Enterprise	...	...	70·50	49·13	...	...	...	230·50	482·62	...
Do. ...	448P	Evening Star	...	...	234·50	258·59	...	...	...	1,437·50	2,978·00	...
Do. ...	(472P)	Independent	...	...	...	...	...	...	...	18·50	34·98	...
Do. ...	5P, 306P ...	No. 1 North Leases	...	...	535·50	266·98	...	...	61·10	3,125·00	2,461·71	·04
Do. ...	(1P), (2P), (4P), 5P, (6P), (8P), (9P), (13P), (15P), (16P), (26P), (27P), (28P), (29P), (35P), (36P), (43P), (53P), (54P), (63P), (146P), (152P), (190P), (213P), (222P), (239P), (248P), (252P), (262P), (274P), 306P, (313P)	(Peak Hill Goldfield, Ltd.)	...	...	...	...	...	...	191·46	462,057·01	223,273·59	2,285·59
Do. ...	(473P)	Reefers	...	8·14	...	...	...	...	8·14	...	...	...
Do. ...	(468P)	Simpson	...	...	...	...	...	...	...	2,946·00	286·68	...
Do. ...	(398P)	Temperance	...	...	...	...	...	...	6·65	797·00	509·20	...
Do. ...	(465P)	Wowser	...	...	11,475·00	971·44	...	...	...	11,512·50	1,068·98	...
Do. ...	...	Voided Leases	...	...	...	...	...	...	521·54	5,459·62	4,843·91	...
Do. ...	...	Sundry claims	6·53	30·56	92·75	69·90	...	30·07	213·26	16,863·00	4,676·58	...
Ravelstone ...	...	Voided leases	...	...	...	...	...	...	101·64	4,219·85	3,117·68	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	553·60	283·17	...
Wilgeena ...	...	Voided leases	...	...	...	...	...	...	23·54	128·50	146·79	...
Wilthorpe ...	...	Voided leases	...	...	...	...	...	...	...	47·00	20·93	...

From Goldfield generally:—												
Sundry Parcels treated at:												
Purcell's Works	...	...	...	...	...	...	...	...	...	524·56	...
State Battery, Egerton	...	...	...	...	...	...	...	...	...	294·87	...
State Battery, Ravelstone	...	...	...	267·61	...	...	...	3·05	15·00	1,785·94	...
Various Works	...	...	...	...	...	...	...	...	30·00	319·97	...
Reported by Banks and Gold Dealers	...	...	...	...	...	1,947·77	345·17	...	...	...	...
Total	**12·89**	**45·43**	**12,929·25**	**2,101·57**	**...**	**1,984·20**	**4,108·89**	**517,190·01**	**252,783·62**	**2,287·63**

East Murchison Goldfield.

LAWLERS DISTRICT.

Bronzewing ...	...	Voided leases	...	...	...	...	...	...	...	468·00	318·03	1·94
Cork Tree ...	...	Voided leases	...	...	...	...	...	...	29·90	3,767·00	3,292·87	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	25·50	13·00	9·32	...
Kathleen Valley	382	(Yellow Aster)	...	...	...	...	...	...	...	37,605·00	27,051·42	...
Do. ...	382	(Yellow Aster)	...	...	...	...	...	...	...	1,714·00	949·04	...
Do. ...	382, 1197 ...	Yellow Aster Leases	...	...	666·00	430·07	...	...	...	3,262·00	1,880·93	...
Do. ...	382	(Yellow Aster: Yellow Aster G.M. Co., N.L.)	...	...	...	...	...	...	...	10,359·75	5,425·26	...
Do. ...	...	Voided leases	...	...	...	...	...	...	141·57	23,291·50	11,350·24	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	478·40	1,489·75	875·31	...
Lake Darlot...	1207, [1515c] ...	New Discovery	...	...	...	...	...	...	...	220·00	84·11	...
Do. ...	(273), ([1514c]) ...	St. George	...	...	...	...	...	...	3,251·30	899·00	7,974·00	...
Do. ...	...	Voided Leases	...	...	...	...	...	...	1,197·12	64,266·30	40,682·33	...
Do. ...	...	Sundry claims	...	...	...	...	...	1·16	474·45	3,972·64	3,387·61	2·60
Lawlers ...	1211	Donegal	...	...	...	...	...	...	...	795·00	467·58	...
Do. ...	(22), (37), 58, 62, (70), (155), (156), (157), (158), (376), (377), (381), (385), (399), (426), (427), (459), (474), (500), (508), (509), (510), (511), (512), (552), (562), (563), (573), (811), (840)	(East Murchison United, Ltd.) ...	...	...	...	...	...	...	...	291,797·00	155,594·26	900·48
Do. ...	1171	(Great Eastern)	...	...	...	...	...	...	...	927·00	337·72	...
Do. ...	1171	Great Eastern	...	...	177·00	72·97	...	...	...	217·00	80·27	...
Do. ...	1171, (1186) ...	(Great Eastern Leases) ...	...	...	...	...	...	...	...	1,601·74	1,352·43	...
Do. ...	(1220)	Lawlers View	...	...	...	...	...	...	...	130·00	28·03	...
Do. ...	(37), 58, 62, (70), (155), (156), (157), (158), (376), (377), (381), (385), (399), (426), (427), (459), (474), (500), (508), (509), (510), (511), (512), (552), (562), (563), (573), (811), (840)	(London and Western Australian Exploration Coy., Ltd.)	...	...	...	...	...	...	...	179,563·00	40,438·14	2,560·31

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

EAST MURCHISON GOLDFIELD—*continued.*

LAWLERS DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Lawlers ...	(22), (37), 58, 62, (70), (155), (156), (157), (158), (376), (377), (385), (459), (508), (509), (562), (563), (811), (840), 918, (1053), (1106), (1109), (1110), (1123), (1160)	(Northern Mines, Ltd.) ...	...	...	...	...	...	...	...	398,856·50	102,005·52	8,356·89
Do. ...	1212	(Queen)	...	...	...	...	...	...	...	168·00	124·30	...
Do. ...	1212	Queen: Daisy Queen G.M. Co., N.L.	...	...	1,979·00	988·20	...	...	...	3,055·00	1,489·07	...
Do. ...	(910), (923) ...	Sunrise Leases	...	...	...	...	...	...	...	8,644·00	4,076·63	...
Do. ...	58, 62, 918 ...	Waroonga G.M. Co., Ltd.	...	...	1,122·00	1,156·97	...	...	...	48,006·00	10,954·05	...
Do. ...	62, (562), (563) ...	(Waroonga South Leases) ...	...	...	...	...	...	...	...	42,150·00	14,329·48	...
Do. ...	58	(Woronga: London and Western Australian Exploration Co., Ltd.)	...	...	...	...	...	...	...	2,438·50	2,755·45	...
Do. ...	...	Voided leases	...	...	...	...	...	...	687·39	295,039·48	152,887·46	2,533·25
Do. ...	...	Sundry claims	...	...	259·00	148·80	...	14·81	247·83	11,211·48	6,848·20	268·34
New England ...	...	Voided leases	...	...	...	...	...	...	57·54	899·00	720·25	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	4·32	554·50	465·23	...
Sir Samuel ...	1190	Bellevue South	...	...	...	...	...	...	...	254·00	139·13	...
Do. ...	(1214)	Bluey's Release	...	...	26·00	12·63	...	...	...	378·50	204·69	...
Do. ...	...	Voided leases	...	...	...	...	...	...	13·49	265,433·00	138,468·17	10,225·58
Do. ...	...	Sundry claims	...	...	189·00	78·18	...	...	21·37	4,009·00	2,857·10	...
Wiluna ...	(140), ([2J]), (162), ([4J]), (163), ([5J]),	(Golden Age Consolidated, Ltd.)	...	...	...	...	...	...	...	42,521·00	19,750·45	...
Do. ...	542, [6J], 548, [7J], (550), ([8J]), (906), ([11J]), (930), ([13J]), (931), ([14J]), (932), ([15J]), (937), ([17J]), (938), ([18J]), (943), ([21J]), (944), ([22J]), (952), ([26J])	(Gwalia Consolidated, Ltd.)	...	...	...	...	...	...	...	210,230·32	74,536·14	69·03

Do. ...	(162), ([4J]), (163), ([5J])	(Lake Way Leases)	...	...	...	...	...	...	...	...	630·00	369·60	...
Do. ...	(162), ([4J]) ...	(Lake Way: Western Australian Goldfields, Ltd.)	...	...	...	...	...	...	...	...	2,786·00	1,238·44	...
Do. ...	870 [10J] ...	(Moonlight)	...	...	...	...	...	...	...	...	1,856·00	787·66	...
Do. ...	917 [12J] ...	(Squib)	...	...	...	...	...	...	...	...	276·50	67·00	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	537·27	58,149·75	41,452·53	124·00
Do. ...	...	Sundry claims	...	...	...	...	...	5·30	...		2,841·15	1,516·76	...
	From District generally:—												
	Sundry Parcels treated at:												
	Great Eastern Battery		...	...	...	1,168·20	42·74	...	...		...	4,050·29	151·37
	Lawlers Public Battery (Retreatment Works) ...		...	...	...	483·93	...	...	...		...	803·46	...
	Queen Works		...	...	...	...	...	...	...		...	1,275·11	39·36
	State Battery, Lake Darlot		...	...	...	...	...	...	...		315·00	1,097·09	...
	State Battery, Sir Samuel		...	...	...	87·47	...	...	...		23·50	1,377·60	...
	State Battery, Wiluna		...	...	...	...	...	...	...		390·00	2,047·17	20·00
	Western Machinery Coy., Ltd.		...	...	80·00	23·41	...	...	...		80·00	37·25	...
	Various Works		...	...	...	...	...	...	...		1,619·50	14,563·26	744·33
	Reported by Banks and Gold Dealers		...	...	...	...	...	5,593·22	67·15		...	5·74	...
	Total		...	...	**4,498·00**	**4,650·83**	**42·74**	**5,614·49**	**7,234·60**		**2,029,174·36**	**904,879·18**	**25,997·48**

WILUNA DISTRICT.

Collavilla ...	...	Voided leases	...	...	...	...	...	...	...	...	1,518·00	496·28	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	...	30·00	21·47	...
Gum Creek ...	(261J)	Little Sweetheart	...	..	3·50	3·91	...	...	...		20·50	35·43	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...		1,314·00	543·73	...
Mt. Keith ...	...	Voided leases	...	...	...	...	...	...	8·29		8,279·50	6,882·05	...
Do. ...	...	Sundry claims	...	...	113·00	43·89	...	...	78·26		1,595·25	976·93	...
New England	...	Voided leases	...	...	...	...	...	...	...		952·00	309·11	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...		115·00	100·62	...
Wiluna ...	91T [940] ...	(Adelaide)	...	...	...	...	...	...	...		401·00	33·29	...
Do. ...	(259J)	Cromarty Hope	...	...	52·50	54·70	...	...	...		80·50	99·36	...
Do. ...	(233J)	Double Gee Reward	...	...	55·50	74·63	...	...	...		84·00	123·54	...
Do. ...	270J	Essex	...	...	99·75	88·94	...	...	...		99·75	88·94	...
Do. ...	218J	Great Zig Zag	...	...	28·00	16·90	...	...	...		801·50	440·27	...
Do. ...	6J, [542], 7J, [548], (8J), ([550]), (11J), (13J), (14J), (15J), (17J), (18J), (21J), (22J), (24J), (25J), (26J), (39J), (161J), (163J)	(Gwalia Consolidated, Ltd.)	...	...	...	...	...	...	...		29,774·50	10,780·42	20·29
Do. ...	119J	(Happy Jack)	...	...	...	...	...	...	...		743·00	236·41	...
Do. ...	(202J)	Happy Jack South: Wiluna Gold Mines, Ltd.	...	...	...	...	...	...	...		1,464·75	803·75	...
Do. ...	268J	Hope	...	...	148·50	92·20	...	...	...		148·50	92·20	...
Do. ...	(267J)	Justitia	...	...	86·25	35·40	...	...	...		86·25	35·40	...
Do. ...	(4J), ([162]), (5J), ([163])	Lake Way Leases: Wiluna Gold Mines, Ltd.	...	...	...	...	...	...	...		2,044·00	975·78	...
Do. ...	10J, [870] ...	(Moonlight)	...	...	...	...	...	...	...		5,181·00	1,078·40	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

East Murchison Goldfield—*continued.*

WILUNA DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Wiluna ...	10J, [870], 37J, 91J, 109J, (123J)	Moonlight Leases	...	...	1,205·25	736·14	...	...	...	28,347·00	11,737·61	...
Do. ...	6J, [542], 7J, [548], (8J), ([550]), (11J), (13J), (14J), (15J), (17J), (21J), (161J), (163J), (193J), (194J), (256J), (257J)	Western Machinery Co., Ltd. ...	...	...	1,275·25	969·91	...	...	...	66,840·25	31,315·23	...
Do. ...	12J, [917], (23J), ([946]), (28J), ([954]), (30J), ([959]), (33J), ([967]), (36J), ([975]), (43J), ([1018]), (76J), ([1090]), (113J), 119J, (124J), (137J), ([1002])	Wiluna Gold Mines, Ltd.	...	...	4,206·00	2,636·44	...	...	...	28,578·75	13,388·22	...
Do. ...	...	Voided leases	...	...	...	...	...	...	27·92	18,665·75	8,028·30	...
Do. ...	...	Sundry claims	...	...	1,022·75	407·55	...	87·59	79·88	8,157·25	3,717·85	·33
	From District generally:—											
	Sundry Parcels treated at:											
	State Battery, Mt. Keith		...	...	...	224·69	...	...	...	...	781·64	12·68
	State Battery, Wiluna		...	...	...	...	...	...	...	202·00	11,482·98	198·70
	Reported by Banks and Gold Dealers		...	...	...	...	...	8·18	2·92	...	...	...
	Total		...	...	**8,296·25**	**5,385·30**	...	**95·77**	**197·27**	**205,524·00**	**104,605·21**	**232·00**

BLACK RANGE DISTRICT.

Barrambie ...	...	Voided leases	...	...	...	...	...	...	...	455·50	1,862·24	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	19·38	127·00	127·18	...
Bellchambers	...	Sundry claims	...	...	...	...	...	...	...	45 00	36 62	...
Birrigrin ...	...	Voided leases	...	...	...	...	...	...	820·68	12,018·16	15,040·45	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	34·52	744·50	678·89	...
Curran's Find	(641B)	Red, White and Blue	...	...	...	...	...	...	24·58	6,874·00	2,929·20	...

Do. ...	(878B)	Despised	4·12	22·25	...	...	...	18·24	90·61	...	...	...
Do. ...	... ...	Voided leases	...	...	...	...	...	...	107·70	164·50	71·82	...
Do. ...	... ...	Sundry claims	...	...	...	...	...	...	27·20	540 50	228·39	...
Erroll's ...	... ...	Voided leases	...	...	...	...	...	14·17	132·04	72·00	426·68	...
Do. ...	... ...	Sundry claims	...	...	...	...	...	6·53	399·11	228·00	327·90	...
Hancock's ...	881B	Bounty	...	...	54·00	31·64	...	...	...	113·00	63·24	...
Do. ...	875B	Comedy King	...	...	70·50	183·91	...	...	...	181·50	488·93	...
Do. ...	... ...	Voided leases	...	...	...	...	...	...	6,489·84	26,691·25	27,343·04	52·08
Do. ...	... ...	Sundry claims	...	...	316·00	107·39	...	4·21	119·02	2,397·00	1,268·38	...
Maninga Marley	203B	(Havilah)	...	...	...	...	...	...	...	1,507·50	2,315·74	...
Do. ...	203B	(Havilah)	...	...	...	...	...	...	...	638·00	716·05	...
Do. ...	203B, (234B), (249B), (254B), (287B), (288B), (289B), (305B), (350B), (504B)	(Havilah G.M. Co., N.L.)	...	...	...	...	...	...	...	36,508·00	20,052·80	22·55
Do. ...	203B, (243B), (287B), (289B), (350B)	(Havilah G.M. Co., N.L.)	...	...	...	...	...	...	...	6,026·00	5,029·69	...
Do. ...	203B, (243B), (249B), (254B), (287B), (288B), (289B), (305B)	(Havilah Leases)	...	...	...	...	...	...	...	2,240·00	2,432·48	...
Do. ...	203B, 345B ...	Havilah Leases	...	...	...	...	...	...	...	...	127·54	...
Do. ...	203B, (243B), (289B)	(Havilah Leases: Tailings Treatment, Ltd.)	...	...	...	...	...	...	...	371·00	2,086·50	...
Do. ...	... ...	Voided leases	...	...	...	...	...	...	195·20	11,977·23	14,442·35	...
Do. ...	... ...	Sundry claims	...	...	...	...	...	...	158·16	853·50	669·68	...
Montagu ...	... ...	Voided leases	...	...	...	...	...	...	94·39	9,133·40	7,223·46	...
Do. ...	... ...	Sundry claims	...	...	...	...	...	...	45·67	794·50	471·76	...
Nungarra ...	... ...	Voided leases	...	...	...	...	...	25·94	986·09	12,171·25	8,808·41	3·64
Do. ...	... ...	Sundry claims	...	...	...	...	...	46·67	1,455·98	3,601·90	2,212·33	...
Sandstone ...	(886B)	Crow's	...	...	30·00	23·17	...	...	...	30·00	23·17	...
Do. ...	883B	Nous Verrons	...	...	98·00	51·33	...	...	...	98·00	51·33	...
Do. ...	885B	Oroya East	...	...	60·15	503·68	...	...	...	60·15	503·68	...
Do. ...	... ...	Voided leases	...	...	...	...	...	4·75	3,185·47	687,276·27	441,095·40	11,751·22
Do. ...	... ...	Sundry claims	3·11	290·10	311·50	103·36	...	27·12	1,262·13	4,458·65	2,513·38	...
Youanmi ...	873B	Three Mugs	...	...	75·00	9·66	...	...	...	75·00	9·66	...
Do. ...	514B	United	...	...	458·53	177·60	...	...	11·86	18,360·53	5,737·26	...
Do. ...	863B, 864E, 865B, 866B	Yuanmi Gold Mines, Ltd.	...	...	595·75	731·06	5·39	...	...	54,268·75	37,690·60	1,658·83
Do. ...	... ...	Voided leases	...	...	...	...	...	·36	115·06	283,509·75	132,261·45	2,949·72
Do. ...	... ...	Sundry claims	1·07	...	205·00	97·98	...	1·07	2·31	1,978·75	554·24	...
	From District generally:—											
	Sundry Parcels treated at:											
	State Battery, Black Range		...	...	...	570·72	...	...	...	202·00	15,375·74	59·53
	State Battery, Youanmi		...	...	...	99·68	...	...	...	...	3,000·49	...
	Various Works		...	...	...	...	...	...	...	37·00	5,664·78	...
	Reported by Banks and Gold Dealers		2·66	...	...	...	...	1,339·48	11·43	...	...	...
	Total		**10·96**	**312·35**	**2,274·43**	**2,691·18**	**5·39**	**1,488·54**	**15,788·43**	**1,186,829·04**	**761,962·93**	**16,500·57**

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

Murchison Goldfield.

CUE DISTRICT.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Barrambie ...	...	Voided leases	...	...	...	...	...	...	22·49	16,903·92	14,338·52	125·60
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	70·50	35·81	...
Cuddingwarra	1860	Big Bell	...	...	7,550·00	1,023·66	...	...	...	48,554·36	8,522·13	85·29
Do. ...	...	Voided leases	...	...	...	...	...	10·59	124·53	35,855·75	43,796·59	15·42
Do. ...	...	Sundry claims	...	...	26·00	23·69	...	...	82·10	524·54	1,088·52	...
Cue	2012	Amythas	...	...	57·00	65·63	...	...	...	221·50	224·33	...
Do. ...	203, 1148 ...	(Cue Consolidated Gold Mines, Ltd.)	...	...	...	...	...	...	...	23,427·50	18,382·10	...
Do. ...	203	Cue No. 1	...	...	28·00	1·95	...	...	...	7,781·75	12,961·68	20·40
Do. ...	(2013)	Francés Amelia	...	...	...	...	...	...	...	70·00	17·02	...
Do. ...	2017	Hidden Treasure	...	...	79·50	38·29	...	...	...	79·50	38·29	...
Do. ...	2019	Kangaroo Dog	...	...	246·50	81·85	...	...	...	246·50	81·85	...
Do. ...	1148	(Light of Asia)	...	...	...	...	...	...	...	10,175·00	7,302·20	...
Do. ...	1148, (1299), (1300), (1634), (1666), (1667),	(Light of Asia Leases)	...	...	...	...	...	...	...	14,024·00	9,078·43	...
Do. ...	1148, 1151, 1252, (1300), (1362), (1498), (1634), (1667), (1884), (1892), (1904), (1906)	Light of Asia and Queen of the May Leases	...	...	...	...	...	...	...	23,043·00	18,341·27	...
Do. ...	1148, 1151, 1252, (1362), (1498), (1884), (1892), (1904), (1906)	Mararoa G.M. Co., N.L.	...	...	27·05	1,669·77	2·88	...	...	11,387·05	11,420·81	2·88
Do. ...	1151, 1252, (1362), (1391), (1498), (1689)	(Queen of the May Leases) ...	...	...	...	...	...	...	...	6,926·00	6,974·06	...
Do. ...	...	Voided leases	...	...	...	...	...	34·72	535·34	182,552·62	129,295·58	43·35
Do. ...	...	Sundry claims	...	17·23	434·10	319·35	...	22·06	547·80	17,358·44	10,574·08	...
Eelya ...	...	Voided leases	...	...	...	...	...	...	8·78	971·00	1,778·94	...
Do. ...	...	Sundry claims	...	...	25·50	28·04	...	...	101·86	595·15	630·47	...
Erroll's ...	...	Voided leases	...	...	...	...	...	...	20·25	14,098·50	8,902·24	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	227·00	92·86	...
Mindoolah ...	...	Voided leases	...	...	...	...	...	3·07	...	7,935·50	4,773·33	42·97
Do. ...	...	Sundry claims	...	...	13·00	6·62	...	...	9·81	1,017·00	1,130·39	...

Reedy's Find	1932	Culculli	...	...	...	...	...	...	...	...	220·00	1,318·78	...	
Do.	1977	Emu	...	...	120·00	37·49	...	...	...	...	419·50	201·52	...	
Do.	1981	Emu North	...	...	...	...	...	...	...	...	104·00	43·45	...	
Do.	1934	Tuckanarra	...	...	...	...	...	...	...	...	69·50	231·25	...	
Do.	2018	Turn of the Tide	...	...	7·00	178·90	...	...	...	...	7·00	178·90	...	
Do.	(2014)	Wild Rabbit	...	...	...	...	...	...	...	...	46·00	45·31	...	
Do.		Voided leases	...	...	...	...	...	...	...	214·65	940·00	4,002·56	...	
Do.		Sundry claims	...	...	9·25	28·24	...	164·88	87·00		384·30	344·20	...	
Tuckabiana	(1924)	Triplicate North	...	...	...	...	...	...	...	...	221·00	270·49	...	
Do.		Voided leases	...	...	...	...	...	...	...	162·70	2,799·00	4,032·02	...	
Do.		Sundry claims	...	...	22·00	14·83	...	23·44	102·14		311·25	202·12	...	
Tuckanarra	1337	Nemesis	...	...	...	...	...	...	872·24		2,371·00	6,220·01	...	
Do.		Voided leases	...	...	...	...	...	14·65	2,095·42		15,584·10	14,405·28	172·77	
Do.		Sundry claims	...	7·72	225·03	217·58	...	93·61	611·31		3,214·23	6,854·71	...	
	From District generally:—													
	Sundry Parcels treated at:													
	Cue No. 1 Works	...	...	...	...	...	...	...	...		1,870·50	6,684·54	...	
	State Battery, Cue	...	...	...	...	802·42	...	...	...		...	1,364·93	...	
	State Battery, Tuckanarra	...	...	...	...	105·04	...	...	...	518·50		3,441·63	...	
	Triplicate Works	...	...	...	...	...	...	...	...			3,546·56	...	
	Various Works	...	...	...	...	...	...	...	...	5,055·02		18,568·66	...	
	Reported by Banks and Gold Dealers	...	42·39	...	...	...	...	799·47	7·54	...	...	...	...	
	Total	...	**50·11**	**147·22**	**8,869·93**	**4,643·35**	**2·88**	**1,166·49**	**5,605·96**	**458,180·98**	**381,738·42**	**508·68**		

MEEKATHARRA DISTRICT.

Abbott's		Voided leases	...	...	...	...	...	...	...	26·45	35,210·60	37,124·40	...	
Do.		Sundry claims	...	...	49	...	...	...	...	·49	55·60	90·87	...	
Burnakura		Voided leases	...	...	...	...	...	...	3,239·43		38,480·95	30,579·03	26·90	
Do.		Sundry claims	...	...	...	...	...	12·51	81·11		144·50	118·98	...	
Chesterfield		Voided leases	...	...	...	...	...	29·02	409·15		6,756·26	7,445·01	·80	
Do.		Sundry claims	...	...	2·80	7·00	15·16	...	41·63		435·60	487·80	...	
Gabanintha		Voided leases	...	...	...	...	...	...	16·93		21,918·00	13,447·58	815·57	
Do.		Sundry claims	...	...	...	...	...	13·05	74·38		1,063·50	715·19	...	
Garden Gully		Voided leases	...	...	...	...	...	26·36	74·91		29,854·06	21,435·37	1,102·59	
Do.		Sundry claims	...	...	45·25	21·80	...	...	5·38		294·35	373·03	...	
Gum Creek		Voided leases	...	...	...	...	...	25·27	88·12		3,639·08	3,359·56	...	
Do.		Sundry claims	...	...	...	...	...	...	...		338·00	278·36	...	
Holden's Find	1460N	Norma	...	...	162·00	117·12	...	...	...		213·75	167·26	...	
Do.	1291N	Wate loo	...	...	1,435·00	613·28	...	...	...		13,776·00	4,740·11	...	
Do.		Voided leases	...	...	...	...	...	...	18·00		1,273·25	987·62	...	
Do.		Sundry claims	...	26·73	...	10·00	11·83	26·73	44·63		206·00	173·56	...	
Jillawarra		Voided leases	...	...	...	...	...	...	1,134·68		1,499·55	2,801·53	...	
Do.		Sundry claims	...	...	...	...	...	169·02	142·95		23·50	53·81	...	
Meeka Pools		Voided leases	...	...	...	...	...	...	...		111·58	82·27	...	
Do.		Sundry claims	...	...	...	...	...	...	2·84		211·72	184·83	...	

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

MURCHISON GOLDFIELD—*continued.*

MEEKATHARRA DISTRICT—continued.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Meekatharra...	597N	(Commodore)	...	...	...	...	...	...	...	498·00	1,268·71	...
Do. ...	597N, (915N), (1041N), (1365N)	(Commodore G.M. Co., N.L.)... ...	...	...	...	...	...	...	...	40,527·00	16,121·38	3·32
Do. ...	(1477N)	Connelly's Ingliston	...	...	97·25	11·39	...	...	...	97·25	11·39	...
Do. ...	477N	(Fenian)	...	...	...	...	...	...	...	8,831·75	18,289·22	...
Do. ...	477N, 814N, ...	Fenian Leases	...	...	7,968·00	6,088·98	...	...	...	307,613·94	251,073·51	...
Do. ...	1331N	Gwalia	...	17·26	798·25	507·84	...	...	132·98	3,618·76	9,420·12	...
Do. ...	(1457N)	Halcyon Extended	...	...	20·00	15·61	...	...	...	63·55	82·81	...
Do. ...	1466N	Haveluck	...	...	169·25	257·69	...	...	...	238·25	305·30	...
Do. ...	555N	(Ingliston)	...	...	...	...	...	...	...	1,202·49	2,332·27	...
Do. ...	475N	(Ingliston Consols Extended) ...	...	...	...	...	...	...	...	1,536·25	4,248·25	·30
Do. ...	475N, 515N, 729N, 822N	Ingliston Consols Extended Leases	...	...	25,449·00	12,997·06	...	...	...	301,655·22	165,524·31	...
Do. ...	1461N	Ingliston Extended	...	...	41·50	105·51	...	...	...	50·50	130·92	...
Do. ...	555N, 1239N ...	Ingliston Leases	...	...	4,367·00	4,006·06	...	...	...	21,309·85	19,934·59	...
Do. ...	(1453N)	Ingliston United	...	...	5·50	17·20	...	...	76·84	20·50	74·92	...
Do. ...	533N	Marmont	...	...	223·75	388·64	...	...	...	54,768·10	39,270·21	...
Do. ...	580N	(Marmont Extended)	...	...	...	...	...	...	...	43·00	38·03	...
Do. ...	580N, 888N ...	Marmont Extended Leases ...	...	...	...	...	...	...	...	152·00	129·61	...
Do. ...	597N, (915N), (1041N), (1365N)	New Commodore G.M. Co. N.L. ...	...	...	...	...	...	...	...	127·10	76·78	...
Do. ...	(1479N)	Pioneer	...	...	18·25	5·47	...	...	...	18·25	5·47	...
Do. ...	(1468N)	Sinn Fein	...	...	245·75	122·76	...	...	...	245·75	122·76	...
Do. ...	...	Voided leases	...	...	...	...	...	3·88	388·60	283,801·40	141,862·34	2,451·42
Do. ...	...	Sundry claims	·66	1·00	710·00	193·66	...	182·49	184·34	5,941·70	2,837·18	...
Mistletoe ...	1514N	Easingwold	4·15	...	...	...	...	4·15	...	...	...	...
Do. ...	...	Sundry claims	76·15	51·35	...	...	...	76·15	51·35	...	...	...
Munara Gully	...	Voided leases	...	...	...	...	...	...	...	13,167·75	6,489·65	...
Do. ...	...	Sundry claims	...	...	10·50	18·93	...	...	11·62	90·50	66·31	...
Nannine ...	166N	Nannine	...	...	...	303·79	...	...	218·15	214·00	518·40	...
Do. ...	(16N), (25N), 166N	(Nannine Leases)	...	...	...	...	...	...	8·71	23,649·60	24,385·66	127·60
Do. ...	...	Voided Leases	...	...	...	...	...	34·02	372·54	68,097·02	43,048·73	39·85
Do. ...	...	Sundry claims	6·36	9·64	60·00	103·69	...	21·29	411·32	2,387·20	1,906·83	...
Quinn's ...	...	Voided leases	...	...	...	...	...	7·30	1,186·50	18,931·16	8,886·79	90·70
Do. ...	...	Sundry claims	...	...	...	...	...	2·25	1,103·07	1,671·50	1,281·62	...
Ruby Well ...	...	Voided leases	...	...	...	...	...	...	...	7,443·00	3,988·36	...
Do. ...	...	Sundry claims	109·65	210·09	...	...	...	109·65	223·12	261·00	341·66	...

Stake Well ...	...	Voided leases	...	...	...	...	...	...	...	200·12	21,362·00	9,566·18	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	31·79	233·50	257·20	...
Star of the East	...	Voided leases	...	...	...	...	...	...	...	...	27,244·00	20,305·40	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	...	127·62	94·97	...
Yaloginda ...	(1496N)	Rocklee South	...	28·27	...	...	...	...	...	28·27	...	...	...
Do. ...	1470N	Sirdar	...	...	32·00	6·62	...	...	...	...	32·00	6·62	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	1,563·55	25,744·02	13,249·73	8·68
Do. ...	...	Sundry claims	...	5·87	...	...	...	10·89	536·58	1,978·17	1,674·87	...	
	From District generally:—												
	Sundry Parcels at:												
	Ruby Well Battery	... ...	...	...	...	...	...	...	...	...	...	699·32	...
	State Battery, Meekatharra	... ...	...	...	...	457·44	...	...	...	...	14·00	10,700·09	19·00
	State Battery, Quinn's ...	....	...	...	...	...	...	...	...	...	...	618·79	...
	Various Works	... ...	...	...	...	...	...	...	...	...	172·75	4,475·42	342·17
	Reported by Banks and Gold Dealers	... ...	15·23	...	...	...	...	9,831·78	13·79	...	...	...	
	Total	...	**238·93**	**326·77**	**41,875·25**	**26,387·53**	...	**10,585·81**	**12,144·32**	**1,400,687·24**	**950,368·85**	**5,028·90**	

DAY DAWN DISTRICT.

Day Dawn ...	(552D)	Croesus	...	...	...	...	...	...	...	...	208·00	54·83	...
Do. ...	555D	Day Dawn South	...	...	161·75	114·64	...	...	...	...	161·75	114·64	...
Do. ...	557D	Great Fingall No. 2	...	...	56·00	121·34	...	...	...	...	56·00	121·34	...
Do. ...	1D, 2D, (86D), (87D), (99D), (119D), (129D), (158D), (159D), (185D), 170D, (191D), (209D), 210D, (211D), (212D), (213D), (224D), (225D), (249D), (424D), (453D), (455D), (467D)	Great Fingall Consolidated, Ltd. ...	...	...	233·50	247·53	...	...	...	1,865,259·35	1,185,161·22	169,210·20	
Do. ...	560D	North Fingall	...	...	105·50	40·03	...	...	...	105·50	40·03	...	
Do. ...	...	Voided leases	...	...	...	...	...	126·30	511·03	45,083·38	30,764·84		·24
Do. ...	...	Sundry claims	...	...	366·75	252·63	...	...	259·13	2,880·08	2,119·83	...	
Jasper Hill ...	(551D)	Night Watch	...	...	...	...	...	...	28·73	...	...	...	
Do. ...	...	Voided leases	...	...	...	...	...	4·90	1,181·50	15,350·75	9,133·76	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	397·17	353·00	455·35	...	
Lake Austin (Island)	536	Eureka	...	70·27	17·00	127·93	...	...	1,271·01	57·25	892·61	...	
Do. ...	556D	Eureka North	...	...	79·00	19·31	...	...	...	79·00	19·31	...	
Do. ...	...	Voided leases	...	...	...	...	...	590·52	1,568·02	29,774·37	45,386·70	...	
Do. ...	...	Sundry claims	...	76·09	42·25	13·40	...	17·74	521·20	740·14	477·85	...	
Mainland ...	...	Voided leases	...	...	...	...	...	·41	2,706·26	7,272·13	23,129·51	...	
Do. ...	...	Sundry claims	...	...	8·00	4·41	...	3·24	677·12	103·95	164·86	...	
	From District generally:—												
	Sundry Parcels treated at:												
	Various Works	... ...	...	...	...	...	...	...	16·61	940·75	1,537·30	...	
	Reported by Banks and Gold Dealers	... ...	27·00	...	...	...	...	1,576·86	3·48	...	·77	...	
	Total	...	**27·00**	**146·36**	**1,069·75**	**941·22**	...	**2,319·97**	**9,141·26**	**1,968,425·40**	**1,299,574·55**	**169,210·44**	

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

MURCHISON GOLDFIELD—*continued.*

MOUNT MAGNET DISTRICT.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Lennonville ...	964M	(Empress)	...	...	...	...	...	...	...	1,649·00	7,361·81	...
Do. ...	964M	Empress	...	...	50·00	49·10	...	...	...	50·00	112·98	...
Do. ...	964M, (1078M), (1079M), (1115M), (1116M), (1117M)	(Empress Leases)	...	...	...	...	...	...	...	4,813·00	3,171·33	...
Do. ...	1197M	Galtee Moore	...	...	667·00	303·59	...	...	...	667·00	303·59	...
Do. ...	(1198M)	Lady Jean	...	...	184·75	36·15	...	...	...	184·75	36·15	...
Do. ...	...	Voided leases	...	...	...	...	...	...	3,196·79	133,431·48	112,622·39	458·82
Do. ...	...	Sundry claims	...	·51	129·25	379·82	...	7·11	93·74	2,246·42	2,226·42	...
Mt. Magnet ...	(1181M)	Fortune of War	...	...	30·00	7·11	...	...	5·77	740·75	335·13	...
Do. ...	(1194M)	Gay Parisian	...	...	435·00	124·63	...	...	...	435·00	124·63	...
Do. ...	1156M	Leap Year	...	...	177·00	80·34	...	...	...	1,221·75	959·76	...
Do. ...	1195M	Lone Hand	...	...	40·00	328·87	...	...	...	40·00	328·87	...
Do. ...	1013M	Mars	...	...	...	...	...	...	...	8,078·15	2,040·25	...
Do. ...	1200M	Morning Star	...	...	126·25	75·42	...	...	...	126·25	75·42	...
Do. ...	(1151M)	Morning Star	...	...	...	...	...	...	9·76	1,031·30	1,205·58	...
Do. ...	1183M	Mount Zion	...	...	...	...	...	...	...	4,907·00	1,333·98	...
Do. ...	1075M	New Havelock	...	...	...	...	...	...	15·77	1,561·00	783·50	...
Do. ...	1190M	Patagonia	...	...	...	...	...	...	...	102·50	19·25	...
Do. ...	1202M	Ready Money	...	25·61	...	...	...	...	25·61	...	...	...
Do. ...	1199M	Saturn	...	1·10	104·00	36·99	...	...	1·10	104·00	36·99	...
Do. ...	1193M	Tame Cat	...	...	48·75	152·10	...	...	...	107·50	304·98	...
Do. ...	...	Voided leases	...	...	...	...	...	27·83	8,366·95	352,356·21	202,986·97	714·36
Do. ...	...	Sundry claims	...	38·92	654·01	419·43	...	1·82	1,181·12	20,682·47	12,410·49	...
Mt. Magnet East	...	Voided leases	...	...	...	...	...	63·29	764·53	5,522·28	2,811·75	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	37·22	214·50	144·10	...
Moyagee ...	1099M	Moyagee	...	...	680·00	654·23	...	...	...	2,301·50	4,082·80	...
Do. ...	...	Voided leases	...	...	...	...	...	...	5·08	2,053·15	2,416·74	...
Do. ...	...	Sundry claims	...	...	36·50	6·75	...	...	111·10	640·73	707·48	...
Paynesville ...	1196M	Elsie	...	158·35	·10	18·13	...	...	158·35	·10	18·13	...
Do. ...	...	Voided leases	...	...	...	...	...	...	152·90	19·75	26·62	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	188·99	27·75	638·09	...
Youanmi ...	...	Sundry claims	...	...	...	...	...	...	...	33·00	44·58	...

From District generally:—														
Sundry Parcels treated at:														
Fremantle Trading Co., Ltd., Works				...	...	...	...	...	...	...	...	...	143·80	...
Morning Star Battery				...	...	...	...	...	...	...	...	...	874·80	...
State Battery, Boogardie				...	...	...	481·42	...	...	...	...	92·51	15,747·31	...
Various Works				...	...	...	...	...	...	...	...	43·06	15,828·72	1·00
Reported by Banks and Gold Dealers				17·27	...	...	...	...	1,676·81	·35	...	...	...	...
Total				**17·27**	**224·49**	**3,362·61**	**3,154·08**	...	**1,776·86**	**14,315·13**	**545,483·86**	**392,265·39**	**1,174·18**

Yalgoo Goldfield.

Adavale ...	...	Sundry claims	...	...	...	...	...	...	...	10·00	12·56	...
Bilberatha ...	...	Voided leases	...	...	...	...	...	...	...	554·00	200·07	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	2·90	...	...	...
Carlaminda ...	...	Voided leases	...	...	...	...	...	...	...	947·32	524·72	3·30
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	114·00	71·96	...
Field's Find...	907	Brown's Reward	...	...	309·50	861·19	...	...	...	309·50	861·19	...
Do. ...	902	Field's Find Extended ...	...	10·38	...	6·18	...	...	10·38	8·00	23·74	...
Do. ...	...	Voided leases	...	...	...	...	...	...	204·26	36,161·30	26,799·16	...
Do. ...	...	Sundry claims	...	6·56	61·50	66·20	...	5·77	163·59	433·25	450·69	...
Goodingnow...	919	Blue Bell	...	...	76·50	72·22	...	...	...	76·50	72·22	...
Do. ...	878	Carnation	...	...	366·50	575·02	...	...	...	2,726·00	4,533·35	...
Do. ...	606	(Lake View)	...	...	...	...	...	...	...	163·00	185·46	...
Do. ...	606	Lake View: Payne's Find Development Co., N.L.	...	...	1,026·00	1,259·94	...	...	15·58	9,254·00	9,292·55	...
Do. ...	613	Orchid	...	...	316·50	466·67	...	...	...	3,273·07	5,247·88	...
Do. ...	849	Princess Mary	...	...	18·00	8·39	...	...	...	372·00	365·89	...
Do. ...	607	Sweet William	...	...	14·00	10·24	...	...	75·56	2,021·00	2,503·29	...
Do. ...	607	(Sweet William)	...	...	...	...	...	...	2·16	4·85	81·59	...
Do. ...	607, (608), (662)	(Sweet William Consolidated Mines, N.L.)	...	...	...	...	...	...	7·68	907·46	1,564·84	...
Do. ...	...	Voided leases	...	...	...	...	...	146·70	171·75	7,789·50	7,554·68	...
Do. ...	...	Sundry claims	...	...	177·00	140·08	...	148·00	80·76	2,947·50	1,635·52	...
Gullewa ...	...	Voided leases	...	...	...	...	...	...	...	23,056·50	15,128·82	...
Do. ...	...	Sundry claims	...	5·41	33·50	24·92	...	...	14·76	663·00	556·54	...
Kurkalucka ...	...	Sundry claims	...	...	...	...	...	...	...	8·80	4·01	...
Messenger's Patch	880	Gnow's Nest	...	...	10,881·00	9,766·34	158·06	...	...	10,938·00	9,827·20	158·06
Do. ...	912	Monte Cristo	...	5·37	·06	76·40	...	...	5·37	·06	76·40	...
Do. ...	...	Voided leases	...	...	...	...	...	...	315·99	587·20	305·89	...
Do. ...	...	Sundry claims	...	...	...	...	...	463·12	315·11	438·55	280·85	...
Mt. Farmer ...	...	Voided leases	...	...	...	...	...	...	...	64·00	40·19	...
Do. ...	... ...	Sundry claims	...	...	...	...	...	...	...	5·00	6·22	...
Mt. Gibson ...	722, 723 ...	Golden Harp Leases	...	...	100·00	26·48	...	...	6·44	287·50	732·58	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	147·00	70·99	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	76·00	40·84	...
Ninghan ...	...	Voided leases	...	...	...	...	...	...	...	10·00	1·41	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	5·00	17·89	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

YALGOO GOLDFIELD—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Noongal ...	953	Revival	...	...	47·00	27·37	...	...	...	47·00	27·37	...
Do. ...	...	Voided leases	...	...	...	...	...	...	15·86	3,086·95	1,847·66	...
Do. ...	...	Sundry claims	...	...	...	...	...	11·55	64·97	293·75	206·50	...
Nyounda ...	...	Voided leases	...	...	...	...	...	...	217·63	416· 0	183·91	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	4·28	18·00	21·67	...
Pinyalling ...	...	Voided leases	...	...	...	...	...	...	1·36	2,281·60	902·03	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	2·59	160·50	132·57	...
Rothesay ...	894	Rothesay	...	...	80·00	82·56	...	...	...	80·00	82·56	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	8,971·00	3,331·15	...
Do. ...	...	Sundry claims	...	...	39·50	33·73	...	...	...	39·50	33·73	...
Wadgingarra...	...	Voided leases	...	...	...	...	...	...	...	541·61	600·91	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	71·50	38·21	...
Warda Warra	...	Sundry claims	...	...	10·00	25·54	...	...	...	10·00	25·54	...
Warriedar ...	961	Highland Chief	...	...	28·75	25·20	...	...	...	28·75	25·20	...
Do. ...	(890)	Ironclads	...	...	98·00	35·35	...	...	...	853·50	254·41	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	11,046·25	3,964·71	7·30
Do. ...	...	Sundry claims	...	...	264·00	121·10	...	...	1·80	838·25	395·00	...
Yalgoo ...	...	Voided leases	...	...	...	...	...	...	3·23	6,314·50	9,965·18	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	17·77	850·50	513·97	...
Yuin ...	712, (735) ...	Bullrush Gold Estates, N.L. ...	...	...	...	...	...	...	...	23,690·00	7,302·83	130·13
Do. ...	712	Royal Standard: Bullrush Gold Estates, N.L.	...	...	6,244·00	2,719·65	...	...	...	6,244·00	2,719·65	...
Do. ...	...	Voided leases	...	...	...	...	...	...	127·12	31,381·50	14,957·04	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	4·70	279·50	59·20	...
		From Goldfield generally:—										
		Sundry Parcels treated at:										
		Field's Find Extended Treatment Works ...	...	...	...	...	...	...	...	...	152·40	...
		State Battery, Goodingnow (Payne's Find) ...	...	...	...	148·38	...	...	...	38·50	1,823·63	...
		State Battery, Warriedar	...	...	...	1,407·78	...	...	...	...	2,548·27	...
		Yuanmi Gold Mines, Ltd., Works (Warriedar Options)	...	...	...	...	...	...	...	...	310·93	26·67
		Various Works	...	...	...	...	...	9·42	...	664·00	1,332·45	...
		Reported by Banks and Gold Dealers	117·84	...	...	...	...	784·57	...	...	...	...
		Total	**117·84**	**27·72**	**20,191·31**	**17,986·93**	**158·06**	**1,569·13**	**1,853·60**	**202,605·70**	**142,829·87**	**325·43**

MOUNT MORGANS DISTRICT.

Australia United	...	Voided leases	...	...	...	...	...	...	...	1,911·63	15,913·69	23,305·76	1·76
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	580·98	799·25	2,072·62	...
Eucalyptus ...	...	Sundry claims	...	...	...	...	...	...	...	...	11·00	5·40	...
Federation Well	...	Voided leases	...	...	...	...	...	...	...	...	1,248·50	1,782·71	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	...	108·07	64·68	...
Korong ...	...	Voided leases	...	...	...	...	...	17·95	72·23	2,722·00	3,473·45	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	34·97	279·28	232·89	...	
Linden ...	344F, [998R] ...	Bindah	...	...	9,660·00	4,486·48	...	...	...	24,202·00	8,825·89	...	
Do. ...	340F, [871R] ...	Democrat	...	...	35·00	196·15	...	...	...	670·50	1,136·23	...	
Do. ...	346F, [1024R] ...	Great Carbine	...	...	...	...	...	...	...	74·00	33·49	...	
Do. ...	(382F)	Marloo	...	...	35·00	8·40	...	...	...	35·00	8·40	...	
Do. ...	379F	Old Kelly	...	...	46·00	117·45	...	...	...	130·00	250·67	...	
Do. ...	341F, [903R], 343F, [985R]	Torquay Leases	...	...	250·00	69·56	...	...	...	4,190·77	2,402·52	·68	
Do. ...	...	Voided leases	...	...	...	...	...	...	...	965·25	755·97	...	
Do. ...	...	Sundry claims	...	...	102·00	135·13	...	...	...	961·75	664·13	...	
Mt. Margaret	...	Voided leases	...	...	...	...	...	·37	...	6,412·89	4,290·53	12·55	
Do. ...	...	Sundry claims	...	18·02	...	3·00	...	16·61	62·05	365·50	284·86	...	
Mt. Morgans	6F	(Lily of the Valley South: Westralia Mt. Morgans G. M. Co., Ltd.)	...	...	...	...	...	...	...	1,587·50	808·18	...	
Do. ...	6F	(Lily of the Valley South: Westralia Mt. Morgans Syndicate, Ltd.)	...	...	...	...	...	...	...	3,002·00	1,022·90	...	
Do. ...	5F, (10F), (19F), (22F), (32F), (73F),	(Westralia-Mt. Morgans G.M. Co., Ltd.)	...	...	...	...	...	...	...	575,148·00	294,758·28	5,552·63	
Do. ...	7F, (20F), (21F) ...	(Westralia - Mt. Morgans G. M. Co., Ltd.)	...	...	...	...	...	...	...	18,261·00	8,127·69	...	
Do. ...	5F, 6F, 7F, (10F), (19F), (20F), (22F), (32F), 301	(Westralia-Mt. Morgans Mines, N.L. ...	...	...	4,749·82	1,873·24	...	...	...	138,373·82	36,007·53	...	
Do. ...	...	Voided leases	...	...	...	...	...	...	76·56	34,334·25	20,938·55	77·86	
Do. ...	...	Sundry claims	...	...	...	...	...	6·61	22·66	1,362·10	1,619·49	...	
Murrin Murrin	372F	Murrin Queen G. M.: Murrin Proprietary G. M. Co., N.L.	...	...	...	4·50	...	...	...	1,323·50	547·80	...	
Do. ...	...	Voided leases	...	...	...	...	...	10·43	222·93	127,382·72	100,615·29	29·60	
Do. ...	...	Sundry claims	...	14·91	271·00	386·84	...	...	237·80	1,438·55	1,577·65	...	
Redcastle ...	...	Voided leases	...	...	...	...	...	4·49	436·54	2,509·95	2,169·63	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	103·58	139·00	163·01	...	
Yundamindera	357F	Big Stone	...	...	663·00	354·83	...	...	...	1,280·50	773·29	...	
Do. ...	381F	Bonaparte	...	...	77·00	9·01	...	...	...	77·00	9·01	...	
Do. ...	369F	Mahalah	...	...	58·50	7·56	...	...	...	58·50	7·56	...	
Do. ...	(377F)	New Moon	...	...	26·50	2·22	...	...	...	26·50	2·22	...	
Do. ...	...	Voided leases	...	...	...	...	...	...	...	230·00	337·18	...	
Do. ...	...	Sundry claims	...	2·35	118·50	68·37	...	...	2·35	749·60	473·61	...	

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

MT. MARGARET GOLDFIELD—*continued.*

MT. MORGANS DISTRICT—continued.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
	From District generally:—											
	Sundry Parcels treated at:											
	Battles Ville Battery		...	...	...	...	...	...	...	126·00	370·00	15·94
	Hainault Sulphide Plant, Kalgoorlie		...	...	...	...	...	...	...	127·21	83·91	...
	Mt. Morven Cyanide Works		...	...	...	...	...	...	...	...	129·48	...
	State Battery, Linden		...	...	...	...	...	...	...	10·00	1,367·08	...
	Westralia-Mt.Morgans Works		...	...	...	...	...	...	...	...	153·10	...
	Various Works		...	...	...	...	...	...	...	788·50	3,010·07	84·03
	Reported by Banks and Gold Dealers		10·36	...	...	...	...	1,699·37	32·47	...	...	...
	Total		**10·36**	**35·28**	**16,092·32**	**7,722·74**	...	**1,755·83**	**3,796·75**	**967,425·65**	**524,662·71**	**5,775·05**

MOUNT MALCOLM DISTRICT.

Cardinia ...	1532c	Contact	2·19	3·71	2·50	50·37	...	11·99	8·81	2·50	50·37	...
Do. ...	...	Voided leases	...	...	...	...	...	...	1,568·29	1,628·24	3,550·42	...
Do. ...	...	Sundry claims	...	...	15·00	34·80	...	...	22·37	23·00	59·04	...
Diorite King	1545c	Diorite King	...	...	71·00	102·67	...	...	...	71·00	102·67	...
Do. ...	...	Voided leases	...	...	...	...	...	...	819·15	34,470·53	31,460·33	24·05
Do. ...	...	Sundry claims	...	...	110·00	141·38	...	1·40	131·02	2,647·80	3,166·41	...
Dodger's Well	...	Voided leases	...	...	...	...	...	...	57·90	1,299··30	1,927·94	...
Do. ...	...	Sundry claims	...	...	6·50	8·56	...	...	3·37	798·75	665·13	...
*Lake Darlot	1515c [1207EM], 1516c [1210EM]	New Discovery Leases	...	...	372·00	156·69	...	...	...	648·11	263·58	...
Do. ...	...	Sundry claims	...	5·52	87·25	69·83	...	...	5·52	153·25	88·12	...
Leonora ...	(1504c)	Dawn of Hope	...	...	...	...	...	...	...	162·50	296·47	...
Do. ...	198c	(Eastern)	...	...	...	...	...	...	...	302·00	321·72	...
Do. ...	1530c	Leonora Gold Blocks	...	...	109·00	140·15	...	...	5·15	349·00	367·99	...
Do. ...	(1533c)	Leura	...	...	...	...	...	...	...	10·00	8·25	...

Do. ...	190c, 198c, 207c, 352c, 353c, 380c, 446c, 447c, (450c), (476c), 489c, 490c, 504c, (523c), 741c, 742c, 807c, 809c, 811c, 812c, (813c), (814c), 980c, (981c), 1082c, (1225c), (1226), (1227c), (1228c), (1229c), (1230c), (1231c), (1232c), 1259c, (1291c), (1292c), 1341c, 1342c, (1343c), (1344c), (1345c), (1346c), (1347c)	Sons of Gwalia, Ltd.	...	...	45·17	14,889·98	1,804·62	...	...	2,682,713·67	1,267,062·84	77,328·12
Do. ...	198c, 1082c ...	(Sons of Gwalia South G.M. Co., N.L.)	...	...	...	...	...	...	...	631·00	903·61	...
Do. ...	198c, 1082c, (1257c), (1258c), 1259c (1284c), (1285c), (1300c), (1301c)	(Sons of Gwalia South G.Ms, Ltd.)	...	...	...	...	...	...	...	98,239·00	51,593·99	8·66
Do. ...	198c, 1082*tc*, 1259c,	(Sons of Gwalia South G,Ms. Ltd.)	...	...	...	...	...	...	...	9,909·00	3,169·89	...
Do. ...	263c	(Trump)	...	...	...	...	...	...	...	562·50	2,393·40	...
Do. ...	263c	Trump: Gwalia Central G.Ms., Ltd.	...	...	...	98·20	...	...	...	1,541·00	3,158·95	...
Do. ...	263c, (774c), (793c)	(Trump Leases)	...	...	...	...	...	...	...	21,794·45	16,002·07	...
Do. ...	...	Voided leases	...	...	...	...	...	...	1,847·42	138,119·25	65,452·13	10·71
Do. ...	...	Sundry claims	...	66·40	789·00	639·19	...	6·59	319·42	10,316·55	9,015·63	...
Mt. Malcolm	...	Voided leases	...	...	...	...	...	...	47·07	62,301·78	47,425·54	...
Do. ...	...	Sundry claims	...	2·26	17·00	10·33	...	5·75	26·50	3,060·90	2,112·01	...
Mertondale ...	...	Voided leases	...	...	...	...	...	...	...	88,663·00	60,840·00	1,497·58
Do. ...	...	Sundry claims	1·45	1·49	...	...	....	1·45	63·04	1,092·46	1,538·97	...
Mt. Clifford ...	1544c	Bannockburn	...	...	29·50	237·98	...	...	...	29·50	237·98	...
Do. ...	~~1329c~~	Victory No. 1	...	...	324·00	135·06	...	...	249·29	1,604·46	7,337·34	...
Do. ...	...	Voided leases	...	...	...	...	...	...	1,364·45	3,274·00	7,060·57	...
Do. ...	...	Sundry claims	...	...	6·00	5·52	...	13·21	256·77	1,006·50	1,601·44	...
Pig Well ...	...	Voided leases	...	...	...	...	...	...	...	13,575·32	14,673·13	63·68
Do. ...	...	Sundry claims	...	...	22·00	8·09	...	...	34·61	2,738·40	1,160·33	...
Randwick ...	...	Voided leases	...	...	...	...	...	...	239·49	8,065·15	8,671·57	...
Do. ...	...	Sundry claims	...	...	...	...	...	66·57	159·37	1,282·14	944·20	...
Webster's Find	...	Voided leases	...	...	...	...	...	30·30	...	21,760·00	13,970·17	...
Do. ...	...	Sundry claims	...	...	...	...	...	36·37	15·73	1,397·80	939·58	...
Wilson's Creek	...	Voided leases	...	...	...	...	...	...	...	333·50	168·27	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	4·24	5·00	19·04	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued

MT. MARGARET GOLDFIELD—*continued.*

MOUNT MALCOLM DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Wilson's Patch	...	Voided leases	...	...	...	...	...	...	99·38	27,395·10	12,638·18	1·05
Do. ...	...	Sundry claims	...	...	...	...	...	...	1·50	814·00	1,086·36	...
	From District generally:—											
	Sundry Parcels treated at:											
	Fremantle Trading Company's Works		...	...	...	...	...	...	...	....	1·42	...
	State Battery, Leonora		...	...	...	...	...	...	...	95·50	10,370·34	98·14
	Various Works		...	...	...	...	...	...	...	371·50	7,149·72	20·12
	Reported by Banks and Gold Dealers		...	...	...	...	...	2,483·14	131·00	...	...	...
		Total	**3·64**	**79·38**	**2,005·92**	**16,728·80**	**1,804·62**	**2,656·77**	**7,480·86**	**3,245,258·41**	**1,661,027·11**	**79,052·11**

* Prior to 1921 Lake Darlot was included in Lawlers District.

MOUNT MARGARET DISTRICT.

Burtville ...	2095T	Bell	...	...	...	...	...	...	...	12·00	12·15	...
Do. ...	2123T	Bond	...	...	237·50	415·54	...	...	...	507·50	877·00	...
Do. ...	2139	Mikado	...	...	...	172·61	...	...	...	...	172·61	...
Do. ...	2138T	Nil Desperandum	...	...	111·50	782·50	...	...	...	125·50	869·02	...
Do. ...	...	Voided leases	...	...	...	...	...	2·29	413·80	66,281·68	102,790·13	275·27
Do. ...	...	Sundry claims	...	...	7·00	6·39	...	...	122·10	3,206·90	2,906·76	...
Duketon ...	(2102T)	Dolorite	...	...	...	...	...	...	200·04	20·50	76·20	...
Do. ...	2114T	Hematite	...	6·18	17·00	78·77	...	...	286·91	22·00	118·97	...
Do. ...	...	Voided leases	...	...	...	...	...	3·54	2,726·26	31,442·92	22,123·04	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	65·43	238·50	366·37	...
Eagle's Nest	...	Voided leases	...	...	...	...	...	...	145·34	331·00	1,215·78	...
Do. ...	...	Sundry claims	...	...	...	...	...	4·00	310·58	110·50	109·42	...
Erlistoun ...	2113T	Baneygo North	...	...	273·00	73·63	...	...	...	551·00	168·13	...
Do. ...	...	Voided leases	...	...	...	...	...	...	11·66	27,012·07	18,461·35	...
Do. ...	...	Sundry claims	...	...	·26	3·33	...	1,179·43	116·81	2,121·24	1,840·43	...
Euro ...	...	Voided leases	...	...	...	...	...	...	65·14	91,556·25	37,582·89	...
Do. ...	...	Sundry claims	...	...	...	159·38	...	...	46·52	259·50	276·07	...
Laverton ...	(2058T)	Augusta	...	...	...	...	...	...	3·95	248· 1	167·20	...

Do. ...	2083T	Beria Main Reef	...	...	282·00	33·83	...	...	...	1,111·50	161·08	...
Do. ...	(838T)	(General Wabash)	...	...	...	...	...	...	...	100·00	288·72	...
Do. ...	(838T)	General Wabash	...	...	52·00	89·16	...	...	...	215·00	255·43	...
Do. ...	(829T), (838T), (846T), (1219T), (1310T), (1671T), (1894T)	Ida H. Gold Mine Co., Ltd. ...	...	...	...	...	...	...	...	229,995·96	170,654·90	4,674·69
Do. ...	715T, 806T, 1206T, (1207T), (1483T), 1523T, 1524T, 1525T, 1542T, (1544T), (1548T)	(Kalgoorlie and Boulder Firewood Co., Ltd.)	...	...	...	...	...	...	...	71,802·00	25,003·11	3,364·01
Do. ...	715T, 806T, 1206T, (1207T), (1483T), 1523T, 1524T, 1525T, 1542T, (1544T), (1548T)	(Lancefield G. M. Co., Ltd.)	...	...	...	...	...	...	...	102,179·78	39,402·81	...
Do. ...	715T, 806T, 1206T, (1207T), (1483T), 1523T, 1524T, 1525T, 1542T, (1544T), (1548T)	(Lancefield G. M. Co., Ltd.)	...	...	...	...	...	...	...	153,829·00	58,842·47	5,824·39
Do. ...	715T, 806T, 1206T, (1207T), (1483T), 1523T, 1524T, 1525T, 1542T, (1544T), (1548T)	(Lancefield G. M. Co., Ltd.)	...	...	...	...	...	...	...	260,749·00	103,535·54	21,612·29
Do. ...	715T, 806T, 1206T, 1523T, 1524T, 1525T, 1542T, 2050T, 2051T	Lancefield Gold Mines, Ltd.	...	...	22·44	23·01	...	...	...	352,677·01	127,175·63	21,012·88
Do. ...	2146T	Lincolnshire Lass	...	...	38·00	65·16	...	...	...	38·00	65·16	...
Do. ...	2142T	Pinnacles	...	...	252·25	71·63	...	...	...	252·25	71·63	...
Do. ...	(2112T)	South Lancefield	...	...	...	...	...	...	...	81·00	26·24	...
Do. ...	...	Voided leases	...	...	...	...	...	17·66	2,020·16	225,119·52	89,133 80	...
Do ...	...	Sundry claims	...	54·79	524·42	754·63	...	195·37	1,358·54	4,912·87	4,612·06	...
Mt. Barnicoat	...	Voided leases	...	...	...	...	...	...	...	652·00	359·12	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	23·00	23·37	...
Quartz Hill ...	...	Voided leases	...	...	...	...	...	...	...	10·00	3·86	...
Red Hill ...	...	Sundry claims	...	...	...	...	...	...	...	27·00	13·76	...
	From District generally:—											
	Sundry Parcels treated at:											
		Brown Hill Consols Works, Kalgoorlie	...	...	...	...	...	...	...	...	13·70	...
		M lga Queen Works	...	...	...	...	...	...	...	6·00	181·20	...
		State Battery, Laverton	...	...	...	277·56	...	...	...	77·50	2,324·08	...
		Various Works	...	...	...	...	...	...	...	151·00	9,603·44	...
		Reported by Banks and Gold Dealers	·89	...	...	...	...	2,022·58	...	...	...	...
		Total	**·89**	**60·97**	**1,817·37**	**3,007·13**	...	**3,424·87**	**7,893·24**	**1,628,056·96**	**821,884·63**	**56,763·53**

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

North Coolgardie Goldfield.

MENZIES DISTRICT.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Comet Vale ...	5217z	(Gladsome)	...	...	...	...	...	...	...	10,879·50	8,678·16	95·29
Do. ...	5217z, 5333z, (5380z)	Gladsome leases	...	...	5·00	41·79	...	...	...	64,875·00	48,235·21	1,410·36
Do. ...	5410z	Lake View	...	...	116·00	16·65	...	...	6·66	745·75	225·25	...
Do. ...	...	Voided leases	...	...	...	...	...	...	409·70	147,111·07	119,022·33	3,839·28
Do. ...	...	Sundry claims	...	3·08	5·00	8·24	...	...	34·99	727·40	541·59	...
Goongarrie ...	...	Voided leases	...	...	...	...	...	·94	1,027·51	27,198·29	17,428·84	...
Do. ...	...	Sundry claims	...	...	15·50	15·52	...	33·72	509·88	1,142·60	1,286·93	...
Menzies ...	5423z	Lady Shenton	...	...	285·83	256·96	...	...	...	5,178·08	4,108·68	...
Do. ...	4931z, 4934z, 4935z, 4936z, 5074z, 5075z, 5260z, 5261z, 5315z	Menzies Consolidated G.Ms., Ltd. ...	...	...	20,170·00	9,281·45	...	...	...	484,747·00	255,053·11	78·67
Do. ...	5484z	Warrior	...	...	169·00	125·64	...	...	...	169·00	125·64	...
Do. ...	...	Voided leases	...	...	...	...	...	45·42	1,049·04	373,305·96	423,936·52	11,263·06
Do. ...	...	Sundry claims	...	...	459·06	303·45	...	6·69	361·33	18,903·56	13,553·19	776·49
Mt. Ida ...	5467z	Forrest Belle	...	...	394·00	372·89	...	...	...	1,065·00	886·34	...
Do. ...	(5473z)	Mt. Ida Consolidated	...	...	34·00	15·85	...	...	...	477·00	127·94	...
Do. ...	5481z	Unexpected South	...	...	36·00	29·45	...	...	...	36·00	29·45	...
Do. ...	...	Voided leases	...	...	...	...	...	...	77·07	56,087·37	67,116·80	106·63
Do. ...	...	Sundry claims	...	...	223·00	179·85	...	31·22	9·57	5,140·00	2,986·73	...
	From District generally :—											
	Sundry parcels treated at:											
	Balkis Battery		...	...	...	...	...	...	...	65·75	4,648·28	...
	Boddington Cyanide Works		...	...	...	596·10	...	...	...	...	596·10	...
	Crusoe Wedderburn Cyanide Works		...	...	...	...	...	...	...	...	1,497·89	...
	Fremantle Trading Co. Ltd. Works		...	...	...	...	...	...	...	...	212·98	...
	Gidney's Cyanide Works		...	...	...	107·04	585·27	...	...	...	906·97	585·27
	Lady Harriett Battery		...	...	9·00	296·25	...	...	...	279·50	3,662·86	30·00
	Menzies Mining and Exploration Ltd., Works ...		...	...	...	...	...	...	...	639·50	732·04	...
	State Battery—Mt. Ida		...	...	...	...	...	...	...	1,842·25	4,484·34	...
	Various Works		...	...	...	...	...	...	...	1,807·05	23,641·87	1,039·43
	Reported by Banks and Gold Dealers		...	...	...	...	...	968·65	195·48	...	...	...
	Total		...	**3·08**	**21,921·39**	**11,647·13**	**585·27**	**1,086·64**	**3,681·23**	**1,202,422·63**	**1,003,726·04**	**19,224·48**

ULARRING DISTRICT.

Davyhurst ...	...	Voided leases	...	...	...	...	...	...	2·93	138·99	155,644·73	123,063·43	5,403·14
Do. ...	...	Sundry claims	...	...	26·80	68·50	...	...		30·12	5,972·15	3,194·28	...
Diemel's Find	...	Sundry claims	...	...	...	...	...	...		7·37	102·50	119·13	...
Mulline ...	324U, 600U, 730U, 969U, 970U, 974U, 975U, 982U, 983U	Riverina South G.M. Co., N.L. ...	...	...	836·00	1,036·96	96·49	...		...	8,397·25	7,445·18	528·04
Do. ...	324U, 600U, 730U	(Riverina South leases) ...	...	...	...	...	...	...		43·87	18,480·50	13,442·65	...
Do. ...	763U	Young Australian	...	...	20·00	1·93	...	...		...	601·25	733·86	...
Do. ...	763U	(Young Australian)	...	...	...	...	...	...		...	1,295·00	3,609·26	...
Do. ...	763U, (938U), (939U)	(Young Australian leases) ...	...	...	...	...	...	...		...	2,672·25	5,763·88	...
Do. ...	...	Voided leases	...	...	...	...	...	...		230·22	66,592·22	67,768·48	2·71
Do. ...	...	Sundry claims	...	...	970·81	217·03	...	...		35·53	7,019·07	4,927·18	·69
Mulwarrie ...	...	Voided leases	...	...	...	...	...	...		56·84	18,440·68	25,625·54	38·47
Do. ...	...	Sundry claims	...	...	...	...	...	...		21·45	2,099·07	1,888·49	...
Ularring ...	...	Voided leases	...	...	...	...	...	...		563·34	9,429·60	13,647·97	...
Do. ...	...	Sundry claims	...	...	...	...	...	...		...	143·00	113·15	...
	From District generally :—												
	Sundry parcels treated at :												
	Hannans Central Battery—Kalgoorlie		...	...	...	...	...	...		...	18·40	4·66	...
	State Battery—Mulline		...	...	...	77·02	...	...		...	538·50	13,088·17	...
	State Battery—Mulwarrie		...	...	...	...	...	...		...	595·20	4,762·31	...
	Various Works		...	...	...	...	...	...		15·82	186·75	654·37	...
	Reported by Banks and Gold Dealers ...		...	...	...	...	...	19·24		·77	...	...	...
	Total		...	...	**1,853·61**	**1,401·44**	**96·49**	**22·17**		**1,144·32**	**298,228·12**	**289,851·99**	**5,973·05**

NIAGARA DISTRICT.

Desdemona ...	...	Voided leases	...	...	...	...	...	...		5·73	9,585·25	7,471·39	12·04
Do. ...	...	Sundry claims	...	...	...	...	...	...		8·99	1,331·70	634·19	...
Kookynie ...	779G	Cosmo	...	...	74·50	36·09	...	...		...	74·50	36·09	...
Do. ...	757G	(Cosmopolitan No. 2 ; Cosmopolitan Proprietary, Ltd.)	...	...	...	...	...	...		...	710·00	909·66	...
Do. ...	757G	Cosmopolitan No. 2 ; Western Machinery Co., Ltd.	...	...	61·00	41·24	...	...		...	3,441·00	3,954·34	...
Do. ...	769G	(Two D's)	...	...	...	...	...	...		...	100·00	14·01	...
Do. ...	769G, (770G), (771G)	Two D's Leases	...	...	140·00	16·23	...	...		...	950·00	590·26	...
Do. ...	...	Voided leases	...	...	...	...	...	...		257·33	729,921·81	383,551·35	5,375·97
Do. ...	...	Sundry claims	...	...	25·50	9·52	...	30·59		93·85	4,912·85	4,421·46	...
Niagara ...	...	Voided leases	...	...	...	...	...	...		104·54	84,472·50	51,887·97	...
Do. ...	...	Sundry claims	...	...	38·00	14·41	...	13·27		70·23	9,874·29	6,069·68	...
Tampa ...	...	Voided leases	...	...	...	...	...	...		28·60	49,271·87	22,173·80	174·24
Do. ...	...	Sundry claims	...	2·49	10·00	6·39	...	5·07		71·93	3,212·00	1,894·48	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

NORTH COOLGARDIE GOLDFIELD—*continued.*

NIAGARA DISTRICT—continued.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922. Alluvial.	Dollied and Specimens	Ore treated.	Gold therefrom.	Silver.	Total Production. Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
	From District generally :—											
	Sundry parcels treated at :											
		Grafter Battery	...	...	...	...	...	...	...	98·00	448·91	...
		Hainault Sulphide Plant—Kalgoorlie	...	...	...	...	...	...	...	...	9·03	...
		Lubra Queen G.M. Co., N.L. Works	...	...	...	...	...	...	...	...	153·47	...
		State Battery—Niagara	...	...	49·00	70·80	...	...	...	671·50	8,945·91	...
		Various Works	...	...	...	...	...	...	...	451·00	6,356·43	41·17
		Reported by Banks and Gold Dealers	...	...	...	...	...	1,435·20	787·38	...	...	...
		Total	...	**2·49**	**398·00**	**194·68**	...	**1,484·13**	**1,428·58**	**899,078·27**	**499,522·43**	**5,603·42**

YERILLA DISTRICT.

Edjudina	1060R	Big Ben	...	...	45·00	32·53	...	...	...	103·00	62·93	...
Do.	(1057R)	Fingall	...	...	...	...	...	...	...	27·00	15·38	...
Do.	(1059R)	Martin	...	...	...	...	...	...	...	21·00	30·98	...
Do.	1062R	Martin	...	...	26·50	22·12	...	...	...	26·50	22·12	...
Do.	1011R	Neta	...	...	11·00	5·74	...	...	...	156·75	102·56	...
Do.	(1010R), (1011R)	(Neta leases)	...	...	...	...	...	...	...	407·00	340·01	...
Do.	(1015R)	Senate	...	...	...	...	...	...	4·38	1,614·50	1,787·21	...
Do.	(1063R)	Triangle	...	...	53·00	46·22	...	...	...	53·00	46·22	...
Do.		Voided leases	...	...	...	...	...	...	14·06	30,367·70	39,778·46	37·79
Do.		Sundry claims	...	...	98·00	67·96	...	...	21·26	3,451·08	2,865·84	...
Eucalyptus		Voided leases	...	...	...	...	...	...	2,864·77	1,351·35	3,020·68	...
Do.		Sundry claims	...	...	...	...	...	...	367·50	362·50	381·82	...
Linden	998R, [344F]	Bindah	...	...	...	...	...	...	...	1,462·50	531·95	...
Do.	871R, [340F]	Democrat	...	...	...	...	...	...	9·01	2,245·25	5,026·30	...
Do.	1024R, [346F]	Great Carbine	...	...	...	...	...	...	...	67·75	20·30	...
Do.	903R, [341F], 985R, [343F]	Torquay leases	...	...	...	...	...	...	...	325·68	107·45	...
Do.	903R, [341F], (904R), 985R, [343F], (992R)	(Westralia United Goldfields, Ltd.)	...	...	...	...	...	...	...	1,995·00	1,452·42	...
Do.		Voided leases	...	...	...	...	...	7·53	544·15	13,471·85	16,540·49	...
Do.		Sundry claims	...	...	...	...	...	77·81	35·11	6,493·25	4,798·42	...
Mt. Celia		Voided leases	...	...	...	...	...	...	...	14·00	5·39	...

Mt. Howe ...	...	Sundry claims	...	...	...	...	...	...	...	...	...	5·00	11·13	...
Mt. Remarkable	...	Voided leases	...	...	...	...	...	...	...	17·74	528·72	415·09	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	...	4·00	1·32	...
Pingin ...	...	Voided leases	...	...	...	...	...	...	...	46·99	14,637·80	10,306·68	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	99·36	3,422·35	2,297·51	...
Yarri ...	1058R	Mt. Wallbrook Main Lode ...	...	...	54·00	32·14	...	...	...	...	116·00	73·06	...
Do. ...	1055R	Redbrook G.M.	...	...	200·25	121·22	...	...	...	...	423·25	259·14	...
Do. ...	...	Voided leases	...	...	...	...	...	6·30	87·08	36,822·75	19,124·10	2·00
Do. ...	...	Sundry claims	...	...	59·00	47·39	...	...	5·31	5,806·10	3,078·55	...
Yerilla ...	...	Voided leases	...	...	...	...	...	...	3,089·51	15,619·21	12,313·06	13·93
Do. ...	...	Sundry claims	...	...	...	...	...	19·30	15·88	2,401·00	1,338·07	...
Yilgangie ...	...	Voided leases	...	...	...	...	...	...	...	218·75	295·45	...
Do. ...	...	Sundry claims	...	...	...	...	...	121·67	29·83	25·50	46·17	...
Yundamindera	...	Voided leases	...	...	...	...	...	...	80·47	69,067·85	46,004·87	5·82
Do. ...	...	Sundry claims	...	...	...	...	...	...	85·22	3,151·25	2,740·75	...
	From District generally :—												
	Sundry parcels treated at :												
	Battles Ville Battery		...	...	...	...	...	...	...	...	621·83	...
	Fremantle Trading Co., Ltd. Works ...		...	...	...	...	...	...	...	...	4·92	...
	Neta Battery		...	...	...	...	...	...	...	...	325·69	...
	State Battery, Linden		...	...	...	...	...	...	...	72·00	4,030·90	...
	State Battery, Yarri		...	...	...	...	...	...	...	231·50	4,412·89	3·50
	State Battery, Yerilla		...	...	...	...	...	2·17	...	72·00	1,257·22	...
	Various Works		...	...	...	...	...	...	...	786·35	5,277·20	...
	Reported by Banks and Gold Dealers		...	...	...	...	...	1,011·56	154·74	...	...	...
	Total		...	...	**546·75**	**375·32**	...	**1,246·34**	**7,572·37**	**217,428·04**	**191,172·53**	**63·04**

Broad Arrow Goldfield.

Bardoc ...	1833w	Zoroastrian	...	...	...	...	...	...	...	23·25	17·45	91·34	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	1,863·68	73,236·55	51,823·64	203·60
Do. ...	...	Sundry claims	...	...	77·65	68·19	...	43·02	559·27	3,337·70	2,870·87	...
Black Flag ...	...	Voided leases	...	...	...	...	...	27·81	373·99	40,332·13	24,451·48	...
Do. ...	...	Sundry claims	...	...	14·70	8·20	...	686·51	171·64	2,181·08	2,063·02	...
Broad Arrow	1900w	Determination	...	...	65·00	227·12	...	...	26·79	72·00	253·91	...
Do. ...	1771w	North Duke	...	193·01	...	...	...	...	1,326·02	127·30	488·06	...
Do. ...	1799w	Oversight	...	...	178·00	403·28	...	...	1,214·31	796·00	2,127·63	...
Do. ...	1905w	Oversight South	...	...	7·90	17·36	...	...	...	7·90	17·36	...
Do. ...	(1885w)	Renown	...	...	...	...	...	...	...	10·60	2·10	...
Do. ...	1735w	Tara	...	...	49·00	88·62	...	...	3,164·85	508·90	1,565·63	...
Do. ...	...	Voided leases	...	...	...	...	...	54·85	2,313·89	117,754·61	97,603·49	15·85
Do. ...	...	Sundry claims	7·47	7·32	134·43	147·14	...	977·33	1,256·16	9,210·45	6,845·04	...
Canegrass ...	1895w	Diggers Luck	...	...	34·10	107·73	...	...	...	89·10	133·13	...
Carnage ...	...	Voided leases	...	...	...	...	...	...	...	138·00	251·97	...
Do. ...	...	Sundry claims	...	...	41·00	26·32	...	...	...	41·00	26·32	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

BROAD ARROW GOLDFIELD—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Paddington ...	...	Voided leases	...	...	...	...	...	5,557·72	257·75	175,109·58	82,198·30	18·96
Do. ...	...	Sundry claims	...	...	50·00	15·96	...	1,714·16	2·13	10,317·92	6,608·82	...
Siberia ...	1399w, 1424w, 1429w, (1442w), (1655w)	Associated Northern Blocks (W.A.), Ltd.	...	...	307·75	91·53	...	...	...	247,494·34	90,998·97	1,664·70
Do. ...	1371w	Gimlet South	...	...	...	...	...	...	...	72,392·50	12,161·18	...
Do. ...	1399w	(Gimlet South Extended) ...	...	...	...	...	...	...	...	525·00	835·44	...
Do. ...	1399w, 1424w, 1429w, (1442w)	(Gimlet South Extended leases)	...	...	...	...	...	...	...	215·00	39·98	...
Do. ...	1338w	(Gimlet West)	...	...	...	...	...	...	...	680·50	482·83	...
Do. ...	1889w	Hazel Gold Mine	...	...	...	...	...	...	...	29·00	2·29	...
Do. ...	1289w	Lady Evelyn	...	...	585·00	695·35	...	...	...	706·00	926·73	...
Do. ...	1289w, (1308w)...	(Lady Evelyn leases)	...	...	...	...	...	...	25·26	5,376·25	5,267·70	...
Do. ...	1906w	Orinda	...	...	637·00	650·32	...	...	...	637·00	650·32	...
Do. ...	1908w	Paddy's Knob	...	...	93·50	67·98	...	...	...	93·50	67·98	...
Do. ...	1375w	(Siberia Consols)	...	...	...	...	...	...	41·58	1,013·50	3,136·03	...
Do. ...	1375w	Siberia Consols	...	...	...	...	...	...	...	581·25	1,236·74	...
Do. ...	1375w, (1610w), (1720w)	(Siberia Consols G.M. Co., N.L.) ...	...	...	...	...	...	...	39·23	352·50	598·52	...
Do. ...	1336w	(Slippery Gimlet)	...	...	...	...	...	...	...	26,110·50	8,217·79	...
Do. ...	1336w, 1338w, (1419w)	Slippery Gimlet leases: Associated Northern Blocks (W.A.), Ltd.	...	...	...	...	...	...	...	6,897·00	2,528·10	...
Do. ...	...	Voided leases	...	...	...	...	...	...	789·17	23,831·92	13,941·82	...
Do. ...	...	Sundry claims	...	37·83	932·75	757·66	...	126·49	599·29	13,624·29	8,968·71	...
Smithfield ...	...	Voided leases	...	...	...	...	...	...	...	1,027·00	200·90	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	23·79	49·50	149·47	...
	From Goldfield generally :—											
	Sundry parcels treated at:											
	Brown Hill Consols Works, Kalgoorlie		...	...	...	...	...	...	...	38·99	15·32	...
	Fremantle Trading Co., Ltd., Works		...	...	...	...	...	...	...	...	80·10	...
	Hannans Central Works, Kalgoorlie		...	...	...	...	...	...	...	8·70	15·47	...
	Hainault Sulphide Plant, Kalgoorlie		...	...	...	...	...	...	...	...	9·57	...
	Pole Works		...	...	...	...	...	...	...	...	356·07	...
	Regan's Carnage Battery		...	...	...	...	...	...	...	27·00	598·81	...
	State Battery—Ora Banda		...	...	...	...	...	...	...	47·00	1,663·42	...
	State Battery—Siberia		...	...	...	...	...	...	...	40·00	749·16	...
	Zoroastrian Works		...	...	...	...	...	...	...	116·50	1,082·23	...
	Various Works		...	...	...	...	...	2,271·17	...	16,622·68	31,760·91	278·85
	Reported by Banks and Gold Dealers		10·17	...	...	...	...	7,836·56	...	...	...	...
	Total		**17·64**	**238·16**	**3,207·78**	**3,372·76**	...	**19,295·62**	**14,072·05**	**851,825·69**	**466,164·67**	**2,181·96**

North-East Coolgardie Goldfield.

KANOWNA DISTRICT.

Black Swan ...	...	Voided leases	...	...	...	...	...	...	...	160·00	141·76	...
Gambier ...	...	Voided leases	...	...	...	...	...	...	38·73	12,729·00	6,638·30	·07
Do. ...	...	Sundry claims	...	...	...	...	...	24·70	245·94	858·75	750·42	...
Gindalbie ...	...	Voided leases	...	...	...	...	...	...	19·94	43,613·28	39,438·75	38·31
Do. ...	...	Sundry claims	...	...	15·00	4·41	...	...	674·82	1,051·27	1,230·42	...
Gordon ...	1385x	Pride of the Morning	...	...	374·85	278·75	...	...	...	4,800·85	1,245·58	...
Do. ...	...	Voided leases	...	...	...	...	...	...	268·25	40,607·30	11,425·99	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	54·65	630·50	577·80	...
Kanowna ...	(1427x)	Evelyn	...	...	...	...	...	...	23·00	4·00	3·21	...
Do. ...	1439x	Golden Crown and Cambrian ...	...	...	10·00	36·63	...	...	...	10·00	36·63	...
Do. ...	(1436x)	Golden Crown Deeps	...	...	...	...	...	...	...	7·50	7·90	...
Do. ...	1389x	Golden Valley	...	...	1,478·50	1,103·93	...	...	...	5,014·13	2,969·51	...
Do. ...	1019x	(Kanowna)	...	...	...	...	...	5·84	691·94	9,588·50	14,544·42	...
Do. ...	1299x	(Kanowna Consols)	...	...	...	...	...	...	...	713·50	129·30	...
Do. ...	1299x	(Kanowna Consols)	...	...	...	...	...	...	...	339·00	207·36	...
Do. ...	1299x, (1300x) ...	(Kanowna Consols leases) ...	...	...	...	...	...	...	6·76	312·00	261·31	...
Do. ...	1299x, 1379x ...	Kanowna Consols leases ...	...	...	75·00	22·19	...	...	...	1,364·00	989·30	...
Do. ...	(1398x)	Kanowna Consols Junction ...	...	...	...	...	...	...	...	122·34	46·52	...
Do. ...	(1428x), (1429x), (1430x)	Kanowna Deep Lead Co., Ltd. ...	...	...	...	...	...	...	...	94·94	32·76	...
Do. ...	1019x	Kanowna Red Hill G.M. Co., N.L. ...	...	...	1,560·00	1,510·76	...	...	...	2,045·00	2,233·65	...
Do. ...	18x, (19x) ...	(Lily Australis G.Ms., Ltd.) ...	...	...	...	...	...	...	...	197·00	119·18	...
Do. ...	1446x	Mullocky Leader...	...	...	68·00	28·38	...	...	...	68·00	28·38	...
Do. ...	1440x	New Reward	...	...	76·00	180·53	...	...	...	76·00	180·53	...
Do. ...	3x, (14x), 15x, 18x, (19x), (60x), (81x), (938x), (974x), (1035x), (1103x), (1263x)	(North White Feather G.Ms., Ltd.) ...	...	...	...	...	...	...	...	147,974·75	74,343·01	159·19
Do. ...	(14x), 15x, 18x, (19x), (974x), (1035x), (1103x) (1263x), (1276x), (1278)	(North White Feather G.Ms., Ltd.) ...	...	...	...	...	...	...	...	37,768·50	10,594·79	...
Do. ...	12x, 13x, (14x), 15x, 18x, (19x), (72x), (855x), (974x), (1035x), (1103x), (1263x), (1278x), 1438x	North White Feather G.Ms., Ltd. ...	...	...	232·00	144·19	...	...	...	54,566·27	24,505·47	...
Do. ...	1445x	Old Reward	...	...	54·00	63·00	...	...	...	54·00	63·00	...
Do. ...	1441x	Red Hill East	...	...	12·00	9·15	...	...	...	12·00	9·15	...
Do. ...	12x, 13x, (14x), 15x, (855x), (1001x), (1012x) (1103x), (1107x), (1108x), (1109x)	(White Feather Main Reefs, Ltd.) ...	...	...	...	...	...	...	...	123,327·56	82,334·52	1,675·68
Do. ...	(9x), (10x), 12x, 13x, (72x), (83x), (201x), (855x), (1001x), (1012x), (1108x), (1249x)	(White Feather Main Reefs (1906), Ltd.)	...	...	...	...	...	...	20·45	24,393·00	9,138·31	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

NORTH-EAST COOLGARDIE GOLDFIELD—*continued.*

KANOWNA DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922. Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Total Production. Alluvial	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Kanowna ...	...	Voided leases	...	...	...	...	...	8·47	3,678·82	246,220·46	137,474·62	647·37
Do. ...	...	Sundry claims	...	34·38	303·00	266·46	...	88·95	1,438·71	14,245·84	7,509·92	1·50
Mulgarrie ...	1426x	Palm	...	...	146·00	78·56	...	...	...	901·00	462·40	...
Do. ...	...	Voided leases	...	...	...	...	...	...	1,216·63	5,843·26	3,567·48	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	13·29	1,184·00	596·64	...
Six-Mile ...	...	Voided leases	...	...	...	...	...	...	1,595·63	559·00	767·72	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	31·44	141·50	103·37	...
	From District generally :—											
	Sundry parcels treated at :											
	Lady Pratt Works		...	...	...	...	...	...	...	31·00	281·01	...
	Old Cement Works—Martin's		...	...	...	109·76	...	...	...	10,893·78	15,561·14	...
	Various Works		...	...	...	...	...	330·42	867·52	147,843·26	132,539·98	...
	Reported by Banks and Gold Dealers		11·05	...	...	...	...	103,994·59	·86	...	84·69	...
		Total	**11·05**	**34·38**	**4,404·35**	**3,836·70**	...	**104,452·97**	**10,887·38**	**940,366·04**	**583,176·20**	**2,522·12**
		KURNALPI DISTRICT.										
Jubilee ...	...	Voided leases	...	...	...	...	...	...	145·13	1,821·25	1,408·51	...
Do. ...	...	Sundry claims	...	...	...	...	...	18·87	...	46·00	28·91	...
Kurnalpi ...	427k	Agoriad Aur	...	...	72·00	115·85	...	...	129·35	86·00	164·55	...
Do. ...	(423k)	Kurnalpi Pride	...	...	...	...	...	...	640·82	33·70	368·13	...
Do. ...	(435k)	The Bridge South	...	211·09	...	...	...	...	211·09	...	...	...
Do. ...	...	Voided leases	...	...	...	...	...	371·18	2,119·38	2,805·31	2,245·39	6·27
Do. ...	...	Sundry claims	...	...	28·00	67·22	...	226·49	185·50	554·00	310·14	...
Mulgabbie ...	428k	Try Again	...	55·62	...	...	...	...	519·35	...	92·34	...
Do. ...	...	Voided leases	...	...	...	...	...	...	606·79	84·65	7,290·69	4·95
Do. ...	...	Sundry claims	...	89·72	...	123·47	...	6·50	1,522·51	139·50	955·10	...
	From District generally :—											
	Sundry parcels treated at :											
	Various Works		...	...	...	...	...	...	...	56·50	193·15	...
	Reported by Banks and Gold Dealers		...	...	...	...	...	11,375·71	19·62	...	...	...
		Total	...	**356·43**	**100·00**	**306·54**	...	**11,998·75**	**6,099·54**	**5,626·91**	**13,056·91**	**11·22**

EAST COOLGARDIE DISTRICT.

Binduli	...	5327E	Nolan's	...	...	85·00	107·74	...	...	...	85·00	107·74	...	
Do.	...	...	Voided leases	...	...	...	...	...	...	...	249·10	116·56	...	
Do.	...	...	Sundry claims	...	...	178·49	344·23	...	...	...	396·56	454·07	...	
Boorara	...	3908E, (3910E), (3912E), (4033E), (4045E), (4327E)	(Golden Ridge G.M. Co., Ltd.) ...	...	...	...	...	...	...	...	239,600·10	132,893·92	408·36	
Do.	...	(4629E)	Jewel	...	...	...	...	...	...	...	139·50	232·45	...	
Do.	...	3908E	Waterfall Gold Mine: Forward, Down, and Co., Ltd.	...	...	133·60	184·16	...	...	...	133·60	184·16	...	
Do.	...	3908E, (3910E), (4625E)	(Waterfall Gold Mine Leases: Forward, Down, and Co., Ltd.)	...	...	...	...	...	...	...	5·40	55·98	...	
Do.	...	3908E (3910E), (4625E)	(Waterfall Gold Mine Leases) ...	...	...	...	...	...	...	...	6,671·50	4,097·17	...	
Do.	...	3908E, (3910E), (3912E), (4033E)	(Waterfall Leases)	...	...	...	...	...	...	...	2,849·00	2,389·48	...	
Do.	...	...	Voided leases	...	...	...	...	...	...	381·56	57,208·35	31,772·37	...	
Do.	...	...	Sundry claims	...	...	91·26	48·70	...	·49	53·46	615·16	550·25	...	
Boulder	...	392E	(Acrobat: Paringa Consolidated Mines, Ltd.)	...	...	...	...	...	...	...	10·25	37·15	...	
Do.	...	392E	Acrobat: Paringa Mines (1909), Ltd....	...	...	609·40	443·79	...	...	...	15,931·15	7,477·18	...	
Do.	...	38E, 71E, 72E, (101E)	Associated G.Ms. of W.A., Ltd. ...	...	...	61,636·09	23,095·62	813·00	...	8·49	2,021,653·44	1,087,524·36	32,936·05	
Do.	...	49E, (4211E) ...	Associated Northern Blocks, (W.A.), Ltd.	...	...	3,166·69	4,616·16	...	...	524·18	412,032·22	501,487·28	4,844·50	
Do.	...	(682E) 902E, 923E, 986E, (1064E), 1124E, 1096E, 4075E	(Boulder Deep Levels, Ltd.) ...	...	...	...	...	...	...	...	3,043·00	1,778·10	26·71	
Do.	...	902E, 923E, 986E, 1124E, 1196E, 4075E	(Boulder Deep Levels (1907), Ltd.)	...	...	...	...	...	...	...	787·50	210·30	...	
Do.	...	281E	(Brookman Bros.: Boulder G.M. Co., Ltd.)	...	...	...	...	...	...	...	8,655·00	8,417·00	...	
Do.	...	4633E	Brownhill Extended, Ltd.	...	...	16·60	3·40	...	...	...	456·83	66·92	...	
Do.	...	24E, (888E), 949E	Central and West Boulder G.M. ...	...	...	646·30	301·95	...	...	...	70,410·52	36,066·30	...	
Do.	...	352E	(Chaffers G.M. Co., Ltd.)	...	...	...	...	...	...	...	4,256·00	1,299·03	161·50	
Do.	...	352E, 873E, 4334E	(Chaffers G.M. Co., Ltd.)	...	...	...	...	...	...	...	111,111·00	44,796·77	...	
Do.	...	352E 873E, 4334E	(Chaffers G.M. Co., (1913), Ltd.) ...	...	...	...	...	...	...	...	13,350·00	3,334·91	129·57	
Do.	...	1621E	(Croesus Proprietary G.M. Co.) ...	...	...	...	...	...	...	...	79·00	45·87	...	
Do.	...	(4617E)	Croesus South	...	...	308·50	286·50	...	...	...	2,706·00	2,016·80	...	
Do.	...	35E	Eureka	...	94·80	3,647·74	3,896·57	...	...	94·80	4,793·63	4,519·64	...	
Do.	...	4627E	Garvagh	...	...	236·50	114·43	...	...	...	982·00	866·20	...	
Do.	...	351E, 1001E, 1002E, 1085E, 1113E, 1219E, 1326E, 1397E	Golden Horseshoe Estates Co., Ltd. ...	...	...	110,220·00	62,034·39	42,295·65	...	...	4,468,436·00	2,776,443·10	604,625·71	
Do.	...	750E	(Golden Link Consolidated G.Ms., Ltd.)	...	...	...	...	...	...	...	10,729·00	6,096·80	...	
Do.	...	2325E, 2326E ...	(Golden Link Consolidated G.Ms., Ltd.)	...	...	...	...	...	...	...	1,525·00	733·48	...	
Do.	...	750E, 1621E ...	(Golden Links, Ltd.)	...	...	...	...	...	...	...	87,115·02	43,504·60	19·06	
Do.	...	873E	Great Boulder Main Reefs, Ltd. ...		...	...	...	...	...	...	143,292·39	119,541·14	761·98	
Do.	...	(50E)	Great Boulder No. 1, Ltd.	...	...	...	...	...	...	...	18,655·94	14,590·79	...	

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

EAST COOLGARDIE GOLDFIELD—*continued.*

EAST COOLGARDIE DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Boulder ...	66E	Great Boulder Perseverance G.M., Ltd.	...	...	37,348·62	41,581·07	7,385·74	...	...	3,260,010·16	1,786·993·49	194,978·02
Do. ...	16E, 51E, 61E, 102E, 280E, 1109E, 4366E	Great Boulder Proprietary G.Ms., Ltd.	...	...	112 535·10	72,751·55	13,142·00	...	...	3,477,984·10	3,062,062·72	344,917·10
Do. ...	902E, 1124E ...	(Great Boulder South G.M. Co., Ltd.)	...	...	...	...	...	...	...	437·00	122·11	...
Do. ...	3643E	(Hainault G.M., Ltd.)	...	...	...	...	...	...	...	517,345·70	184,570·02	113·30
Do. ...	6E	(Hannan's Block 45, Ltd.)	...	...	...	...	...	...	...	2,343·55	3,226·69	...
Do. ...	131E, 245E, 269E, 743E, (794E), 969E	(Hannan's Central G.Ms., Ltd.) ...	...	...	...	...	...	...	...	6,098·00	3,360·33	...
Do. ...	739E	(Hannan's Croesus G.M. Co., Ltd.) ...	...	...	...	...	...	...	...	4,256·75	4,416·90	...
Do. ...	1004E	(Hannan's North Croesus G.M. Co., Ltd.)	...	...	...	...	...	...	...	50·00	13·21	...
Do. ...	15E, 60E, 902E, 923E, 986E, 1116E, 1124E, 1196E, 4075E	(Hannan's Star Consolidated, Ltd.) ...	...	...	...	...	...	...	...	360·00	175·59	...
Do. ...	15E, 60E, 1116E,	(Hannan's Star G.M. Co., Ltd.) ...	...	...	...	...	...	...	...	85,652·75	40,438·85	2,142·59
Do. ...	15E, 60E, 1116E	(Hannan's Star, Ltd.)	...	...	...	...	...	...	...	13,470·50	4,716·66	191·22
Do. ...	5336E	Hardup	...	...	27·00	7·53	...	...	...	27·00	7·53	...
Do. ...	4317E, (4318E), (4442E)	Idaho Leases	...	410·06	245·69	463·24	...	...	4,847·57	128,727·26	63,546·75	...
Do. ...	946E, (4370E), (4531E)	Ironsides North Leases	...	...	165·35	583·09	...	...	...	71,677·81	128,290·00	...
Do. ...	946E	(Ironsides North G.M. Co., N.L.) ...	...	...	...	...	...	...	...	1,348·00	807·48	...
Do. ...	31E, 1357E, 1413E, 1507E, 4399E, 4445E, 4476E	Ivanhoe Gold Corporation, Ltd. ...	...	...	159,290·00	71,919·77	21,747·38	...	...	4,110,724·00	2,486,524·51	428,388·19
Do. ...	1507E, (2899E), (3712E), (3713E)	(Ivanhoe Junction G.M. Co., N.L.) ...	...	...	...	...	...	...	...	1,764·00	121·43	...
Do. ...	6E, 131E, 245E, 269E, (301E), 739E, 743E, (794E) 969E	(Kalgoorlie Amalgamated, Ltd.) ...	...	...	...	...	...	...	...	32,589·00	8 859·95	...
Do. ...	6E, 131E, 245E, 269E, (301E), 739E, 743E, (794E), 969E	(Kalgoorlie Amalgamated (new), Ltd.)	...	...	...	...	...	...	...	27,145·00	6,265·27	...
Do. ...	6E, 131E, 245E, 269E, (301E), 739E, 743E, (794E), 969E	(Kalgoorlie Amalgamated (1909), Ltd.)	...	...	...	...	...	...	...	7,940·50	1,568·40	...

Do.	...	73E, (74E) ...	(Kalgoorlie Mint and Iron King Gold Estates, Ltd.)	...	...	...	...	...	...	...	3,020·00	1,762·00	...
Do.	...	73E, (74E) ...	(Kalgoorlie Mint and Iron King G.Ms., Ltd.)	...	...	...	...	...	...	...	3,647·00	7,454·80	...
Do.	...	1004E	(Kalgoorlie Golden Eagle)	...	...	...	...	...	...	...	4,891·50	1,289·65	...
Do.	...	1004E	(Kalgoorlie Golden Eagle: Golden Links, Ltd.)	...	...	...	...	...	...	...	193·00	31·63	...
Do.	...	22E, 34E ...	(Kalgurli G.Ms., Ltd.)	...	...	...	...	...	...	...	1,683,548·41	1,072,090·59	188·24
Do.	...	15E, 25E, 32E, 60E, 352E, 873E, 902E, 923E, 986E, 1116E, 1124E, 1196E, 2325E, 2326E, 4075E, 4334E, (4432E), (4433E), (4434E), 4493E	Lake View and Star, Ltd.	...	...	48,076·54	25,664·74	1,959·29	...	...	1,696·861·55	584,005·68	54,683·56
Do.	...	25E, 32E, 2325E, 2326E	(Lake View Consols, Ltd.)	...	...	...	...	...	...	...	1,179,303·55	1,016,875·27	38,491·89
Do.	...	5159E	Lake View South	...	...	141·31	36·96	...	...	...	184·10	96·60	...
Do.	...	(33E), 35E, (975E)	(New North Boulder G.Ms., Ltd.) ...	...	...	...	...	...	...	...	23,438·78	14,750·03	...
Do.	...	(33E), 35E, (975E)	(North Boulder G.M. Co., Ltd.) ...	...	...	...	...	...	...	...	33,549·15	47,532·52	...
Do.	...	(33E), 35E, (975E)	(North Boulder G.Ms., Ltd.) ...	...	...	...	...	...	...	...	4,542·50	4,256·55	·63
Do.	...	281E, 287E, 444E	(North Kalgurli Co., Ltd.)	...	...	...	...	...	43·99	...	104,116·49	60,229·47	7,202·47
Do.	...	281E, 287E, 444E	North Kalgurli (1912), Ltd.	...	...	3,221·18	2,246·34	...	...	...	32,295·03	15,684·82	...
Do.	...	5232E	Old Bank of England	...	...	336·28	443·80	...	...	...	717·88	642·07	...
Do.	...	73E, 410E, 448E, 532E, 578E, 698E, 944E, (1395E), (3031E), (4180E)	(Oroya Brown Hill Co., Ltd.) ...	...	...	...	...	...	...	...	1,075,862·55	1,163,881·77	61,682·30
Do.	...	6E, 22E, 34E, 73E, 131E, 245E, 269E, (301E), 410E, 448E, 532E, 578E, 698E, 739E, 743E, 750E, (794E), 944E, 969E, 1004E, (1395E), 1621E, (3031E), (4180E)	Oroya Links, Ltd.	...	...	14,619·84	12,675·55	56·30	...	...	886,055·66	359,190·77	28,532·96
Do.	...	392E	(Paringa Mines (1909), Ltd.)... ...	...	...	...	...	...	...	...	26,890·74	12,599·54	...
Do.	...	1208E, 3612E, 3643E	South Kalgurli Consolidated, Ltd. ...	...	...	70,297·00	32,941·67	...	...	...	813,572·00	291,541·44	15,071·52
Do.	...	1208E, 3612E ...	(South Kalgurli G.Ms., Ltd.)... ...	...	...	...	...	...	...	...	826,909·00	347,222·75	17,609·67
Do.	...	4537E	Union Jack	...	...	1,376·83	774·17	...	...	...	5,913·83	2,755·13	...
Do.	...	...	Voided leases	...	...	...	...	...	109·90	5,780·86	218,808·07	140,458·08	...
Do.	...	...	Sundry claims	...	...	371·44	101·15	...	24·58	...	2,126·51	1,321·85	...
Feysville	...	4949E, 5152E ...	Britannia G.Ms., N.L.	...	...	39·30	19·00	...	...	87·88	210·30	220·20	...
Do.	...	Block 48 ...	Hampton Gold Mining Areas, Ltd.—										
			P.P.L. 78—Triangle	...	...	...	...	...	...	...	17·10	66·95	...
			P.P.L. 53	...	...	8·18	18·43	...	...	...	8·18	18·43	...
			P.P.L. 63 and 84—Golden Hope G.Ms., N.L.	...	...	65·70	39·63	...	...	...	268·30	195·77	...
			P.P.L. 175—Jubilee Central ...	...	...	...	...	...	...	...	29·00	7·70	...
			P.P.L. 207—Lancashire Lass ...	...	...	...	...	...	...	...	18·30	29·17	...
			P.P.L. 264—Marion	...	...	...	...	...	...	...	16·29	25·52	...
			P.P.L. 98—Red Indian	...	...	·25	18·23	...	...	...	8·75	29·43	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

EAST COOLGARDIE GOLDFIELD—*continued.*

EAST COOLGARDIE DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Feysville ...	Block 48 ...	Hampton Gold Mining Areas, Ltd.—										
		P.P.L. 37—Ring Neck	...	...	...	...	...	...	15·36	4·40	58·25	...
		P.P.L. 306—Westralia	...	...	39·95	17·98	...	...	...	39·95	17·98	...
		P.P.L. 1—White Hope: Hopeful Syndicate, Ltd.	...	...	3,244·17	1,504·83	...	...	...	3,997·53	2,076·15	...
Do. ...	...	Sundry claims	...	...	·06	13·29	...	...	...	·06	13·29	...
Do. ...	Block 48 ...	(Hampton Plains Estate, Ltd.) ...	...	...	...	...	...	4,565·62	21·59	20,615·28	2,502·56	...
Do. ...	Block 50 ...	(Hampton Plains Estate (1906), Ltd.)	...	...	...	...	...	...	...	85·00	108·82	...
Do. ...	Block 45 ...	Hampton Properties, Ltd.	...	...	18·00	3·89	...	...	52·75	69·75	80·52	...
Do. ...	Block 50 ...	(Hampton Properties, Ltd.)	...	...	...	...	...	...	7·26	6,348·00	3,956·22	...
Do. ...	Block 50 ...	Hampton Properties, Ltd.	...	...	...	...	...	...	106·23	689·36	591·14	...
Do. ...	Block 50 ...	P.P.L. 138—Eva May Hampton ...	...	...	...	...	...	...	...	22·00	9·70	...
		P.P.L. 9 and 274—Hampton Celebration (W.A.), Ltd.	...	...	7,797·00	3,353·26	...	...	...	7,797·00	3,353·26	...
		P.P.L. 222—Hampton Jubilee ...	...	...	113·68	72·62	...	...	...	225·56	175·73	...
		P.P.L. 183 and 184—Melvina leases	...	...	...	...	...	...	...	170·00	44·00	...
		P.P.L. 23—Mutooroo Copper Corporation, N.L.	...	...	83·48	61·95	...	...	...	1,132·39	2,054·61	...
		P.P.L. 10—Pernatty Central Copper Mining Co., N.L.	...	...	...	...	...	...	...	125·11	42·56	...
		P.P.L. 293—Union Jack	...	...	15·62	7·46	...	...	...	41·35	11·84	...
		Voided leases	...	...	...	...	...	...	22·86	310·45	114·30	...
		Sundry claims	...	...	63·60	45·18	...	...	10·62	340·75	220·66	...
Kalgoorlie ...	5166E	Black Princess	...	...	...	...	...	...	...	86·96	23·35	...
	5247E	Black's G.M.	...	...	39·79	7·40	...	...	...	39·79	7·40	...
no. ...	(796E)	Bonnie Lass	...	...	25·37	28·04	...	...	...	25·37	28·04	...
Do. ...	(796E), (1228E)	(Bonnie Lass leases)	...	...	...	...	...	...	160·69	6,011·00	5,945·22	...
Do. ...	(796E), (1228E), (3771E)	(Bonnie Lass leases)	...	...	...	...	...	...	...	16,329·65	8,403·33	...
Do. ...	5279E	Cassidy Hill	...	...	92·00	232·02	...	...	...	144·00	270·40	...
Do. ...	5251E	Central	...	...	6,355·00	2,360·33	...	...	...	6,355·00	2,360·33	...
Do. ...	(4557E)	Corn Cob	...	...	...	...	...	...	...	87·65	41·58	...
Do. ...	4546E, 4547E, 4548E, (4551E)	Hannan's Reward, Ltd.	...	...	1,441·00	431·50	...	...	5·72	32,088·00	8,732·03	...
Do. ...	(4001E), (4035E), (4036E) ...	Hidden Secret leases	...	...	45·00	5·30	...	...	105·65	10,894·25	15,361·72	43,383·29
Do. ...	(4586E)	Hidden Secret West	...	...	...	...	...	...	...	18·00	2·90	...
Do. ...	(4477E)	Lord Nelson	...	...	24·00	9·26	...	...	123·27	3,028·54	1,530·11	...
Do. ...	(5146E)	Marion Catherine	...	...	14·00	3·90	...	...	...	14·00	3·90	...
Do. ...	4632E	North End	...	...	75·65	21·12	...	...	...	99·65	24·42	...
Do. ...	(5147E)	Reservoir	...	...	...	...	...	...	...	101·79	79·84	...

Do.	5193E	Surprise, North	...	...	...	35·37	9·68	...	...	...	124·93	29·17	...
Do.	4499E	Williamstown	...	...	...	541·08	387·83	...	...	...	4,657·70	2,446·03	...
Do.	...	Voided leases	...	...	...	...	...	...	242·48	9,089·20	874,629·90	333,795·02	633·83
Do.	...	Sundry claims	...	...	3·24	5,784·41	3,284·32	...	207·69	335·50	35,601·02	12,251·56	...
Wombola	4574E	Creedon's Welcolm	...	...	...	31·50	112·80	...	...	...	427·91	1,920·53	...
Do.	4600E	Daisy	...	...	...	31·50	109·68	...	...	...	330·55	1,750·47	...
Do.	(4555E)	Dinnie	...	...	...	105·00	89·63	...	...	...	475·70	1,324·53	...
Do.	4766E	Great Hope	...	...	...	53·98	195·37	...	...	...	412·98	3,258·84	...
Do.	4770E	Great Hope North	...	...	...	593·00	452·20	...	...	...	1,313·24	1,917·60	...
Do.	(5264E)	Great Hope South	...	...	...	9·00	27·66	...	...	...	9·00	27·66	...
Do.	5243E	Lass C'Gowrie	...	...	...	56·00	55·32	...	...	...	56·00	55·32	...
Do.	5249E	Mount Monger Proprietary East	...	...	...	19·50	25·19	...	...	...	19·50	25·19	...
Do.	(4774E)	Mount View: McCahon's Treasure G.M. Co., N.L.	...	...	...	...	...	...	...	...	7·80	9·07	...
Do.	(5263E)	Scotch Star	...	...	...	...	...	...	...	1,254·05	...	...	...
Do.	(5261E)	Spade Guinea	...	...	...	22·50	25·32	...	...	...	22·50	25·32	...
Do.	...	Voided leases	...	...	...	...	...	...	...	613·86	5,005·43	3,790·08	...
Do.	...	Sundry claims	...	...	...	53·50	78·61	...	...	4·15	796·41	870·32	...
		From District generally :—											
Do.	...	Sundry claims	...	...	...	...	...	...	10,907·93	431·95	5,208·00	1,560·12	...
		Sundry parcels treated at :											
		Adeline Works	...	...	...	...	...	...	42·64	35·12	127·90	20,900·12	...
		Associated Northern Works	...	...	...	...	...	...	...	...	...	287·41	...
		Bonnie Lass leases	...	...	...	...	...	...	...	...	55·00	1,297·73	...
		Brown Hill Consols Works	...	...	...	...	...	...	...	...	780·38	45,161·54	...
		Dunstan & Cummings Works	...	...	...	...	...	...	...	...	...	9,244·56	1,644·00
		Fremantle Trading Co., Ltd., Works	...	...	...	...	517·59	...	...	...	...	11,259·95	7,925·45
		Great Boulder Perseverance Battery	...	...	...	...	7·18	...	...	...	...	7·18	...
		Hainault Sulphide Plant	...	...	...	...	657·50	16·27	...	...	35·66	2,712·64	728·06
		Hannans Central Lakeside Works (A.W.A. Slimes Plant)	...	...	...	...	...	...	...	...	58·06	4,788·43	...
		Hannans Central Works	...	...	...	...	1,510·31	...	...	...	142·80	65,019·28	67·17
		Kalgoorlie G.Ms., Ltd.	...	...	...	...	...	...	...	...	7·44	658·04	...
		Lone Hand Works	...	...	...	269·00	1,568·18	...	...	14·43	469·00	3,079·65	...
		North Kalgurli Battery	...	...	...	...	...	...	...	...	...	810·22	...
		Oroya Links Battery	...	...	...	·88	184·28	...	...	...	·88	184·28	...
		Various Works	...	...	...	...	...	...	341·72	15·15	38,756·72	75,908·77	1,968·67
		Reported by Banks and Gold Dealers	...	...	7·61	...	...	...	11,122·18	9,013·32	...	4·57	...
		Total	...	...	**7·61**	**508·10**	**656,235·37**	**375,241·54**	**87,415·72**	**27,609·22**	**33,217·53**	**29,171,808·76**	**18,430,689·30**	**1,894,457·57**

BULONG DISTRICT.

Balagundi	...	Voided leases	...	...	...	...	...	...	...	2,408·98	1,110·68	1,473·73	12·92
Do.	...	Sundry claims	...	...	...	...	...	...	...	120·34	268·40	221·31	...
Bulong	1191W	Sweet Nell	...	...	...	11·20	57·18	...	...	...	11·20	57·18	...
Do.	...	Voided leases	...	...	...	...	...	...	107·54	8,433·70	99,606·01	82,419·97	...
Do.	...	Sundry claims	...	...	21·97	43·70	281·19	...	1,648·60	1,013·48	6,890·73	14,831·23	...
Hogan's Find	...	Voided leases	...	...	...	...	...	...	...	908·82	309·50	276·51	...
Majestic	Block 41	Hampton Gold Mining Areas, Ltd.—	...	...									
Do.	...	P.P.L. 275 —Long Looked For	...	...	...	116·60	88·20	...	...	...	121·80	94·81	...
Do.	Block 41	Hampton Properties, Ltd	...	...	...	...	...	...	...	...	41·00	22·66	...
Do.	(1178Y)	Number One	...	...	...	3·15	11·62	...	...	...	3·15	11·62	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

EAST COOLGARDIE GOLDFIELD—*continued.*

BULONG DISTRICT—continued.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated	Gold therefrom.	Silver.	Alluvial	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Majestic ...	...	Voided leases	...	...	...	...	...	...	...	1,004·55	321·68	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	43·20	77·90	30·04	...
Mt. Monger ...	...	Voided leases	...	...	...	...	...	...	1,862·57	1,128·35	979·59	...
Do. ...	...	Sundry claims	...	...	...	...	...	215·60	...	369·80	302·47	...
Randalls ...	...	Voided leases	...	...	...	...	...	...	60·04	31,820·04	10,645·98	...
Do. ...	...	Sundry claims	...	...	...	...	...	20·45	...	1,893·55	486·04	...
Sudden Jerk	...	Voided leases	...	...	...	...	...	...	63·91	14·25	53·67	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	·15	10·23	...
Taurus ...	1194Y	Ran Second	...	...	10·75	107·92	...	...	...	10·75	107·92	...
Do. ...	...	Voided leases	...	...	...	...	...	2·06	3·70	1,678·15	760·83	...
Do. ...	...	Sundry claims	...	...	...	...	...	112·69	...	276·00	411·01	...
Trans Find ...	(1174Y)	Triangle	...	...	...	...	...	...	...	4·50	31·63	...
Woodline ...	...	Voided leases	...	...	...	...	...	...	...	792·75	610·57	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	39·33	61·57	...
	From District generally :—											
Do. ...	...	Sundry claims	...	...	...	...	...	5·64	41·85	744·55	254·99	...
	Sundry parcels treated at :											
	Various Works	... ...	...	...	...	...	...	...	...	6,102·15	5,848·25	...
	Reported by Banks and Gold Dealers	... ...	63·36	...	...	...	...	24,550·70	52·39	...	...	...
		Total	**63·36**	**21·97**	**185·40**	**546·11**	...	**26,663·28**	**15,012·98**	**154,319·24**	**120,325·49**	**12·92**

Coolgardie Goldfield.

COOLGARDIE DISTRICT.

Bonnievale ...	554	Lorna	...	...	...	·92	...	...	8·36	343·75	334·37	...
Do. ...	4600	Melva Maie	...	...	190·00	674·77	...	...	...	261·00	963·43	...
Do. ...	...	Voided leases	...	...	...	...	...	...	16·64	350,509·09	187,753·75	...
Do. ...	...	Sundry claims	...	32·54	38·50	562·40	...	...	56·08	2,013·68	1,950·37	...
Bulla Bulling	...	Voided leases	...	...	...	...	...	...	...	612·38	346·15	...
Do. ...	...	Sundry claims	...	...	16·00	2·14	...	...	12·82	330·60	184·31	...

Burbanks ...	5152	Burbanks Oversight	...	...	189·50	239·04	...	...	...	189·50	239·04	...
Do. ...	(4623)	National	...	...	24·00	36·62	...	...	...	400·00	523·76	...
Do. ...	(4601)	Victor	...	...	...	6·00	...	...	11·35	55·50	67·10	...
Do. ...	...	Voided leases	...	...	...	...	...	13·36	331·61	407,078·61	300,441·69	521·06
Do. ...	...	Sundry claims	...	...	149·00	156·28	...	43·37	141·95	4,537·50	3,677·66	...
Cave Rocks ...	...	Voided leases	...	...	...	...	...	...	...	132·00	28·04	...
Coolgardie ...	5127	Bayley's Reward	...	...	83·00	20·78	...	...	...	140·50	65·52	...
Do. ...	4559	Cockshot	...	...	64·50	751·41	...	...	182·77	347·93	1,448·33	...
Do. ...	5137	Coolgardie Redemption No. 1 South	...	...	47·00	5·19	...	...	...	47·00	5·19	...
Do. ...	4555	(Dreadnought)	...	...	...	...	...	...	...	867·85	870·10	...
Do. ...	4555, 4561, (4563), (5065)	Dreadnought leases	...	...	112·67	117·19	...	...	...	838·14	957·45	...
Do. ...	5147, 5148 ...	Garden Gully leases	...	...	50·00	3·71	...	...	...	50·00	3·71	...
Do. ...	4567	Griffiths Gold Mine	...	...	·50	1·11	...	...	1·70	17,782·50	2,043·31	...
Do. ...	Block 59 ...	Hampton Gold Mining Areas, Ltd. ...	...	...	...	...	...	...	...	9·00	1·57	...
Do. ...	...	P.P.L. 119—Golden Eagle ...	...	...	48·50	67·31	...	...	...	104·84	129·50	...
Do. ...	Block 49 ...	Hampton Plains Estate, Ltd. ...	...	...	...	...	...	...	10·94	150·00	157·31	...
Do. ...	Block 53 ...	(Hampton Plains Estate, Ltd.) ...	...	...	...	...	...	...	358·42	67·00	112·49	...
Do. ...	Block 59 ...	(Hampton Plains Estate, Ltd.) ...	...	...	...	...	...	...	4·12	8,008·25	7,194·52	...
Do. ...	4556	Lady Carmen	...	...	221·61	112·06	...	...	74·83	1,054·99	504·69	...
Do. ...	...	Voided leases	...	...	...	...	...	1,299·02	4,237·04	539,885·78	316,497·14	·96
Do. ...	...	Sundry claims	19·59	49·84	720·71	214·05	...	105·73	2,049·29	36,343·95	14,334·98	...
Eundynie ...	...	Voided leases	...	...	...	...	...	...	...	29,812·50	14,966·76	1·75
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	117·00	31·11	...
Gibraltar ...	4586	Carlton	...	...	474·00	176·02	...	...	15·28	836·00	659·45	...
Do. ...	4604	Limerick	...	...	...	...	...	...	...	97·00	37·49	...
Do. ...	4580	(Lloyd George)	...	...	...	...	...	...	...	341·75	289·27	...
Do. ...	4580, 4726, 4727	Lloyd George G.M. Co., N.L. ...	...	...	7,944·00	2,897·45	...	...	...	7,944·00	2,897·45	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	970·75	609·91	...
Do. ...	...	Sundry claims	...	...	16·20	59·25	...	...	48·55	629·45	417·67	...
Gnarlbine ...	...	Voided leases	...	...	...	...	...	...	10·94	1,899·75	1,049·90	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	1·31	189·75	99·26	...
Higginsville ...	(5141)	Sugar Gum	...	...	462·00	97·08	...	...	...	462·00	97·08	...
Do. ...	...	Voided leases	...	...	...	...	...	...	287·26	32,116·00	14,841·36	134·79
Do. ...	...	Sundry claims	...	...	...	...	...	...	16·52	772·90	515·40	...
Londonderry...	(4545)	Royal Standard	...	...	36·00	37·88	...	...	...	614·69	895·29	...
Do. ...	...	Voided leases	...	...	...	...	...	...	46·25	26,488·16	17,642·30	...
Do. ...	...	Sundry claims	...	...	11·00	10·95	...	...	6·00	1,691·85	1,450·92	...
Mungari ...	...	Voided leases	...	...	...	...	...	...	17·71	735·00	331·78	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	107·82	346·51	204·90	...
Paris ...	(4673)	Saltbush	...	...	...	...	...	...	4·30	...	...	...
Red Hill ...	...	Voided leases	...	...	...	...	...	...	1,541·48	40,797·40	31,070·65	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	34·62	160·42	287·90	...
Ryan's Find	5120	Undaunted	...	...	...	...	...	...	...	7·00	9·14	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	47·16	142·55	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	·44	87·69	226·64	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

COOLGARDIE GOLDFIELD—*continued.*

COOLGARDIE DISTRICT—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
St. Ives ...	4905	Brennan's Idough	...	...	402·50	564·50	...	...	12·18	402·50	564·50	...
Do. ...	4669	Coo-ee	...	...	...	...	...	...	...	107·50	287·82	...
Do. ...	4732	Ives Lake View Reward Junction	...	...	205·50	97·88	...	...	...	215·50	150·01	...
Do. ...	5164	Just in Time	12·48	...	...	...	...	12·48	...	...	...	...
Do. ...	(5116)	Lady Doris	...	...	91·50	188·92	...	...	...	91·50	188·92	...
Do. ...	4720, 4721, 4722	Lake View Reward leases ...	...	...	704·25	423·88	...	...	...	704·25	423·88	...
Do. ...	5159	New Victory lease	...	...	82·75	42·21	...	...	...	82·75	42·21	...
Do. ...	(4714)	Triumph	...	...	...	...	...	...	...	25·00	4·46	...
Do. ...	(4629)	Venture	...	...	87·50	30·86	...	...	...	87·50	30·86	...
Do. ...	(5121)	Victorian	...	...	33·00	18·89	...	...	...	33·00	18·89	...
Do. ...	(4617)	Victory	...	...	237·00	168·63	...	...	...	237·00	168·63	...
Do. ...	4638	Victory North-West	...	...	161·50	91·90	...	...	...	234·00	159·37	...
Do. ...	...	Voided leases	...	...	...	...	...	...	2·75	17·50	9·99	...
Do. ...	...	Sundry claims	...	...	358·00	126·97	...	...	...	394·17	138·90	...
Widgiemooltha	(5180)	Ada V.	...	...	...	...	...	...	20·59	...	...	...
Do. ...	4028	Flinders	...	...	43·00	73·70	...	...	66·67	575·60	2,760·02	...
Do. ...	5000	Great Reward	...	...	79·00	142·11	...	...	...	223·50	288·40	...
Do. ...	(5082)	Guest	...	...	...	...	...	...	...	22·00	90·51	...
Do. ...	5153	Home Signal	...	...	56·50	115·14	...	...	...	56·50	115·14	...
Do. ...	(4923)	Host	...	...	...	...	...	...	...	41·60	25·58	...
Do. ...	...	Voided leases	...	...	...	...	...	9·42	774·62	8,751·73	3,684·65	·17
Do. ...	...	Sundry claims	...	36·53	406·40	370·75	...	9·21	101·06	3,880·44	2,118·45	...
		From District generally :—										
		Sundry parcels treated at :										
		Burbanks Main Lode Works	...	...	...	...	...	2·77	...	557·50	1,261·60	114·17
		Fremantle Trading Co., Ltd., Works	...	...	...	...	...	...	...	...	20·08	...
		Highgate Battery	...	...	...	...	...	...	...	100·00	334·15	...
		Imperial Battery	...	...	...	...	...	...	...	17·00	6·29	...
		Lady Robinson Cyanide Works	...	...	...	...	...	...	...	70·00	348·28	...
		State Battery—Coolgardie	...	...	...	698·88	9·65	...	...	687·50	11,314·80	9·65
		Various Works	...	...	...	...	...	4·98	...	3,083·61	15,618·12	108·89
		Reported by Banks and Gold Dealers	106·87	...	...	...	...	7,587·32	543·04	...	...	...
		Total	**138·94**	**118·91**	**13,847·09**	**9,404·83**	**9·65**	**9,087·66**	**11,157·31**	**1,540,025·22**	**969,784·17**	**891·44**

Balgarrie ...	(893s)	New Matrix	...	...	18·00	20·22	...	...	...	18·00	20·22	...	
Do. ...	...	Voided leases	...	...	...	...	...	10·94	75·48	5,124·25	4,805·74	1·33	
Do. ...	...	Sundry claims	...	...	15·00	12·57	...	...	18·57	1,065·25	395·61	...	
Carbine ...	33s	(Carbine)	...	...	...	...	...	...	10·85	2,401·00	1,164·53	...	
Do. ...	33s, 710s, 711s, 807s, 863s, (890s)	Carbine leases	...	...	1,020·00	4,930·55	...	...	677·13	40,172·86	32,896·21	...	
Do. ...	...	Voided leases	...	...	...	...	...	...	...	3,347·00	3,233·60	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	73·00	55·69	...	
Carnage ...	...	Voided leases	...	...	...	...	...	176·04	659·31	2,402·00	2,170·67	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	61·00	27·50	...	
Cashman's (Siberia)	716s, [1289w] ...	Lady Evelyn	...	...	...	...	...	...	...	241·75	479·81	...	
Do. ...	...	Voided leases	...	...	...	...	...	67·51	793·44	7,187·90	6,395·33	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	6·16	116·00	67·61	...	
Chadwin ...	...	Voided leases	...	...	...	...	...	...	...	1,111·75	2,062·12	...	
Do. ...	...	Sundry claims	...	...	...	...	...	...	8·87	507·00	449·22	...	
Dunnsville ...	...	Voided leases	...	...	...	...	...	...	181·12	17,407·10	7,982·23	...	
Do. ...	...	Sundry claims	...	...	...	...	...	·43	121·27	297·19	301·14	...	
Jourdie Hills	...	Voided leases	...	...	...	...	...	...	18·00	28,009·74	19,401·09	28·45	
Do. ...	...	Sundry claims	...	...	...	...	...	...	27·85	760·50	422·33	...	
Kandana ...	...	Voided leases	...	...	...	...	...	...	...	465·00	68·12	...	
Kintore ...	...	Voided leases	...	...	...	...	...	6·66	143·66	44,174·14	31,882·70	...	
Do. ...	...	Sundry claims	...	...	...	...	...	100·30	·78	1,230·70	1,159·32	...	
Siberia ...	...	Voided leases	...	...	...	...	...	1·07	1,557·81	8,216·85	10,530·14	...	
Do. ...	...	Sundry claims	...	...	...	...	...	30·91	...	223·00	349·86	...	
25-Mile ...	696s	(Blue Bell)	...	...	...	...	...	...	8·05	697·00	429·47	...	
Do. ...	(727s)	(Blue Bell Extended)	...	...	...	...	...	...	...	113·00	71·32	...	
Do. ...	696s, (727s) ...	Blue Bell leases	...	...	...	3·88	...	...	...	1,693·00	1,647·99	...	
Do. ...	892s	Brittania	...	158·52	11·00	143·53	...	...	158·52	11·00	143·53	...	
Do. ...	845s	Sadie	...	...	64·00	50·51	...	...	...	2,005·00	1,837·89	...	
Do. ...	(871s)	Shamrock	...	...	...	29·44	...	...	2·96	489·00	359·52	...	
Do. ...	645s	Star of Fremantle	...	...	...	224·89	...	32·67	...	5,301·00	3,771·00	...	
Do. ...	603s	Sydney Mint	...	...	100·50	92·06	...	...	229·72	1,695·75	3,462·59	...	
Do. ...	847s	Turn of the Tide	...	...	154·50	267·49	...	...	2·72	4,058·48	4,596·87	...	
Do. ...	...	Voided leases	...	...	...	...	...	...	453·30	87,359·49	66,468·64	18·84	
Do ...	...	Sundry claims	...	19·43	240·50	343·23	...	13·22	135·11	6,889·95	4,025·17	...	
	From District generally :—												
	Sundry parcels treated at :												
	Blue Bell Battery		...	...	...	211·54	...	3·77	...	72·00	1,900·16	...	
	Stanley Works		...	...	...	...	...	14·86	...	402·60	384·93	...	
	Various Works		...	...	...	...	...	9·22	...	1,276·66	2,006·02	...	
	Reported by Banks and Gold Dealers		...	...	...	...	...	264·19	1·10	...	...	...	
	Total		...	**177·95**	**1,623·50**	**6,329·91**	...	**731·79**	**5,291·78**	**276,676·91**	**217,425·89**	**48·67**	

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

Yilgarn Goldfield.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Blackbourne...	...	Voided leases	...	...	...	...	...	...	...	1,282·50	341·37	...
Bullfinch ...	3251	Beechwood	...	...	30·00	5·24	...	...	...	30·00	5·24	...
Do. ...	914, 915, 916, 926, 928, 942, 960	(Bullfinch leases)	...	...	...	...	...	...	...	1,027·52	10,958·88	...
Do. ...	914, 915, 916, 926, 928, 930, 942, 960	(Bullfinch Proprietary (W.A.), Ltd. ...	...	...	...	...	...	...	...	477,968·42	166,223·11	27,833·41
Do. ...	914, 915, 916, 926, 928, 930, 942, 960	Bullfinch Proprietary (1919), Ltd. ...	...	...	20·30	31·05	...	...	...	20·30	31·05	...
Do. ...	3256	Millenium	...	...	103·00	78·03	...	...	...	103·00	78·03	...
Do. ...	3237	Who Can Tell, North	...	...	87·50	175·98	...	...	...	87·50	175·98	...
Do. ...	...	Voided leases	...	...	...	...	...	...	3·57	360·65	364·67	...
Do. ...	...	Sundry claims	...	...	88·40	33·27	...	...	...	143·55	104·56	...
Corinthian ...	(896), (934), (946)	Corinthian North G.Ms., Ltd. ...	...	...	...	...	...	...	...	131,222·00	27,795·29	...
Do. ...	...	Voided leases	...	...	...	...	...	...	...	3,286·00	1,529·54	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	104·50	77·35	...
Ennuin ...	...	Voided leases	...	...	...	...	...	...	...	134·56	361·34	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	117·00	72·12	...
Forrestonia ...	(3223)	Black Prince	...	...	124·00	68·74	...	...	...	124·00	68·74	...
Do. ...	2909	Great Southern	...	...	277·00	30·99	...	...	...	782·00	182·82	...
Do. ...	(3180)	Great Southern West G.M. Co., Ltd.	...	...	50·00	5·24	...	...	...	146·00	15·25	...
Do. ...	...	Sundry claims	...	...	262·00	86·85	...	...	...	262·00	86·85	...
Golden Valley	(2272)	Glide Away	...	...	20·00	4·24	...	...	...	2,004·00	2,230·15	...
Do. ...	(2948)	Greenharp New	...	...	...	...	...	...	...	736·50	839·01	...
Do. ...	2994	Radio	...	...	105·70	415·53	...	...	...	1,646·50	4,983·95	...
Do. ...	...	Voided leases	...	...	...	...	...	...	18·05	5,194·74	5,219·91	2·00
Do. ...	...	Sundry claims	...	...	152·50	206·21	...	...	2·75	2,113·22	1,851·80	...
Greenmount	(3179)	Jean Nichol	...	...	...	...	...	...	...	186·00	213·60	...
Do. ...	550	(Sunbeam)	...	...	...	...	...	14·00	...	4,472·00	1,427·25	...
Do. ...	550	Sunbeam	...	...	...	72·99	...	...	...	200·00	173·13	...
Do. ...	550, (565) ...	(Sunbeam leases)	...	...	...	...	...	...	...	3,191·00	816·42	...
Do. ...	(536)	(Transvaal)	...	...	...	...	...	...	...	30,233·00	7,340·62	579·78
Do. ...	(536)	Transvaal	...	...	...	...	...	...	...	3,088·00	830·09	...
Do. ...	(536), (1358) ...	(Transvaal leases)	...	...	...	...	...	...	...	11,924·00	2,891·60	...
Do. ...	(3201)	Triumph	...	...	13·00	8·68	...	...	...	82·50	79·49	...
Do. ...	...	Voided leases	...	...	...	...	...	31·99	21·62	70,374·00	17,488·46	364·72
Do. ...	...	Sundry claims	...	...	·50	1·44	...	...	4·12	845·00	314·01	...
Hope's Hill ...	2544	Colleen Bawn	...	...	19·00	80·10	...	...	15·26	379·20	1,650·86	..

Do. ...	...	Voided leases	...	...	...	...	...	...	56·97	129,884·85	33,899·78	1·00
Do. ...	...	Sundry claims	...	...	...	...	...	...	25·38	1,622·50	506·06	...
Kennyville ...	911, 3170, 3171...	Edna May Battler G.M. Co., N.L. ...	...	...	...	...	...	...	...	5,850·00	1,296·33	...
Do. ...	(570)	(Great Leviathan)	...	...	...	...	...	...	...	3,821·85	2,948·67	...
Do. ...	(570)	Great Leviathan	...	...	52·78	36·94	...	...	...	5,845·78	3,701·61	·50
Do. ...	(570)	(Great Leviathan: Northern Blocks Syndicate, Ltd.)	...	...	...	...	...	...	...	10,705·00	2,974·64	...
Do. ...	911	(Trafalgar)	...	...	...	...	...	...	...	1,984·00	1,499·02	...
Do. ...	3164	Wallace: New Trafalgar Gold Mining Co., N.L.	...	...	78·00	45·27	...	...	...	153·00	58·92	...
Do. ...	...	Voided leases	...	...	...	...	...	...	18·76	3,487·50	2,405·25	·09
Do. ...	...	Sundry claims	...	2·19	179·00	73·81	...	...	5·06	896·50	395·56	...
Koolyanobbing	...	Voided leases	...	...	...	...	...	...	...	308·00	116·74	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	55·00	11·24	...
Marvel Loch ...	3069	(Banker)	...	...	...	...	...	...	...	1,043·00	926·75	...
Do. ...	923	Bohemian	...	...	196·00	244·65	...	...	19·66	4,453·00	4,305·15	...
Do. ...	3217, 3222, 3069, 3151, 3152	Firelight leases	...	...	365·00	87·21	...	...	...	1,055·00	292·01	...
Do. ...	3157, 3213 ...	Golden Butterfly G.M. Co., N.L. ...	...	...	70·00	478·68	...	...	...	4,495·00	2,523·50	...
Do. ...	719	(Great Victoria)	...	...	...	...	...	...	...	1,356·00	281·53	...
Do. ...	719, 944 945, 1227, 1228, 1606	Great Victoria leases	...	...	3,880·00	329·29	...	...	...	132,664·26	17,869·89	...
Do. ...	852	May Queen	...	...	21·00	70·35	...	...	4·07	846·50	4,198·11	...
Do. ...	(3186)	Never Never	...	...	403·00	48·66	...	...	...	2,246·00	373·09	...
Do. ...	3255	New Jacoletti (No-Liability) ...	...	...	198·00	85·66	...	...	...	198·00	85·66	...
Do. ...	3247	Pro Patria	...	...	30·00	12·32	...	...	...	30·00	12·32	...
Do. ...	(3225)	Research	...	...	65·00	32·28	...	...	...	200·00	69·86	...
Do. ...	(3143)	Scotch Lassie Amalgamated ...	...	...	...	...	...	...	...	125·00	25·01	...
Do. ...	2998	St. George	...	...	138·00	48·66	...	...	...	2,638·00	961·48	...
Do. ...	(3011)	Victory	...	...	48·00	29·34	...	...	...	1,088·00	667·88	...
Do. ...	...	Voided leases	...	...	...	...	...	...	80·78	236,895·00	83,431·71	771·03
Do. ...	...	Sundry claims	...	...	238·00	122·30	...	7·72	77·53	9,949·49	5,125·24	...
Mt. Jackson...	...	Voided leases	...	...	...	...	...	...	114·88	37,186·03	27,676·47	2,305·28
Do. ...	...	Sundry claims	...	...	...	...	...	4·42	25·43	1,481·75	1,062·53	...
Mt. Rankin ...	...	Voided leases	...	...	...	...	...	3·84	5·20	496·00	122·17	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	170·00	54·38	...
Parker's Range	2801	Scots Greys	...	...	55·00	15·78	...	...	...	956·00	360·82	...
Do. ...	724	(Spring Hill)	...	...	...	...	...	...	...	3,232·00	607·21	...
Do. ...	724 (760) ...	(Spring Hll leases)	...	...	...	...	...	...	...	8,910·00	2,215·59	...
Do. ...	724, 2633, (2793)	Spring Hill G.M. Co., N.L.	...	...	587·00	348·82	...	...	...	1,875·00	564·69	...
Do. ...	2951	White Horseshoe	...	...	481·00	453·74	...	...	...	2,251·50	2,086·98	...
Do. ...	...	Voided leases	...	...	...	...	...	...	105·14	13,686·25	10,013·04	...
Do. ...	...	Sundry claims	...	...	142·00	62·19	...	...	...	2,050·75	1,367·70	...
Southern Cross	3228, 3232 ...	Fraser's Central, 1921 leases ...	...	...	575·00	175·69	...	...	...	575·00	175·69	...
Do. ...	...	Voided leases	...	...	...	...	...	2·13	211·22	433,160·20	211,594·62	364·41
Do. ...	...	Sundry claims	...	...	180·00	32·63	...	5·50	595·45	4,015·10	1,194·62	...
Weston's ...	(2180)	(Edna May)	...	...	...	...	...	...	...	581·00	919·27	...
Do. ...	2291, 2585, 2615	Edna May Central G.Ms., N.L. ...	...	...	91·00	1,238·59	...	...	...	138,442·00	63,897·34	19·38
Do. ...	(2570), (2617), (2644)	Edna May Consolidated G.M. Co., N.L.	...	...	9·00	634·15	...	...	...	22,568·00	10,082·66	2·20
Do. ...	(2168), (2180), (2238), (2777)	Edna May Deep Levels G.M. Co., N.L.	...	...	4,084·00	5,250·79	...	...	...	46,832·00	37,639·67	...

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

YILGARN GOLDFIELD—*continued.*

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Weston's ...	3257	Edna May Deep Levels G.M. Co., N.L.	...	...	60·00	206·10	...	...	...	60·00	206·10	...
Do. ...	(2180), (2605) ...	(Edna May G.M. Co., N.L.)	...	...	...	...	...	...	...	191,993·00	171,472·76	...
Do. ...	3260	Les Trois	...	...	33·00	24·63	...	...	...	33·00	24·63	...
Do. ...	(3097)	Le Trois	...	...	...	...	...	...	...	177·00	169·42	...
Do. ...	2291	(Myrtle Central)	...	...	...	...	...	...	...	751·00	243·96	...
Do. ...	(2168), (2238) ...	(Myrtle Consols leases)	...	...	...	...	...	...	...	4,009·00	3,696·32	·20
Do. ...	(2570)	(Myrtle East)	...	...	...	...	...	...	...	202·00	116·12	...
Do. ...	3226	Royal Flush	...	...	66·00	64·52	...	...	...	215·00	154·51	...
Do. ...	...	Voided leases	...	...	...	...	...	...	4·06	15,269·02	9,262·47	...
Do. ...	...	Sundry claims	...	...	192·00	145·96	...	...	52·91	1,230·75	1,191·91	...
		From Goldfield generally :—										
		Sundry parcels treated at :										
		Glide Away Battery	...	...	...	58·85	...	...	...	...	169·84	...
		Great Victoria Cyanide Works	...	...	...	...	...	...	...	...	5,847·54	...
		Howlett's Battery	...	...	...	302·67	...	...	...	...	660·31	...
		Never Never Works	...	...	...	102·83	...	...	...	...	1,615·47	...
		Spring Hill Works	...	...	...	81·17	...	...	...	...	854·27	...
		Sunbeam Battery	...	...	...	542·65	...	...	...	8·00	6,896·67	...
		Violet Works	...	...	...	...	...	...	...	...	998·34	...
		Various Works	...	...	...	...	...	...	...	118·28	26,087·03	36·54
		Reported by Banks and Gold Dealers	...	...	...	...	...	22·05	3·53	...	...	...
		Total	...	**2·19**	**13,869·68**	**12,791·76**	...	**91·65**	**1,471·40**	**2,250,302·02**	**1,029,088·72**	**32,280·54**

Dundas Goldfield.

Buldania ...	...	Voided leases	...	...	...	...	...	...	3·02	846·05	708·99	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	36·53	341·27	519·77	...
Dundas ...	...	Voided leases	...	...	...	...	...	...	...	4,543·23	2,203·48	...
Do. ...	...	Sundry claims	...	...	...	...	...	...	385·37	182·50	143·88	...
Killaloe ...	...	Voided leases	...	...	...	...	...	...	...	20·65	6·88	...
Norseman ...	(1294)	Esperanto	...	...	...	...	...	...	...	10·00	3·00	...
Do. ...	903, 1138, 1253...	Great Boulder Proprietary G.Ms., Ltd.	...	...	2,218·89	4,150·52	...	...	...	2,367·52	4,419·34	...
Do. ...	1306	Gloaming	...	90·62	...	...	...	...	90·62	...	...	...
Do. ...	1295	Hardy Junction Extended ...	...	...	109·50	125·77	...	...	...	109·50	125·77	...
Do. ...	1209	Hoffman's Gold Mines	...	...	203·65	109·39	...	...	...	1,408·40	861·05	...
Do. ...	1288	Mararoa, No. 3	...	...	92·25	224·05	...	...	...	92·25	224·05	...
Do. ...	1290	Mararoa, No. 2	...	...	186·50	189·75	...	...	...	186·50	189·75	...

Do.	1291	Mararoa, No. 1								219·25	260·98	
Do.	1261	Mararoa South Extended								377·00	70·32	
Do.	(1259)	Myrtle Extended								223·40	426·45	
Do.	1289	New Valkyrie								34·25	18·25	
Do.	903	(O.K.)							21·23	1,147·25	1,293·01	
Do.	903, 1138, 1253	(O.K. leases)								2,364·00	3,455·06	
Do.	1297	O.K., North			18·50	14·21				18·50	14·21	
Do.	(1292)	Recoup Extended		10·94	8·00	9·39			10·94	8·00	9·39	
Do.	1281	Red White and Blue Extended, No. 2			1,450·75	585·59				2,401·75	939·54	
Do.	1092	(Sun)							142·26	655·50	737·49	
Do.	1092	Sun			108·00	141·42				1,722·00	1,697·38	
Do.	1092, (1125)	(Sun leases)								337·00	692·34	
Do.	1287	Supreme			70·25	84·07				122·25	130·62	
Do.	1286	Thelma Joyce								8·00	220·52	
Do.	990	(Viking No. 1)								1,274·00	3,095·95	
Do.	990, (1060)	(Viking No. 1 leases)								775·50	1,176·13	16·89
Do.	990, (1016), (1060), (1117), (1181), (1194), (1235)	Viking No. 1 leases			580·25	613·57				48,452·00	44,457·70	242·83
Do.	1180	Viking South			10·75	22·04				662·50	928·53	
Do.		Voided leases						4·23	10,147·29	801,881·48	502,772·91	34,600·73
Do.		Sundry claims		156·48	487·75	372·80		996·60	2,941·90	20,402·46	11,611·15	·59
Peninsula		Voided leases							17·61	7,807·14	4,833·88	
	From Goldfield generally :—											
	Sundry parcels treated at :											
	Rawlings, Bullen, and Rumble's Works					207·92				57·39	4,171·19	
	State Battery, Norseman				17·50	935·46				401·25	12,527·38	885·41
	Various Works								54·52	425·75	6,562·86	646·45
	Reported by Banks and Gold Dealers							1,026·29			1·04	
	Total			**258·04**	**5,562·54**	**7,785·95**		**2,027·12**	**13,851·29**	**901,885·49**	**611,515·24**	**36,392·90**

Phillips River Goldfield.

Kundip	147, 179	Fair Play leases			201·00	60·91				4,860·72	8,678·54	12·63
Do.	184	Gem			488·67	269·27				4,027·89	3,176·37	
Do.	151	(Gem Consolidated)								777·50	616·30	
Do.	151, 156	Gem Consolidated leases								6,315·76	5,690·35	8·00
Do.	M.L. 52, M.L. 94	Harbour View Gold and Copper Co., Ltd.			12·00	11·53				1,582·89	1,826·52	360·11
Do.	M.L. 52, M.L. 94	(Harbour View leases)							379·86	3,619·25	1,560·86	61·41
Do.	M.L. 52, M.L. 94	(Harbour View leases)								3,403·50	2,227·62	1·88
Do.	98	Hillsborough			245·90	256·03				3,183·52	5,754·26	118·03
Do.	M.L. 370	North Harbour View				·41				35·27	22·16	
Do.	M.L. 52, M.L. 94	(Ravensthorpe G.M. Syndicate, N.L.)								1,124·00	433·94	164·98
Do.	(74)	Two Boys							3·90	11,282·71	8,365·44	
Do.		Voided leases						113·28	172·41	26,421·32	17,083·31	3,070·20
Do.		Sundry claims			86·09	39·13		79·05	71·58	956·88	595·44	15·45
Mt. Desmond	M.L. 203	(British Flag)									7·76	
Do.	M.L. 203	(British Flag : Phillips River Gold and Copper Co., Ltd.)									4·08	

TABLE IV.—*Production of Gold and Silver from all sources, etc.*—continued.

PHILLIPS RIVER GOLDFIELD—continued.

Mining Centre.	Number of Lease.	Registered Name of Company or Lease.	Total for 1922.					Total Production.				
			Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.	Alluvial.	Dollied and Specimens.	Ore treated.	Gold therefrom.	Silver.
			Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.	Fine ozs.	Fine ozs.	Tons (2,240lbs.)	Fine ozs.	Fine ozs.
Mt. Desmond	M.L. 208	(Desmond)	...	...	...	...	...	...	...	...	·77	...
Do.	M.L. 208	Desmond	...	...	...	...	...	...	...	...	155·38	...
Do.	M.L. 208	(Desmond: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	219·59	14·55
Do.	M.L. 95	Elverdton	...	...	...	...	...	...	...	...	519·69	...
Do.	M.L. 95	(Elverdton: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	2,569·38	6,537·35
Do.	M.L. 95	(Elverdton: Phillips River Option Syndicate, N.L.)	...	...	...	...	...	...	...	...	9·63	...
Do.	M.L. 168	(Elverdton South: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	·94	...
Do.	M.L. 109	(Mt. Desmond)	...	...	...	...	...	...	1·40	...	36·97	...
Do.	M.L. 109	Mt. Desmond: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	228·19	180·06
Do.	M.L. 199	(P.L.P.)	...	...	...	...	...	...	...	...	13·69	7·41
Do.	M.L. 199	(P.L.P.): Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	3·14	...
Do.	...	Voided leases	...	...	...	...	...	...	...	9·00	136·25	152·22
Do.	...	Sundry claims	...	...	...	...	...	...	...	...	32·81	51·01
Mt. Purchas	...	Voided leases	...	...	...	...	...	...	4·38	346·05	293·13	...
Do.	...	Sundry claims	...	...	...	...	...	...	...	4·75	4·68	...
Ravensthorpe	(M.L 378)	Bickerton	...	...	...	...	...	...	...	...	·40	...
Do.	M.L. 16	(Marion Martin)	...	...	...	...	...	...	...	...	20·09	...
Do.	M.L. 16	Marion Martin	...	...	...	...	...	...	...	...	240·70	...
Do.	M.L. 16	(Marion Martin: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	275·33	205·97
Do.	M.L. 15	(Mt. Cattlin)	...	...	...	...	...	...	·49	200·00	85·50	...
Do.	M.L. 15	Mt. Cattlin	...	...	...	...	...	...	...	...	789·34	...
Do.	M.L. 15	(Mt. Cattlin: Mt. Cattlin Copper Mining Co., Ltd.)	...	...	...	...	...	...	...	...	1,496·92	52·92
Do.	M.L. 15	(Mt. Cattlin: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	387·33	...
Do.	M.L. 15	(Mt. Cattlin: Phillips River Gold and Copper Co., Ltd.)	...	...	...	...	...	...	...	...	3,077·08	3,814·45
Do.	(M.L. 342)	Surprise	...	...	...	...	...	...	...	...	32·55	...
Do.	...	Voided leases	...	...	...	...	...	...	141·31	21,716·76	18,732·70	310·73
Do.	...	Sundry claims	...	...	92·00	51·47	...	157·82	6·60	2,127·18	1,315·80	20·65
West River	...	Voided leases	...	...	...	...	...	...	...	...	10·34	31·06
Do.	...	Sundry claims	...	...	...	...	...	...	...	...	3·29	3·44

		From Goldfield generally :—												
		Sundry parcels treated at :												
		Gem Battery	...	...	...	...	...	...	...	...	...	138·89	...
		Phillips River Smelter	...	...	...	...	...	...	...	...	...	385·96	493·66
		Two Boys Works	...	...	...	...	...	...	...	...	...	100·95	...
		Various Works	...	...	...	...	...	...	...	...	...	4·76	...
		Reported by Banks and Gold Dealers	...	...	...	...	...	122·05	...	...	...	...	...
		Total	...	...	1,125·66	688·75	...	472·20	781·93	91,994·95	87,365·12	15,688·17		

Donnybrook Goldfield.

Donnybrook...	...	Voided leases	...	...	...	...	...	23·24	...	1,613·30	816·23	...		
Do. ...	...	Sundry claims	...	...	...	...	...	...	...	40·00	2·29	....		
		Total	...	...	...	...	...	23·24	...	1,653·30	818·52	...		

State generally.

Narra Tarra...	Loc. 833 ...	Narra Tarra : Fremantle Trading Co., Ltd.	...	...	...	59·92	7,929·36	...	...	...	59·92	7,929·36		
Coombana Ck.	...	Voided leases	...	...	...	...	...	...	53·66	...	...	...		
		From State generally :—												
		Sundry parcels treated at :												
		Fremantle Trading Co., Ltd., Works	...	...	...	...	...	...	...	...	3,019·56	9,435·22		
		Hainault Sulphide Plant, Kalgoorlie	...	...	...	...	...	...	...	...	21·28	...		
		State Smelters. Ravensthorpe	...	...	...	...	...	...	...	...	41·20	...		
		Various Works	...	...	...	...	...	...	...	27·00	4,411·14	481·77		
		Sundry specimens	...	53·69	...	...	...	...	56·56	...	...	...		
		Reported by Banks and Gold Dealers	...	30·84	...	...	...	124·89	183·87	...	...	...		
		Total	...	**84·53**	...	**59·92**	**7,929·36**	**124·89**	**294·09**	**27·00**	**7,553·10**	**17,846·35**		

TOTAL OUTPUT OF GOLD BULLION ENTERED FOR EXPORT, AND RECEIVED AT THE PERTH BRANCH OF THE QUANTITY OBTAINED EACH YEAR FROM THE RESPECTIVE

Year.	KIMBERLEY.			PILBARA.			*a* WEST PILBARA.			ASHBURTON.		
	Export.	Mint.	Total.	Export.	Mint.	Total.	Export.	Mint.	Total.	Export.	Mint.	Total.
	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.
1886	270·17	...	270·17	...	...	...	...	...	...	...	...	...
1887	4,359·37	...	4,359·37	...	...	...	...	...	...	...	...	...
1888	3,124·82	...	3,124·82	...	...	...	...	...	...	...	...	...
1889	2,204·28	...	2,204·28	9,992·63	...	9,992·63	...	...	...	...	...	...
1890	4,002·42	...	4,002·42	14,363·01	...	14,363·01	...	...	...	...	...	...
1891	2,415·07	...	2,415·07	10,623·32	...	10,623·32	...	...	...	750·31	...	750·31
1892	974·08	...	974·08	11,533·84	...	11,533·84	...	...	...	·63	...	·63
1893	1,450·77	...	1,450·77	10,465·43	...	10,465·43	...	...	...	418·43	...	418·43
1894	526·59	...	526·59	14,541·20	...	14,541·20	...	...	...	255·20	...	255·20
1895	784·27	...	784·27	17,464·65	...	17,464·65	...	...	...	483·76	...	483·76
1896	797·85	...	797·85	10,565·27	...	10,565·27	...	...	...	598·64	...	598·64
1897	495·67	...	495·67	10,695·67	...	10,695·67	...	...	...	928·75	...	928·75
1898	257·54	...	257·54	10,433·27	...	10,433·27	1,814·48	...	1,814·48	402·46	...	402·46
1899	728·52	275·94	1,004·46	17,888·69	473·96	18,362·65	1,749·39	...	1,749·39	214·26	252·10	466·36
1900	29·16	576·14	605·30	8,629·83	6,703·99	15,333·82	522·76	122·85	645·61	44·82	424·27	469·09
1901	...	601·26	601·26	36·68	10,223·75	10,260·43	78·38	357·46	435·84	7·70	50·24	57·94
1902	1·48	378·02	379·50	...	9,199·50	9,199·50	...	2,822·20	2,822·20	...	...	...
1903	...	433·71	433·71	2·26	12,049·52	12,051·78	...	5,493·23	5,493·23	...	114·67	114·67
1904	...	31·51	31·51	...	6,931·27	6,931·27	...	4,320·82	4,320·82	...	125·96	125·96
1905	...	545·95	545·95	48·33	13,353·49	13,401·82	...	1,164·92	1,164·92	...	42·05	42·05
1906	...	647·77	647·77	...	4,956·14	4,956·14	...	755·35	755·35	...	138·84	138·84
1907	...	362·06	362·06	...	4,130·48	4,130·48	...	332·30	332·30	...	41·85	41·85
1908	...	338·00	338·00	...	8,172·26	8,172·26	...	1,076·68	1,076·68	...	45·87	45·87
1909	...	168·95	168·95	...	5,529·19	5,529·19	...	1,396·22	1,396·22	...	228·16	228·16
1910	...	487·25	487·25	...	5,894·32	5,894·32	63·66	1,387·66	1,451·32	...	173·06	173·06
1911	...	148·53	148·53	...	4,874·00	4,874·00	58·00	819·35	877·35	...	270·68	270·68
1912	...	294·55	294·55	...	6,274·04	6,274·04	...	747·34	747·34	...	38·73	38·73
1913	...	266·41	266·41	...	4,207·37	4,207·37	...	1,237·85	1,237·85	...	39·26	39·26
1914	...	196·46	196·46	...	5,544·64	5,544·64	...	1,262·73	1,262·73	...	46·14	46·14
1915	...	220·94	220·94	...	7,411·06	7,411·06	·64	1,239·94	1,240·58	...	16·63	16·63
1916	...	249·58	249·58	...	6,700·93	6,700·93	...	560·79	560·79	...	31·16	31·16
1917	...	108·90	108·90	...	4,673·40	4,673·40	63·80	559·95	623·75	...	21·21	21·21
1918	...	116·34	116·34	2·35	2,951·81	2,954·16	...	267·48	267·48	...	6·29	6·29
1919	...	239·74	239·74	...	3,849·66	3,849·66	...	23·90	23·90	...	3·30	3·30
1920	...	131·53	131·53	9·42	5,295·85	5,305·27	...	114·20	114·20	...	2·96	2·96
1921	...	49·35	49·35	...	1,404·86	1,404·86	...	160·51	160·51	...	22·31	22·31
1922	...	5·01	5·01	...	3,732·13	3,732·13	...	95·88	95·88	...	13·57	13·57
Total	22,422·06	6,873·90	29,295·96	147,295·85	144,537·62	291,833·47	4,351·11	26,319·61	30,670·72	4,104·96	2,149·31	6,254·27

Year.	*b* YALGOO.			*c* MT. MARGARET.			*e* NORTH COOLGARDIE.			*f* BROAD ARROW.		
1886	...	...	...	...	...	...	...	...	...	...	...	...
1887	...	...	...	...	...	...	...	...	...	...	...	...
1888	...	...	...	...	...	...	...	...	...	...	...	...
1889	...	...	...	...	...	...	...	...	...	...	...	...
1890	...	...	...	...	...	...	...	...	...	...	...	...
1891	...	...	...	...	...	...	...	...	...	...	...	...
1892	...	...	...	...	...	...	...	...	...	...	...	...
1893	...	...	...	...	...	...	...	...	...	...	...	...
1894	...	...	...	...	...	...	...	...	...	...	...	...
1895	...	...	...	...	...	...	...	...	...	...	...	...
1896	...	...	...	...	...	...	15,351·71	...	15,351·71	...	...	...
1897	1,819·81	...	1,819·81	7,770·22	...	7,770·22	66,697·57	...	66,697·57	3,720·87	...	3,720·87
1898	3,360·44	...	3,360·44	38,706·19	...	38,706·19	63,181·09	...	63,181·09	22,035·17	...	22,035·17
1899	5,089·83	4,643·00	9,732·83	58,064·19	15,128·98	73,193·17	54,489·26	40,059·43	94,548·69	32,224·04	7,607·18	39,831·22
1900	462·55	7,918·53	8,381·08	65,998·38	60,607·45	126,605·83	15,660·11	79,340·01	95,000·12	29,955·07	12,860·80	42,815·87
1901	6·80	8,330·42	8,337·22	65,352·46	114,840·17	180,192·63	6,620·82	122,806·58	129,427·40	9,313·50	17,066·09	26,379·59
1902	483·32	4,396·91	4,880·23	61,846·01	124,306·49	186,152·50	4,064·18	156,856·06	160,920·24	2,128·49	13,665·52	15,794·01
1903	47·08	1,430·59	1,477·67	65,416·09	125,437·19	190,853·28	1,348·74	167,153·90	168,502·64	5,201·12	18,245·41	23,446·53
1904	...	2,796·23	2,796·23	63,180·89	119,889·93	183,070·82	1,614·64	139,518·37	141,133·01	318·83	20,660·78	20,979·61
1905	76·75	4,549·25	4,626·00	34,949·75	153,203·05	188,152·80	1,193·71	145,615·47	146,809·18	603·66	15,300·58	15,904·24
1906	...	4,883·17	4,883·17	21,869·88	137,022·23	158,892·11	1,140·45	107,890·76	109,031·21	1,245·75	16,841·70	18,087·45
1907	...	3,199·60	3,199·60	23,989·43	154,059·92	178,049·35	13,240·87	72,701·05	85,941·92	4,292·34	13,610·81	17,903·15
1908	...	456·43	456·43	19,324·02	147,879·90	167,203·92	6,701·28	76,700·77	83,402·05	3,613·64	7,946·35	11,559·99
1909	...	626·80	626·80	24,123·15	135,914·94	160,038·09	6,389·19	66,631·79	73,020·98	6,711·37	4,863·50	11,574·87
1910	...	725·79	725·79	28,507·31	131,976·01	160,483·32	1,889·24	60,886·71	62,775·95	...	321·40	321·40
1911	...	294·80	294·80	21,302·54	131,280·97	152,583·51	209·17	60,270·42	60,479·59	176·57	280·54	457·11
1912	...	1,169·18	1,169·18	4,835·73	101,353·79	106,189·52	53·68	49,946·08	49,999·76	...	4·33	4·33
1913	...	2,837·97	2,837·97	157·14	89,408·71	89,565·85	...	60,855·69	60,855·69	...	8,947·58	8,947·58
1914	...	1,403·35	1,403·35	184·66	103,550·71	103,735·37	...	73,943·49	73,943·49	...	3,074·74	3,074·74
1915	...	4,218·34	4,218·34	68·20	107,934·53	108,002·73	638·99	56,372·00	57,010·99	...	14,447·56	14,447·56
1916	...	4,336·27	4,336·27	642·48	111,277·58	111,920·06	...	39,714·46	39,714·46	...	6,815·74	6,815·74
1917	...	1,108·11	1,108·11	...	111,357·98	111,357·98	...	28,306·34	28,306·34	...	9,185·65	9,185·65
1918	...	878·62	878·02	...	95,186·67	95,186·67	...	30,273·00	30,273·00	...	2,493·63	2,493·63
1919	...	648·81	648·81	...	95,129·83	95,129·83	...	21,535·19	21,535·19	...	2,782·50	2,782·50
1920	...	243·26	243·26	...	82,976·60	82,976 60	...	11,221·31	11,221·31	...	5,642·42	5,642·42
1921	...	188·04	188·04	...	27,703·53	27,703·53	380·43	9,785·52	10,165·95	...	163·81	163·81
1922	...	11,669·19	11,669·19	215·69	30,878·39	31,094·08	180·55	11,236·64	11,417·19	...	...	...
Total	11,346·58	72,952·06	84,298·64	606.504·41	2,508,305·55	3,114,809·96	261,045·68	1,689,621·04	1,950,366·72	121,540·42	202,828·62	324,369·04

Year.	*h* DUNDAS.			*i* PHILLIPS RIVER.			¶ DONNYBROOK.			STATE GENERALLY.		
1886	...	...	...	...	...	...	...	...	...	...	...	...
1887	...	...	...	...	...	...	...	...	...	...	...	...
1888	...	...	...	...	...	...	...	...	...	...	...	...
1889	...	...	...	...	...	...	...	...	...	...	...	...
1890	...	...	...	...	...	...	...	...	...	...	...	...
1891	...	...	...	...	...	...	...	...	...	...	...	...
1892	...	...	...	...	...	...	...	...	...	...	...	...
1893	132·37	...	132·37	...	...	...	...	...	...	...	...	...
1894	204·31	..	204·31	...	...	...	...	...	...	...	...	...
1895	216·40	...	216·40	...	...	...	...	...	...	...	...	...
1896	3,891·77	..	3,891·77	...	...	...	...	...	...	...	...	...
1897	17,275·36	...	17,275·36	...	...	...	...	...	...	...	...	...
1898	28,655·52	...	28,655·52	...	...	...	...	...	...	...	...	...
1899	39,980·65	423·71	40,404·36	...	...	...	277·27	175·49	452·76	...	809·07	809·07
1900	8,144·72	28,254·19	36,398·91	...	...	...	...	237·56	237·56	5,644·83	1,450·08	7,094·91
1901	5,411·46	29,752·16	35,163·62	...	...	...	...	4·20	4·20	215·91	1,511·63	1,727·54
1902	4,401·31	26,714·16	31,115·47	2,946·53	4,422·56	7,369·09	4·94	57·64	62·58	7·77	2,115·52	2,123·29
1903	1,311·53	33,905·88	35,217·41	2,136·09	5,441·68	7,577·77	...	82·64	82·64	53·44	2,839·44	2,892·88
1904	1,834·03	31,347·06	33,181·09	936·76	2,047·59	2,984·35	...	...	...	·86	1,344·25	1,345·11
1905	1,324·48	27,411·31	28,735·79	2,060·46	1,458·44	3,518·90	...	...	...	70·41	1,515·58	1,585·99
1906	1,111·18	20,198·62	21,309·80	945·65	1,439·03	2,384·68	...	...	...	284·38	763·15	1,047·53
1907	...	22,830·71	22,830·71	4,043·86	1,514·90	5,558·76	...	...	...	799·48	285·47	1,084·95
1908	...	41,203·39	41,203·39	969·00	3,631·02	4,600·02	...	...	...	15·91	1,953·56	1,969·47
1909	...	35,894·72	35,894·72	4,025·81	3,605·75	7,631·56	...	...	...	46·78	455·34	502·12
1910	...	43,260·55	43,260·55	3,271·89	5,031·60	8,303·49	...	...	...	48·67	222·89	271 56
1911	...	48,361·14	48,361·14	1,374·96	4,241·05	5,616·01	...	...	...	209·03	129·01	338·04
1912	...	38,373·40	38,373·40	...	3,292·05	3,292·05	...	...	...	687·32	142·72	830·04
1913	...	27,090·46	27,090·46	...	3,515·02	3,515·02	...	...	...	385·58	230·17	615·75
1914	...	27,803·51	27,803·51	...	395·67	395·67	...	...	...	280·34	287·86	568·20
1915	...	24,148·61	24,148·61	2,011·73	263·06	2,274·79	...	...	...	188·32	318·59	506·91
1916	...	21,956·42	21,956·42	4,119·93	181·13	4,301·06	...	...	...	8,188·93	357·85	8,546·78
1917	...	19,346·27	19,346·27	2,995·76	196·24	3,192·00	...	...	...	356·72	216·30	573·02
1918	...	16,215·83	16,215·83	4,463·52	400·11	4,863·63	...	...	...	1·89	562·96	564·85
1919	...	13,631·96	13,631·96	...	349·49	349·49	...	...	...	...	88·12	88·12
1920	...	7,156·82	7,156·82	...	34·62	34·62	...	...	...	...	129·31	129·31
1921	...	4,961·45	4,961·45	2,733·42	329·14	3,062·56	...	...	...	...	68·11	68·11
1922	...	3,799·37	3,799·37	...	317·13	317·13	...	...	...	59·92	67·33	127·25
Total	113,895·09	594,041·70	707,936·79	39,035·37	42,107·28	81,142·65	282·21	557·53	839·74	17,546·49	17,864·31	35,410·80

a Prior to 1st May, 1898, included with Pilbara. *b* Prior to 1st April, 1897, included with Murchison. *c* From 1st August, 1897.
e Prior to 1st May, 1896, included with Coolgardie. *f* From 1st September, 1897. *h* Prior to 1893 included with Yilgarn.
i Prior to 1902, included in State generally. ¶ Abolished 4th March, 1908.

ROYAL MINT, FROM 1st JANUARY, 1886, TO 31st DECEMBER 1922, SHOWING, IN FINE OUNCES, THE GOLDFIELDS, AND THE TOTAL ANNUAL VALUE.

Year.	*b* GASCOYNE.			*c* PEAK HILL.			*c* EAST MURCHISON.			MURCHISON.		
	Export.	Mint.	Total.	Export.	Mint.	Total.	Export.	Mint.	Total.	Export.	Mint.	Total.
	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.	fine ozs.
1886	...	...	...	...	...	...	...	...	...	...	...	...
1887	...	...	...	...	...	...	...	...	...	...	...	...
1888	...	...	...	...	...	...	...	...	...	...	...	...
1889	...	...	...	...	...	...	...	...	...	...	...	...
1890	...	...	...	...	...	...	...	...	...	...	...	...
1891	...	...	...	...	...	...	...	...	...	1,846·83	...	1,846·83
1892	...	...	...	...	...	...	...	...	...	21,789·19	...	21,789·19
1893	...	...	...	...	...	...	...	...	...	18,974·77	...	18,974·77
1894	...	...	...	...	...	...	...	...	...	47,365·54	...	47,365·54
1895	...	...	...	...	...	...	...	...	...	58,575·66	...	58,575·66
1896	...	...	...	...	...	...	...	...	...	63,769·17	...	63,769·17
1897	...	...	...	4,571·38	...	4,571·38	8,457·34	...	8,457·34	74,154·67	...	74,154·67
1898	...	...	...	12,288·93	...	12,288·93	35,393·19	...	35,393·19	83,794·22	...	83,794·22
1899	297·96	76·63	374·59	14,064·24	14,558·64	28,622·88	33,826·08	3,361·95	37,188·03	61,586·09	22,074·71	83,660·80
1900	...	77·02	77·02	9,528·14	16,119·79	25,647·93	23,545·54	28,671·55	52,217·09	53,815·70	43,423·77	97,239·47
1901	6·59	16·82	23·41	231·85	19,352·44	19,584·29	29,780·63	40,557·07	70,337·70	92,149·56	38,996·10	131,145·66
1902	...	107·29	107·29	85·93	28,044·55	28,130·48	25,450·63	53,583·10	79,033·73	141,731·91	40,926·08	182,657·99
1903	...	30·76	30·76	203·60	29,395·32	29,598·92	21,878·06	65,334·05	87,212·11	154,012·88	54,348·53	208,361·41
1904	...	10·95	10·95	...	17,475·33	17,475·33	21,296·85	64,550·36	85,847·21	165,232·67	52,683·16	217,915·83
1905	...	21·34	21·34	125·01	13,371·75	13,496·76	1,361·68	89,249·93	90,611·61	131,656·36	92,742·05	224,398·41
1906	...	78·73	78·73	...	2,038·62	2,038·62	140·68	95,168·89	95,309·57	79,172·69	109,936·80	189,109·49
1907	...	8·44	8·44	...	5,918·75	5,918·75	2,891·66	117,735·69	120,627·35	54,811·74	115,497·50	170,309·24
1908	...	31·82	31·82	...	9,864·36	9,864·36	10,701·24	137,028·14	147,729·38	45,483·05	111,540·54	157,023·59
1909	...	7·37	7·37	...	7,322·29	7,322·29	11,599·83	136,637·67	148,237·50	24,682·47	107,167·27	131,849·74
1910	...	26·31	26·31	...	3,057·25	3,057·25	1,557·78	137,190·44	138,748·22	19,568·85	111,414·23	130,983·08
1911	...	7·87	7·87	...	134·23	134·23	11·77	96,442·87	96,454·64	13,919·70	109,444·91	123,364·61
1912	...	6·55	6·55	...	196·11	196·11	...	90,397·82	90,397·82	6,377·17	105,245·32	111,622·49
1913	...	...	...	...	258·10	258·10	195·78	80,122·11	80,317·89	5,749·47	115,694·96	121,444·43
1914	...	4·11	4·11	...	85·66	85·66	354·75	65,609·61	65,964·36	6,443·82	111,822·67	118,266·49
1915	...	65·55	65·55	·56	446·00	446·56	268·57	52,926·34	53,194·91	8,669·79	96,610·36	105,280·15
1916	...	60·53	60·53	...	155·01	155·01	902·67	30,284·85	31,187·52	6,694·02	77,369·19	84,063·21
1917	...	...	...	...	...	...	...	7,942·96	7,942·96	1,082·93	94,142·67	95,225·60
1918	...	...	...	...	...	...	...	768·08	768·08	214·23	75,478·06	75,692·29
1919	...	...	...	...	57·83	57·83	...	766·30	766·30	...	64,425·15	64,425·15
1920	...	3·19	3·19	...	18·78	18·78	...	98 82	98·82	835·05	56,338·49	57,173·54
1921	...	7·46	7·46	...	1·23	1·23	21·54	76·18	97·72	677·71	50,411·30	51,089·01
1922	...	1·52	1·52	...	5·12	5·12	556·07	614·95	1,171·02	238·39	40,724·62	40,963·01
Total	304·55	650·26	954·81	41,099·64	167,877·16	208,976·80	230,192·34	1,395,119·73	1,625,312·07	1,445,076·30	1,898,458·44	3,343,534·74

Year.	*e* NORTH-EAST COOLGARDIE.			*e* EAST COOLGARDIE.			*g* COOLGARDIE.			YILGARN.		
1886	...	...	...	...	...	...	...	...	...	...	...	...
1887	...	...	...	...	...	...	...	...	...	...	...	...
1888	...	...	...	...	...	...	...	...	...	...	...	...
1889	...	...	...	...	...	...	...	...	...	1,662·61	...	1,662·61
1890	...	...	...	...	...	...	...	...	...	2,036·99	...	2,036·99
1891	...	...	...	...	...	...	...	...	...	11,480·61	...	11,480·61
1892	...	...	...	...	...	...	...	...	...	18,973·91	...	18,973·91
1893	...	...	...	...	...	...	...	...	...	67,760·73	...	67,760·73
1894	...	...	...	...	...	...	94,227·58	...	94,227·58	28,178·31	...	28,178·31
1895	...	...	...	...	...	...	111,919·21	...	111,919·21	17,666·25	...	17,666·25
1896	3,679·63	...	3,679·63	76,297·42	...	76,297·42	61,848·03	...	61,848·03	14,819·20	...	14,819·20
1897	29,437·40	...	29,437·40	268,411·95	...	268,411·95	93,312·00	...	93,312·00	16,097·78	...	16,097·78
1898	112,039·58	...	112,039·58	402,847·31	...	402,847·31	113,816·75	...	113,816·75	10,463 35	...	10,463·35
1899	57,674·82	14,940·55	72,615·37	796,696·63	29,567·58	826,264·21	101,589·22	24,700·89	126,290·11	6,919·11	8,114·60	15,033·71
1900	10,400·57	36,233·90	46,634·47	600,328·29	125,105·24	725,433·53	60,988·33	46,167·62	107,155·95	688·47	25,628·83	26,317·30
1901	6,798·56	39,024·18	45,822·74	698,042·56	238,840·93	936,883·49	9,584·35	70,720·21	80,304·56	49·15	26,677·85	26,727·00
1902	549·07	46,316·67	46,865·74	460,462·26	546,964·68	1,007,426·94	2,872·61	80,887·85	83,760·46	3·31	22,232·80	22,236·11
1903	4,308·99	36,145·75	40,454·74	570,447·27	580,790·97	1,151,238·24	7,318·63	69,681·38	77,000·01	...	22,761·00	22,761·00
1904	55·09	33,262·10	33,317·19	555,016·48	584,579·88	1,139,596·36	1,100·07	61,073·11	62,173·18	28·87	29,965·37	29,994·24
1905	2,187·11	40,220·19	42,407·30	479,254·37	613,103·20	1,092,357·57	177·80	62,066·34	62,244·14	...	25,291·11	25,291·11
1906	1,590·31	30,943·82	32,534·13	454,645·84	612,546·81	1,067,192·65	103·78	60,474·81	60,578·59	...	25,570·77	25,570·77
1907	3,132·83	25,399·75	28,532·58	323,550·05	643,139·11	966,689·16	1,050·88	61,670·65	62,721·53	...	23,311·41	23,311·41
1908	925·44	23,902·44	24,827·88	267,748·62	657,936 89	925,685·51	871·76	40,982·65	41,854·41	...	20,866·10	20,866·10
1909	1,774·45	24,566·87	26,341·32	306,462·21	620,612·07	927,074·28	350·91	36,311·70	36,662·61	204·41	20,958·23	21,162·64
1910	...	19,082·01	19,082·01	179,062·94	653,211·05	832,273·99	...	38,264·02	38,264·02	...	24,049·13	24,049·13
1911	...	18,528·97	18,528·97	123,160·54	686,386·80	809,547·34	...	33,840·93	33,840·93	...	14,688·17	14,688·17
1912	194·22	14,475·38	14,669·60	71,429·00	717,356·45	788,785·45	...	42,327·65	42,327·65	...	27,439·38	27,439·38
1913	...	11,210·69	11,210·69	70,078·57	722,593·22	792,671·79	...	35,593·00	35,593·00	9,688·59	63,679·58	73,368·17
1914	...	5,210·22	5,210·22	40,393·05	677,609·26	718,002·31	...	21,957·78	21,957·78	3,798·03	81,713·56	85,511·59
1915	...	8,773·97	8,773·97	5,493·67	709,061·79	714,555·46	...	17,590·21	17,590·21	...	90,705·75	90,705·75
1916	...	1,996·06	1,996·06	6,194·14	635,425·68	641,619·82	...	12,381·82	12,381·82	...	84,800·82	84,800·82
1917	...	769·16	769·16	4,523·28	602,459·51	606,982·79	...	6,500·66	6,500·66	...	74,399·36	74,399·36
1918	...	145·91	145·91	10,216·56	560,438·18	570,654·74	...	6,727·82	6,727·82	745·57	67,956·84	68,702·41
1919	...	116·83	116·83	6,445·89	459,912·83	466,358·72	...	3,918·19	3,918·19	...	60,140·27	60,140·27
1920	...	350·26	350 26	2,186·57	402,861·25	405,047·82	...	4,031·16	4,031·16	2,230·09	35,930·17	38,160·26
1921	...	43·63	43·63	3,095·25	428,936·85	432,032·10	...	214·67	214·67	262·39	22,031·97	22,294·36
1922	...	...	...	2,631·78	415,979·06	418,610·84	...	518·97	518·97	1,437·76	13,267·24	14,705·00
Total	234,748·07	431,659·31	666,407·38	6,785,122·50	12,925,419·29	19,710,541·79	661,131·91	838,604·09	1,499,736·00	215,195·49	912,180·31	1,127,375·80

Year.	GRAND TOTAL.			
	Export.	Mint.	Total.	Value.
	fine ozs.	fine ozs.	fine ozs.	£ s. d.
1886	270·17	...	270·17	1,147 12 2¼
1887	4,359·37	...	4,359·37	18,517 8 6½
1888	3,124·82	...	3,124·82	13,273 7 10½
1889	13,859·52	...	13,859·52	58,871 9 11½
1890	20,402·42	...	20,402·42	86,663 19 5
1891	27,116·14	...	27,116·14	115,182 0 10½
1892	53,271·65	...	53,271·65	226,283 11 8
1893	99,202·50	...	99,202·50	421,385 8 8½
1894	185,298·73	...	185,298·73	787,098 19 6
1895	207,110·20	...	207,110·20	879,748 4 2½
1896	251,618·69	...	251,618·69	1,068,808 5 2
1897	603,846·44	...	603,846·44	2,564,976 12 9½
1898	939,489·49	...	939,489·49	3,990,697 13 10
1899	1,283,360·25	187,244·41	1,470,604·66	6,246,731 10 7½
1900	894,387·27	519,923·59	1,414,310·86	6,007,610 13 4½
1901	923,686·96	779,729·56	1,703,416·52	7,235,653 9 1
1902	707,039·75	1,163,997·60	1,871,037·35	7,947,661 9 7½
1903	833,685·78	1,231,115·62	2,064,801·40	8,770,718 17 0½
1904	810,616·04	1,172,614·03	1,983,230·07	8,424,225 17 3½
1905	655,089·88	1,300,226·00	1,955,315·88	8,305,653 18 5½
1906	562,250·59	1,232,296·01	1,794,546·60	7,622,749 8 7
1907	431,803·14	1,265,750·45	1,697,553·59	7,210,749 6 2½
1908	356,353·96	1,291,557·17	1,647,911·13	6,999,881 10 10½
1909	386,370·58	1,208,898·83	1,595,269·41	6,776,273 14 7½
1910	233,970·34	1,236,661·68	1,470,632·02	6,246,847 15 0
1911	160,422·28	1,210,445·24	1,370,867·52	5,823,075 1 9½
1912	83,577·12	1,199,080·87	1,282,657·99	5,448,384 16 5½
1913	86,255·13	1,227,788·15	1,314,043·28	5,581,701 1 2½
1914	51,454·65	1,181,522·17	1,232,976·82	5,237,352 12 6½
1915	17,340·47	1,192,771·23	1,210,111·70	5,140,227 15 5½
1916	26,742·17	1,034,655·87	1,061,398·04	4,508,532 5 11
1917	9,022·49	961,294·67	970,317·16	4,121,645 6 2½
1918	15,644·12	860,867·03	876,511·15	3,723,182 14 9
1919	6,445·89	727,619·90	734,065·79	3,118,113 5 6½
1920	5,261·13	612,581·00	617,842·13	2,624,426 11 0
1921	7,170·74	546,559·92	553,730·66	2,352,098 6 8½
1922	5,320·16	532,926·12	538,246·28	2,286,324 17 5
TOTAL	10,962,941·03	23,878,127·12	34,840,068·15	147,992,477 0 6

b Prior to March, 1899, included with Ashburton. *c* From 1st August, 1897. *e* Prior to 1st May, 1896, included with Coolgardie. *g* Declared 5th April, 1894, to which date included with Yilgarn.

TABLE VI.

COMPARATIVE RETURN OF GOLD BULLION ENTERED FOR EXPORT AND RECEIVED AT THE PERTH BRANCH OF THE ROYAL MINT, DURING THE YEARS 1920, 1921, AND 1922, SHOWING IN FINE OUNCES THE QUANTITY RECORDED EACH MONTH, AND ITS VALUE.

MONTHS AND QUARTERS.	1920.				1921.				1922.			
	EXPORT.	MINT.	TOTAL.	VALUE.	EXPORT.	MINT.	TOTAL.	VALUE.	EXPORT.	MINT.	TOTAL.	VALUE.
	fine ozs.	fine ozs.	fine ozs.	£ s. d.	fine ozs.	fine ozs.	fine ozs.	£ s. d.	fine ozs.	fine ozs.	fine ozs.	£ s. d.
JANUARY	836·72	25,670·66	26,507·38	112,596 3 10½	523·90	50,934·68	51,458·58	218,582 3 1	329·92	37,851·30	38,181·22	162,183 10 3¼
FEBRUARY	1,927·85	49,452·81	51,380·66	218,251 3 5	684·87	26,872·92	27,557·79	117,058 1 0¼	926·19	41,194·66	42,120·85	178,917 19 11½
MARCH	...	54,020·93	54,020·93	229,466 6 6	10·83	47,875·64	47,886·47	203,408 15 10¾	180·55	42,662·44	42,842·99	181,985 9 1
1st January to 31st March ...	**2,764·57**	**129,144·40**	**131,908·97**	**560,313 13 9½**	**1,219·60**	**125,683·24**	**126,902·84**	**539,049 0 0**	**1,436·66**	**121,708·40**	**123,145·06**	**523,086 19 3¾**
APRIL	835·05	56,256·47	57,091·52	242,509 7 2¾	670·94	46,602·38	47,273·32	200,804 6 0	1,237·24	45,157·08	46,394·32	197,070 10 10¾
MAY	227·15	50,976·12	51,203·27	217,497 13 3¾	474·94	47,638·48	48,113·42	204,372 16 4¼	271·67	39,454·59	39,726·26	168,746 8 6¼
JUNE	502·15	56,679·78	57,181·93	242,893 8 0	153·91	28,194·14	28,348·05	120,414 17 3	136·91	49,158·13	49,295·04	209,392 0 4¾
1st January to 30th June ...	**4,328·92**	**293,056·77**	**297,385·69**	**1,263,214 2 4**	**2,519·39**	**248,118·24**	**250,637·63**	**1,064,640 19 7¼**	**3,082·48**	**255,478·20**	**258,560·68**	**1,098,295 19 1½**
JULY	...	48,341·22	48,341·22	205,340 9 0	1,641·31	44,917·02	46,558·33	197,767 4 3½	366·04	42,774·63	43,140·67	183,249 18 4½
AUGUST	167·61	54,258·14	54,425·75	231,185 17 9¾	110·97	51,731·26	51,842·23	220,211 15 11	1,051·61	48,638·71	49,690·32	211,071 1 3
SEPTEMBER	141·25	54,798·76	54,940·01	233,370 6 7	380·13	50,728·16	51,108·59	217,095 9 9¾	...	46,398·21	46,398·21	197,087 1 5
1st January to 30th September ...	**4,637·78**	**450,454·89**	**455,092·67**	**1,933,110 15 8¾**	**4,652·10**	**395,494·68**	**400,146·78**	**1,699,715 9 7½**	**4,500·13**	**393,289·75**	**397,789·88**	**1,689,704 0 2**
OCTOBER	174·15	53,801·21	53,975·36	229,272 15 1½	1,910·42	51,286·91	53,197·33	225,967 17 10¾	216·07	49,092·82	49,308·89	209,450 17 0
NOVEMBER	128·09	54,729·33	54,857·42	233,019 10 2	156·75	46,429·46	46,586·21	197,885 12 10	153·10	46,401·35	46,554·45	197,750 14 8
DECEMBER	321·11	53,595·57	53,916·68	229,023 9 11¾	451·47	53,348·87	53,800·34	228,529 6 4¼	450·86	44,142·20	44,593·06	189,419 5 7
Total	**5,261·13**	**612,581·00**	**617,842·13**	**2,624,426 11 0**	**7,170·74**	**546,559·92**	**553,730·66**	**2,352,098 6 8½**	**5,320·16**	**532,926·12**	**538,246·28**	**2,286,324 17 5**

TABLE VII.

MONTHLY RETURN OF GOLD, CONTAINED IN BULLION, FURNACE PRODUCTS, AND ORE, ENTERED FOR EXPORT DURING 1922.

MONTH.	UNITED KINGDOM.			VICTORIA.			NEW SOUTH WALES.			SOUTH AUSTRALIA.			TOTALS.			Minted Gold Exported*
	Bullion.	Furnace Products.	Ore.	Bullion.	Furnace Products.	Ore.	Bullion.	Furnace Products.	Ore.	Bullion.	Furnace Products.	Ore.	Bullion.	Furnace Products.	Ore.	
1922.	Fine ozs.	Estimated fine ozs.	Estimated fine ozs.	Fine ozs.	Estimated fine ozs.	Estimated fine ozs.	Fine ozs.	Estimated fine ozs.	Estimated fine ozs.	Fine ozs.	Estimated fine ozs.	Estimated fine ozs.	Fine ozs.	Estimated fine ozs.	Estimated fine ozs.	Fine ozs.
January	...	...	...	...	...	...	...	329·92	...	...	...	...	...	329·92	...	...
February	...	...	...	...	...	752·90	...	173·29	...	...	...	...	...	173·29	752·90	58·85
March	...	...	...	...	...	...	...	180·55	...	...	...	...	...	180·55	...	...
April	...	...	...	...	...	153·18	...	1,084·06	...	...	...	...	...	1,084·06	153·18	...
May	...	...	...	...	...	...	...	271·67	...	...	...	...	...	271·67	...	19·33
June	...	...	...	...	...	...	...	136·91	...	...	...	...	...	136·91	...	...
July	...	...	...	...	...	...	...	366·04	...	...	...	...	...	366·04	...	24·44
August	...	...	...	...	...	466·88	...	584·73	...	...	...	...	...	584·73	466·88	...
September	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
October	...	...	...	...	...	64·80	...	122·26	29·01	...	...	...	...	122·26	93·81	...
November	...	...	...	...	...	...	...	153·10	...	...	...	...	...	153·10	...	45·45
December	...	...	...	...	...	...	...	450·86	...	...	...	...	...	450·86	...	...
TOTALS	...	...	...	...	...	1,437·76	...	3,853·39	29·01	...	...	...	...	3,853·39	1,466·77	148·07

*When considering the total production of gold for this State, these amounts must be disregarded, having been already recorded in the total receipts of gold at the Mint.

TABLE VIII.

RETURN OF GOLD BULLION RECEIVED AT THE PERTH BRANCH OF THE ROYAL MINT FROM MAY, 1899, TO THE 31ST DECEMBER, 1922, SHOWING IN GROSS OUNCES THE QUANTITY OBTAINED FROM THE RESPECTIVE GOLDFIELDS AND OTHER COUNTRIES, AND THE ACTUAL VALUE THEREOF.

Year.	Kimberley.	Pilbara.	West Pilbara.	Ashburton.	Gascoyne.	Peak Hill.	East Murchison.	Murchison.	Yalgoo.
	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
1899	308·45	529·80	...	281·80	85·65	16,274·00	3,758·07	24,675·64	5,190·05
1900	644·02	7,493·88	137·33	474·26	86·10	18,019·08	32,049·74	48,540·12	8,851·52
1901	663·37	11,279·93	394·38	55·42	18·56	21,351·67	44,746·88	43,024·65	9,191·01
1902	439·93	10,706·03	3,284·37	...	124·86	32,637·17	62,357·98	47,628·18	5,116·94
1903	511·75	14,217·53	6,481·58	135·30	36·29	34,684·27	77,089·29	64,127·18	1,687·99
1904	37·69	8,293·58	5,170·06	150·73	13·10	20,909·99	77,237·31	63,037·71	3,345·82
1905	656·34	16,053·42	1,400·46	50·54	25·65	16,075·36	107,295·17	111,493·34	5,469·06
1906	785·23	6,007·79	915·63	168·30	95·43	2,471·21	115,363·22	133,264·79	5,919·37
1907	431·72	4,924·97	396·22	49·89	10·06	7,057·22	140,382·15	137,713·43	3,815·06
1908	400·19	9,676·11	1,292·97	54·32	37·68	11,679·58	162,243·76	132,066·00	2,625·14
1909	203·59	6,662·82	1,682·49	274·93	8·89	8,823·58	164,652·43	129,139·74	755·31
1910	586·44	7,094·46	1,670·20	208·31	31·67	3,679·72	165,123·37	134,098·94	873·58
1911	183·78	6,033·33	1,014·60	334·38	9·78	165·36	119,267·86	135,342·96	363·85
1912	361·11	7,674·55	912·60	47·77	8·09	237·96	110,585·25	128,679·43	1,410·49
1913	319·55	5,048·77	1,491·66	47·37	...	564·67	96,270·04	139,021·56	3,410·52
1914	238·83	6,750·56	1,538·31	56·09	5·00	104·45	79,785·02	135,990·48	1,705·85
1915	270·76	9,084·52	1,540·93	20·50	81·05	550·77	65,111·82	118,861·14	5,208·56
1916	306·92	8,265·75	692·68	38·34	74·07	190·21	37,169·30	95,071·24	5,320·33
1917	133·03	5,770·70	683·84	25·85	...	...	9,660·88	115,360·36	1,366·18
1918	144·31	3,643·49	339·36	7·87	...	...	949·78	93,501·94	1,090·10
1919	293·46	4,813·34	29·62	4·10	...	71·92	958·91	79,921·84	806·04
1920	164·07	6,589·24	137·59	3·79	4·03	22·62	121·47	70,428·05	307·48
1921	62·45	1,772·78	201·52	28·42	9·39	1·58	97·40	63,808·17	235·89
1922	6·36	4,694·01	123·65	17·41	1·89	6·40	789·30	51,649·85	14,819·53
Total ...	**8,153·35**	**173,081·36**	**31,532·05**	**2,535·69**	**767·24**	**195,578·79**	**1,673,666·40**	**2,296,446·74**	**88,885·67**

Year.	Mt. Margaret.	North Coolgardie.	Broad Arrow.	North-East Coolgardie.	East Coolgardie.	Coolgardie.	Yilgarn.	Dundas.	*Phillips River.
	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
1899	16,911·54	44,779·38	8,503·50	16,700·90	33,051·33	27,611·24	9,070·70	473·63	...
1900	67,748·45	88,688·14	14,376·10	40,503·12	139,845·60	51,607·26	28,648·51	31,583·20	...
1901	126,703·91	135,493·31	18,829·13	43,055·63	263,514·75	78,026·07	29,433·84	32,825·75	...
1902	144,663·12	182,543·06	15,903·42	53,901·58	636,536·52	94,134·17	25,873·68	31,088·91	5,146·80
1903	148,006·49	197,229·08	21,528·20	42,649·25	685,289·82	82,218·79	26,856·28	40,006·39	6,420·79
1904	143,453·51	166,939·82	24,721·53	39,799·55	699,475·35	73,076·66	35,854·87	37,508·11	2,450·03
1905	184,178·87	175,057·14	18,394·17	48,352·22	737,065·14	74,615·36	30,404·65	32,953·56	1,753·32
1906	166,097·63	130,784·60	20,415·43	37,509·91	742,525·99	73,307·24	30,996·76	24,484·65	1,744·38
1907	183,693·29	86,685·09	16,228·85	30,285·39	766,846·83	73,532·99	27,795·35	27,222·21	1,806·30
1908	175,092·47	90,815·08	9,408·64	28,300·91	779,009·10	48,524·18	22,835·58	48,785·54	4,299·19
1909	163,781·55	80,293·29	5,860·66	29,603·84	747,856·04	43,756·68	25,255·30	43,254·22	4,345·04
1910	158,847·24	73,283·66	386·84	22,967·23	786,209·41	46,054·82	28,945·68	52,068·70	6,056·08
1911	162,319·77	74,536·34	346·78	22,917·38	848,725·06	41,861·54	18,190·20	59,831·49	5,242·16
1912	124,123·10	61,018·13	5·32	17,705·86	876,900·05	51,732·78	33,429·29	52,220·76	4,026·32
1913	107,391·67	73,160·41	10,814·52	13,452·90	867,887·30	42,738·63	76,581·73	47,535·02	4,221·40
1914	125,937·60	89,904·49	3,727·56	6,318·12	824,280·77	26,696·51	99,410·57	47,487·27	480·65
1915	132,819·64	69,318·34	17,810·14	10,808·78	872,406·66	21,593·44	111,539·75	42,283·16	324·48
1916	136,731·10	48,799·86	8,415·40	2,441·68	780,354·90	15,238·33	104,136·12	36,653·26	221·89
1917	136,343·74	34,650·24	11,300·38	936·97	737,833·22	7,968·62	91,168·91	34,685·39	238·50
1918	118,132·80	37,572·67	3,087·67	179·83	695,564·50	8,338·10	84,297·45	29,649·05	494·27
1919	117,763·53	26,692·84	3,455·12	144·34	569,081·41	4,866·10	74,493·69	20,346·85	434·47
1920	103,788·16	14,038·70	6,997·95	440·84	507,113·25	5,035·18	45,007·22	9,865·14	43·29
1921	35,134·85	12,492·59	206·82	54·75	543,397·61	273·77	27,844·76	6,259·31	413·29
1922	39,372·87	14,263·42	...	...	527,784 28	664·06	16,847·62	4,800·69	403·98
Total ...	**3,019,036·90**	**2,009,039·68**	**240,724·13**	**509,030·98**	**15,668,554·89**	**993,472·52**	**1,104,918·51**	**793,872·26**	**50,566·63**

Year.	†Donny-brook.	State generally.	TOTAL. Western Australia. Quantity.	Western Australia. Actual Value.	Other Countries. Quantity.	Other Countries. Actual Value.	GRAND TOTAL. Quantity.	Grand Total. Actual Value.
	ozs.	ozs.	ozs.	£ s. d.	ozs.	£ s. d.	ozs.	£ s. d.
1899	196·17	904·39	209,306·24	762,546 11 6	103·46	336 18 3	209,409·70	762,883 9 9
1900	265·55	1,620·93	581,182·91	2,096,212 14 2	17·49	44 15 7	581,200·40	2,096,257 9 9
1901	4·64	1,667·79	860,280·69	3,033,311 0 9	92·25	297 5 8	860,372·94	3,033,608 6 0
1902	67·08	2,461·98	1,354,615·78	4,791,303 18 1	16·27	38 10 2	1,354,632·05	4,791,342 8 3
1903	97·52	3,350·32	1,452,624·11	5,139,852 11 9	294·78	763 14 10	1,452,918·89	5,140,556 6 7
1904	...	1,608·47	1,403,083·89	4,955,870 9 0	263·05	614 11 9	1,403,346·94	4,956,485 0 9
1905	...	1,821·99	1,563,115·76	5,475,841 2 10	525·80	1,491 0 7	1,563,641·56	5,477,332 3 5
1906	...	925·10	1,493,782·66	5,330,245 12 1	413·86	974 16 0	1,494,196·52	5,331,220 8 1
1907	...	340·39	1,509,217·41	5,416,812 0 7	640·51	1,663 4 3	1,509,857·92	5,418,475 4 10
1908	...	2,080·42	1,529,226·86	5,386,858 15 8	1,313·84	3,885 2 3	1,530,540·70	5,390,743 17 11
1909	...	548·71	1,456,759·11	5,143,035 17 1	882·56	1,109 6 7	1,457,641·67	5,144,145 3 8
1910	...	268·26	1,488,454·61	5,163,100 17 11	2,251·71	1,670 11 7	1,490,706·32	5,164,771 9 6
1911	...	159·90	1,496,846·52	5,143,795 10 5	452·22	915 19 4	1,497,298·74	5,144,711 9 9
1912	...	174·26	1,471,253·12	5,106,466 9 1	641·47	1,527 8 0	1,471,894·59	5,107,993 17 1
1913	...	277·70	1,490,235·42	5,204,738 18 3	697·50	1,247 12 7	1,490,932·92	5,205,986 10 10
1914	...	350·48	1,450,768·61	5,016,905 19 0	915·24	1,726 5 1	1,451,683·85	5,018,632 4 1
1915	...	392·28	1,480,026·72	5,060,196 7 6	1,260·07	2,610 8 11	1,481,286·79	5,062,806 16 5
1916	...	437·33	1,280,558·71	4,405,278 13 10	1,059·26	2,060 6 9	1,281,617·97	4,407,339 0 7
1917	...	264·27	1,188,391·08	4,074,112 6 7	1,016·70	1,905 17 7	1,189,407·78	4,076,018 4 2
1918	...	705·32	1,077,698·51	3,655,942 4 5	1,468·02	2,476 6 11	1,079,166·53	3,658,418 11 4
1919	...	109·08	904,286·66	3,089,243 3 1	1,358·71	2,611 16 1	905,645·37	3,091,854 19 2
1920	...	161·46	770,269·53	2,595,167 17 9	1,375·73	1,531 18 5	771,645·26	2,596,699 16 2
1921	...	86·45	692,381·80	2,322,697 14 1	1,563·59	2,206 15 8	693,945·39	2,324,904 9 9
1922	...	85·44	676,330·76	2,264,069 17 11	3,319·49	2,130 17 2	679,650·25	2,266,200 15 1
Total ...	**630·96**	**20,802·72**	**28,880,697·47**	**100,633,606 12 11**	**21,943·58**	**35,781 10 0**	**28,902,641·05**	**100,669,388 2 11**

* Prior to 1902 included in State generally. † Abolished 4th March, 1908.

PART II.—MINERALS OTHER THAN GOLD.

TABLE IX.—GENERAL RETURN OF ORE AND MINERALS, OTHER THAN GOLD, SHOWING THE QUANTITY PRODUCED AND THE VALUE THEREOF AS REPORTED TO THE MINES DEPARTMENT FROM THE RESPECTIVE GOLDFIELDS AND MINERAL FIELDS, DURING 1922, AND PREVIOUS YEARS.

BLACK TIN.

Period.	Pilbara Goldfield—Marble Bar District.				Greenbushes Mineral Field.				Total.			
	Quantity.			Value.	Quantity.			Value.	Quantity.			Value.
	Lode.	Stream.	Total.		Lode.	Stream.	Total.		Lode.	Stream.	Total.	
	tons.	tons.	tons.	£	tons.	tons.	tons.	£	tons.	tons.	tons.	£
Previous to 1899 ...	...	75·45	75·45	4,419	...	1,590·33	1,590·33	66,108	...	1,665·78	1,665·78	70,527
1899	...	57·50	57·50	3,612	...	277·32	277·32	21,658	...	334·82	334·82	25,270
1900	...	387·87	387·87	27,174	...	435·62	435·62	29,528	...	823·49	823·49	56,702
1901	...	412·98	412·98	21,148	...	321·34	321·34	18,852	...	734·32	734·32	40,000
1902	...	216·35	216·35	15,103	...	403·21	403·21	24,680	...	619·56	619·56	39,783
1903	...	292·11	292·11	21,528	...	524·94	524·94	34,362	...	817·05	817·05	55,890
1904	...	320·86	320·86	24,355	...	533·64	533·64	34,462	...	854·50	854·50	58,817
1905	...	435·74	435·74	33,880	...	643·52	643·52	52,960	...	1,079·26	1,079·26	86,840
1906	36·59	675·06	711·65	78,449	26·18	757·10	783·28	79,195	62·77	1,432·16	1,494·93	157,644
1907	104·13	749·56	853·69	85,603	40·40	729·60	770·00	73,045	144·53	1,479·16	1,623·69	158,648
1908	31·00	372·03	403·03	30,636	13·90	562·43	576·33	41,046	44·90	934·46	979·36	71,682
1909	81·75	212·21	293·96	22,431	44·40	414·35	458·75	34,786	126·15	*628·08	*754·23	†57,335
1910	33·75	119·75	153·50	12,899	25·06	292·65	317·71	27,974	58·81	412·40	471·21	40,873
1911	27·35	121·30	148·65	16,064	27·82	383·30	411·12	44,638	55·17	504·60	559·77	60,702
1912	10·25	113·13	123·38	14,993	14·90	415·55	430·45	50,166	25·15	528·68	553·83	65,159
1913	14·15	124·95	139·10	16,506	29·06	429·42	458·48	50,954	43·21	‡557·72	‡600·93	§67,717
1914	12·35	75·05	87·40	8,168	5·32	239·22	244·54	21,145	17·67	314·27	331·94	29,313
1915	5·05	73·60	78·65	7,633	7·55	239·78	247·33	21,431	12·60	313·38	325·98	29,064
1916	6·50	146·67	153·17	15,939	9·94	271·80	281·74	27,319	16·44	418·47	434·91	43,258
1917	4·05	65·00	69·05	9,264	11·18	226·74	237·92	29,928	15·23	291·74	306·97	39,192
1918	5·70	93·80	99·50	20,984	50·52	245·28	295·80	57,653	56·22	339·08	395·30	78,637
1919	...	36·70	36·70	5,871	23·66	220·95	244·61	34,959	23·66	257·65	281·31	40,830
1920	...	41·50	41·50	7,616	10·25	179·84	190·09	31,249	10·25	221·34	231·59	38,865
1921	...	14·50	14·50	1,460	7·00	45·87	52 87	5,778	7·00	60·37	67·37	7,238
1922	...	25·35	25·35	2,446	·15	15·71	15·86	1,393	·15	41·06	41·21	3,839
Total	**372·62**	**5,259·02**	**5,631·64**	**508,181**	**347·29**	**10,399·51**	**10,746·80**	**915,269**	**719·91**	**15,663·40**	**16,383·31**	**1,423,825**

* Includes tons 1·52, the produce of Cue District. † Includes £118, value of tons 1·52, the produce of Cue District, ‡ Includes tons 3·20, the produce of Cue District and tons ·15 of Coolgardie District. § Includes £242, value of tons 3·20 the produce of Cue District, and £15, value of ·15 tons of Coolgardie District.

TANTALITE.

Period.	Pilbara Goldfield—Marble Bar District.				Greenbushes Mineral Field.				Total.			
	Quantity.			Value.	Quantity.			Value.	Quantity.			Value.
	Lode.	Stream.	Total.		Lode.	Stream.	Total.		Lode.	Stream.	Total.	
	tons.	tons.	tons.	£	tons.	tons.	tons.	£	tons.	tons.	tons.	£
Previous to 1899 ...	...	...	...	...	...	...	...	...	...	...	...	...
1899	...	...	...	...	...	...	...	...	...	...	...	...
1900	...	...	...	...	...	...	...	...	...	...	...	...
1901	...	...	...	...	...	...	...	...	...	...	...	...
1902	...	...	...	...	...	...	...	...	...	...	...	...
1903	...	...	...	...	...	...	...	...	...	...	...	...
1904	...	...	...	...	...	...	...	...	...	...	...	...
1905	...	70·95	70·95	8,925	...	2·34	2·34	1,590	...	73·29	73·29	10,51
1906	1·80	12·85	14·65	2,644	...	...	...	...	1·80	12·85	14·65	2,645
1907	...	...	...	...	...	...	...	...	...	...	...	...
1908	...	...	...	...	...	...	...	...	...	...	...	...
1909	·45	...	·45	113	...	·85	·85	214	·45	·85	1·30	327
1910	...	...	...	...	...	...	...	...	...	...	...	...
1911	...	...	...	...	...	...	...	...	...	...	...	...
1912	...	...	...	...	...	...	...	...	...	...	...	...
1913	...	...	...	...	...	...	...	...	...	...	...	...
1914	...	...	...	...	...	...	...	...	...	...	...	...
1915	...	...	...	...	...	...	...	...	...	...	...	...
1916	...	...	...	...	...	...	...	...	...	...	...	...
1917	...	12·50	12·50	1,782	...	...	...	...	...	12·50	12·50	1,782
1918	...	...	...	...	...	...	...	...	...	...	...	...
1919	...	...	...	...	...	...	...	...	...	...	...	...
1920	...	...	...	...	...	...	...	...	...	...	...	...
1921	...	...	...	...	...	...	...	...	...	...	...	...
1922	...	...	...	...	...	...	...	...	...	...	...	...
Total	**2·25**	**96·30**	**98·55**	**13,464**	**...**	**3·19**	**3·19**	**1,804**	**2·25**	**99·49**	**101·74**	**15,268**

Period.	PYRITIC ORE.		COPPER ORE.													
	Mt. Margaret G.F.		West Kimberley Goldfield		Pilbara Goldfield.				West Pilbara Gf.		Ashburton Gf.		Peak Hill Gf.		E. Murchison Gf.	
	Mt. Morgans D.				Marble Bar D.		Nullagine D.								Lawlers D.	
	Quantity.	‖Value.	Q'ntity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£
Previous to 1899 ...	...	...	...	...	...	...	...	...	7,018·00	55,270	...	...	...	...	...	...
1899	...	...	...	...	...	...	...	...	2,555·00	29,478	...	...	...	...	...	...
1900	...	...	...	...	...	...	...	...	1,605·00	12,139	...	...	...	...	...	...
1901	...	...	...	...	...	...	...	...	1,162·00	15,891	...	...	...	...	...	...
1902	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1903	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1904	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1905	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1906	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1907	...	...	...	...	7·77	190	...	...	3,365·50	63,548	...	...	...	...	...	...
1908	...	...	...	...	...	...	...	...	1,486·00	17,691	188·00	2,311	...	...	6·77	69
1909	...	...	...	...	...	...	...	...	7,135·50	62,447	10·75	259	...	...	...	...
1910	...	...	...	...	...	...	...	...	8,479·80	64,861	...	...	...	...	...	...
1911 ... 9,938·92	3,529	...	...	25·10	196	5·00	120	9,082·02	69,140	...	...	...	...	...	...	...
1912 ... 7,625·80	2,543	...	...	...	...	...	...	12,284·02	104,289	...	...	...	...	...	...	...
1913 ... 10,216·18	3,658	...	...	...	...	...	...	12,621·73	76,878	...	...	...	...	...	...	...
1914 ... 9,758·83	3,485	38·50	426	...	...	...	...	7,764·18	40,607	...	...	112·70	2,409	...	...	...
1915 ... 6,557·62	2,368	67·55	1,247	...	...	...	...	314·75	3,546	146·00	3,744	237·58	7,618	10·93	147	
1916 ... 4,409·22	2,263	3·47	36	...	...	...	...	48·87	16,116	2·61	27	250·93	8,268	63·42	1,311	
1917 ... 3,575·46	1,752	...	...	...	...	...	...	783·61	13,406	3·71	67	287·84	9,683	75·00	1,523	
1918 ... 2,251·81	1,629	...	...	...	...	...	...	1,844·19	28,961	...	...	76·28	2,480	82·44	1,314	
1919 ... 4,135·93	4,919	...	...	...	...	...	...	1,030·78	15,807	...	...	14·39	353	...	...	
1920 ... 6,019·98	7,276	...	...	...	...	9·00	360	1,700·50	32,059	...	...	35·39	1,401	...	...	
1921 ... 6,116·66	7,871	...	...	...	...	...	...	1,055·00	18,955	...	...	...	...	...	...	
1922 ... 3,441·15	4,203	...	...	...	...	...	...	164·00	2,481	...	...	...	...	...	...	
Total ... 74,047·56	**45,496**	**109·52**	**1,709**	**32·87**	**386**	**14·00**	**480**	**82,400·45**	**743,570**	**351·07**	**6,408**	**1,015·11**	**32,212**	**238·56**	**4,364**	

‖ Represents the value of the sulphur only, the copper contents not having been treated yet.

TABLE IX.—*Minerals other than Gold, etc.*—continued.

COPPER ORE—*continued.*

Period.	Murchison Gf.				Yalgoo Gf.		Northampton Mf.		Yandanooka Mf.		Mt. Margaret Goldfield.			
	Meekatharra D.		Day Dawn D.								Mt. Morgans District.		Mt. Margaret District.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Previous to 1899	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£
1899	...	...	...	...	...	...	98·00	1,715	38·00	407	273·00	4,338	...	...
1900	...	...	5·15	91	...	...	...	...	...	...	4,539·00	30,718	...	...
1901	...	...	10·50	76	...	...	38·50	277	...	...	7,660·00	40,738	...	...
1902	...	...	...	...	...	...	...	...	...	...	1,954·00	6,852	...	...
1903	...	...	...	...	...	...	...	...	...	...	18,965·00	45,557	...	...
1904	...	...	...	...	...	...	...	...	...	...	500·00	900	...	...
1905	...	...	...	...	...	...	...	...	...	...	60·00	674	...	...
1906	133·50	2,816	...	...	13·91	91	...	...	...	...	4,361·05	21,934	...	...
1907	...	...	31·71	274	10·00	130	...	...	...	...	5,141·52	58,888	2·85	26
1908	...	...	...	...	9·50	97	...	...	133·55	1,482	4,404·10	20,221	...	...
1909	608·00	2,823	...	...	...	...	...	...	...	...	...	...	...	...
1910	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1911	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1912	...	...	4·80	54	...	...	...	...	...	...	...	...	...	...
1913	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1914	15·19	248	3·40	27	...	...	...	...	...	...	...	...	...	...
1915	33·70	492	...	...	4·99	95	...	...	...	...	...	...	...	...
1916	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1917	82·92	2,164	...	...	...	...	...	...	...	...	...	...	...	...
1918	78·34	1,794	...	...	...	...	...	...	...	...	...	...	...	...
1919	16·81	377	...	...	...	...	...	...	...	...	...	...	...	...
1920	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1921	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1922	...	...	...	...	...	...	998·66	13,435	...	...	...	...	...	...
Total ...	968·46	10,714	55·56	522	38·40	413	1135·16	15,427	171·55	1,889	47,857·67	230,320	2·85	26

COPPER ORE—*continued.*

Period.	North Coolgardie Goldfield.		East Coolgardie Goldfield.		Phillips River Goldfield.		State generally.		Total.		GYPSUM.	
	Menzies District.		E. Coolgardie D.								State generally.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Previous to	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£
1899	...	...	...	...	...	...	...	...	7,018·00	55,270	...	...
1899	...	...	...	...	...	...	...	...	2,964·00	35,938	...	...
1900	...	...	...	...	34·00	725	...	...	6,183·15	43,673	...	...
1901	...	...	...	...	1,089·14	12,918	...	...	9,960·14	69,900	...	...
1902	...	...	...	...	308·25	1,238	...	...	2,262·25	8,090	...	...
1903	...	...	...	...	1,561·33	10,984	...	...	20,526·33	56,541	...	...
1904	...	...	...	...	3,468·89	24,280	...	...	3,968·89	25,180	...	...
1905	...	...	...	...	2,329·04	15,592	...	...	2,389·04	16,266	...	...
1906	4·70	33	...	...	2,885·00	25,270	13·50	193	7,411·66	50,337	...	...
1907	1·42	18	...	...	10,414·57	57,273	3·08	40	18,978·42	180,387	...	...
1908	...	...	50·67	330	2,015·71	9,233	...	...	8,294·30	51,434	...	...
1909	...	...	...	...	7,330·70	29,815	...	...	15,084·95	95,344	...	...
1910	...	...	...	...	25,871·65	96,745	...	...	34,351·45	161,606	...	...
1911	...	...	...	...	13,563·68	46,862	...	...	22,675·80	116,318	...	...
1912	...	...	...	...	1,318·38	15,815	...	...	13,607·20	120,158	...	...
1913	...	...	...	...	806·95	9,737	...	...	13,428·68	86,615	...	...
1914	...	...	...	...	4,841·15	37,524	...	...	12,775·12	81,241	...	...
1915	...	...	...	...	3,681·03	24,093	2·03	16	4,498·56	40,998	...	...
1916	...	...	...	...	5,428·08	48,618	...	...	6,697·38	74,376	...	...
1917	...	...	...	...	5,255·57	66,868	...	...	6,488·65	93,711	...	...
1918	...	...	...	...	2,901·66	42,978	...	...	4,982·91	77,527	...	...
1919	...	...	...	...	215·02	4,993	...	...	1,277·00	21,530	...	...
1920	...	...	...	...	217·27	4,125	...	...	1,962·16	37,945	...	...
1921	...	...	...	...	95·34	1,207	...	...	1,150·34	20,162	664·50	622
1922	...	...	...	...	31·84	217	...	...	1,194·50	16,133	63·00	16
Total ...	6·12	51	50·67	330	95,664·25	587,110	18·61	249	230,130·88	1,636,680	727·50	638

Period.	IRONSTONE.								LEAD ORE.					
	W. Pilbara Gf.		E. Coolgardie Gf. / E. Coolgardie D.		State generally.		Total.		Northampton Mf.		West Pilbara Gf.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Previous to	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£
1899 ...	100·00	300	...	...	...	...	100·00	300	...	...	...	...	...	...
1899 ...	...	...	...	...	12,852·00	8,939	12,852·00	8,939	82·75	912	...	...	82·75	912
1900 ...	...	...	...	...	12,251·00	9,258	12,251·00	9,258	268·00	533	...	...	268·00	533
1901 ...	...	...	450·00	247	20,119·00	12,999	20,569·00	13,246	...	...	...	...	...	...
1902 ...	...	...	...	...	4,800·00	2,040	4,800·00	2,040	...	...	...	...	...	...
1903 ...	...	...	...	...	220·00	88	220·00	88	...	...	...	...	...	...
1904 ...	...	...	...	...	1,441·50	577	1,441·50	577	...	...	...	...	...	...
1905 ...	...	...	...	...	3,212·60	1,285	3,212·60	1,285	...	...	...	...	...	...
1906 ...	...	...	...	...	1,279·87	512	1,279·87	512	...	...	...	...	...	...
1907 ...	...	...	...	...	1,093·53	438	1,093·53	438	10·00	128	...	...	10·00	128
1908 ...	...	...	...	...	...	...	...	...	57·00	461	...	...	57·00	461
1909 ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1910 ...	...	...	...	...	† 10·50	† 12	10·50	12	185·10	1,777	...	...	185·10	1,777
1911 ...	...	...	...	...	...	...	...	...	8,194·76	17,663	...	...	8,194·76	17,663
1912 ...	...	...	...	...	...	...	...	...	11,098·50	24,412	...	...	11,098·50	24,412
1913 ...	...	...	...	...	...	...	...	...	26,589·53	50,474	...	...	26,589·53	50,474
1914 ...	...	...	...	...	...	...	...	...	15,334·62	38,351	...	...	15,334·62	38,351
1915 ...	...	...	...	...	...	...	...	...	15,678·30	29,396	...	...	15,678·30	29,396
1916 ...	...	...	...	...	...	...	...	...	34,578·34	110,872	44·00	770	34,622·34	111,642
1917 ...	...	...	...	...	...	...	...	...	46,801·97	143,925	62·57	759	46,864·54	144,684
1918 ...	...	...	...	...	...	...	...	...	47,079·68	176,330	...	...	47,079·68	176,330
1919 ...	...	...	...	...	...	...	...	...	7,385·70	29,841	...	...	7,385·70	29,841
1920 ...	...	...	...	...	...	...	...	...	27,716·40	172,483	...	...	27,716·40	172,483
1921 ...	...	...	...	...	...	...	...	...	10,330·43	25,649	...	...	10,330·43	25,649
1922 ...	...	...	...	...	...	...	...	...	29,602·90	72,338	...	...	29,602·90	72,338
Total ...	100·00	300	450·00	247	57,280·00	36,148	57,830·00	36,695	280,993·98	895,545	106·57	1,529	281,100·55	897,074

† Iron ore from Koolan Island, Yampi Sound.

TABLE IX.—*Minerals other than Gold, etc.*—continued.

Period.	Silver Lead Ore.		Tungsten Ores.											
	Wolfram.		Scheelite.											
	Ashburton Gf.		State generally.		North Coolgardie Gf. Menzies District.		Broad Arrow Goldfield.		Coolgardie Gf. Coolgardie District.		Dundas Goldfield.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Q'nty.	Value.	Quantity.	Value.	Q'nty.	Value.	Quantity.	Value.
	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£
Previous to 1899	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1899	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1900	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1901	21·05	152	...	...	...	...	...	...	...	...	...	...	...	...
1902	35·85	277	...	...	...	...	...	...	...	...	...	...	...	...
1903	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1904	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1905	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1906	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1907	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1908	727·25	6,914	...	...	...	...	...	...	...	...	...	...	...	...
1909	440·00	3,520	*5·00	90	...	...	...	...	...	...	...	...	...	...
1910	...	...	†42·00	115	...	...	...	...	...	...	...	...	...	...
1911	...	...	‡194·00	877	...	...	...	...	...	...	...	...	...	...
1912	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1913	125·50	1,757	‡4·64	69	...	...	...	...	...	...	...	...	...	...
1914	715·10	9,807	...	...	...	...	...	...	...	...	...	...	...	...
1915	298·96	4,429	**·25	27	...	...	...	...	...	...	...	...	...	...
1916	67·83	554	20·00	117	...	...	...	...	...	...	...	...	...	...
1917	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1918	237·48	3,461	...	...	...	...	...	...	...	...	...	...	...	...
1919	214·76	3,116	...	...	273·06	829	...	...	45·71	101	...	...	318·77	930
1920	...	...	...	...	134·25	113	3·35	175	40·00	54	·41	10	178·01	352
1921	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1922	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	2,883·78	33,987	265·89	1,295	407·31	942	3·35	175	85·71	155	·41	10	496·78	1,282

Period.	Coal.		Fireclay.		Gadolinite.		Asbestos.					
					Pilbara Gf. Marble Bar D.		Pilbara Gf.				Total.	
	Collie Mf.		Collie Mf.				Marble Bar D.		Nullagine D.			
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£
Previous to 1899	3,508·00	1,761	...	...	...	...	...	...	...	...	...	...
1899	54,336·00	25,951	...	...	...	...	...	...	...	...	...	...
1900	118,410·10	54,835	...	...	...	...	...	...	...	...	...	...
1901	117,835·80	68,561	...	...	...	...	...	...	...	...	...	...
1902	140,883·90	86,188	...	...	...	...	...	...	...	...	...	...
1903	133,426·62	69,128	...	...	...	...	...	...	...	...	...	...
1904	138,550·04	67,174	...	...	...	...	...	...	...	...	...	...
1905	127,364·06	55,312	...	...	...	...	...	...	...	...	...	...
1906	149,755·27	57,998	...	...	...	...	...	...	...	...	...	...
1907	142,372·54	55,158	...	...	...	...	...	...	...	...	...	...
1908	175,247·92	75,694	...	...	...	...	40·00	1,600	...	...	40·00	1,600
1909	214,301·98	90,965	...	...	...	...	2·83	154	...	...	2·83	154
1910	262,166·06	113,699	...	...	...	...	...	...	...	...	...	...
1911	249,899·15	111,154	...	...	...	...	...	...	...	...	...	...
1912	295,078·91	135,857	...	...	...	...	...	...	...	...	...	...
1913	313,817·96	153,614	...	...	1·00	112	...	...	...	...	...	...
1914	319,210·32	148,684	...	...	...	...	...	...	...	...	...	...
1915	286,666·35	137,859	...	...	...	...	...	...	...	...	...	...
1916	301,525·97	147,823	...	...	...	...	...	...	...	...	...	...
1917	326,550·07	191,822	...	...	...	...	...	...	...	...	...	...
1918	337,039·24	204,319	...	...	...	...	...	...	...	...	...	...
1919	401,713·18	270,355	...	...	...	...	...	...	53·00	1,443	53·00	1,443
1920	462,020·78	350,346	...	...	...	...	32·00	1,900	124·50	5,386	156·50	7,286
1921	468,816·65	407,117	677·80	646	...	...	32·60	1,360	202·75	12,221	235·35	13,581
1922	438,442·78	381,555	...	...	...	...	2·50	250	179·18	7 350	181·68	7,600
Total ...	5,978,939·65	3,462,929	677·80	646	1·00	112	109·93	5,264	559·43	26,400	669·36	31,664

Period.	Limestone.								Diamonds.		Magnesite.		Antimony.		Manganese.	
	Murchison Gf. Cue District.		Yilgarn Goldfield.		State generally.		Total.		Pilbara Gf. Nullagine District.		East Coolgardie Goldfield. Bulong District.		West Pilbara Goldfield.		Peak Hill Goldfield.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	tons.	£	tons.	£	tons.	£	tons.	£	carats.	£	tons.	£	tons.	£	tons.	£
Previous to 1899	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1899	...	...	...	...	17,593·00	2,838	17,593·00	2,838	§	24	...	...	...	...	...	...
1900	...	...	269·85	273	15,657·00	3,321	15,926·85	3,594	...	...	...	...	...	...	...	...
1901	...	...	1,642·00	919	16,568·00	3,429	18,210·00	4,348	...	...	...	...	...	...	...	...
1902	...	...	535·00	340	4,545·35	1,000	5,080·35	1,340	...	...	...	...	...	...	...	...
1903	...	...	102·00	75.	1,177·50	103	1,279·50	178	...	...	...	...	...	...	...	...
1904	...	...	...	...	13,397·20	1,699	13,397·20	1,699	...	...	...	...	...	...	...	...
1905	...	...	...	...	9,144·60	1,220	9,144·60	1,220	...	...	...	...	...	...	...	...
1906	...	...	...	...	9,472·28	1,691	9,472·28	1,691	...	...	...	...	...	...	...	...
1907	298·00	772	...	...	3,303·95	610	3,601·95	1,382	...	...	...	...	...	...	...	...
1908	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1909	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1910	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1911	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1912	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1913	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1914	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1915	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1916	...	...	...	...	...	...	...	...	...	...	601·50	601	...	...	...	...
1917	...	...	...	...	...	...	...	...	...	...	97·50	97	20·78	491	...	...
1918	...	...	...	...	...	...	...	...	...	...	20·50	21	...	...	...	...
1919	...	...	...	...	...	...	...	...	...	...	105·25	334	...	...	...	...
1920	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1921	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1922	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18·11	142
Total ...	298·00	772	2,548·85	1,607	90,858·88	15,911	93,705·73	18,290	...	24	824·75	1,053	20·78	491	18·11	142

* Produced within the West Kimberley Goldfield. † Tons 22·00, value £30, the produce of West Kimberley, and tons 20·00, value £85, the produce of Cue. ‡ The produce of Cue District. § Weight unknown. ** The produce of Yalgoo Goldfield.

NOTE.—As the collection of Statistics of Minerals other than Gold commenced during 1899, the total production from the different localities can only be approximately estimated by the Customs Records, the latest available returns of which are to be found in Table XXVII., pages 76–7.

TABLE X.

QUANTITY AND VALUE OF BLACK TIN REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922. Quantity. Lode.	1922. Quantity. Stream.	1922. Quantity. Total.	1922. Value.	TOTALS TO DATE. Quantity. Lode.	TOTALS TO DATE. Quantity. Stream.	TOTALS TO DATE. Quantity. Total.	TOTALS TO DATE. Value.
			tons.	tons.	tons.	£	tons.	tons.	tons.	£
PILBARA GOLDFIELD.										
MARBLE BAR DISTRICT.										
Cooglegong ...	...	Sundry claims	...	6·00	6·00	553	...	1,701·27	1,701·27	151,099
Mill's Find ...	...	Sundry claims	...	...	...	...	...	·85	·85	69
Moolyella ...	...	Voided leases	...	...	...	...	...	330·53	330·53	21,340
Do. ...	...	Sundry claims	...	19·00	19·00	1,873	...	2,815·21	2,815·21	266,686
Old Shaw ...	...	Voided leases	...	...	...	...	...	6·75	6·75	424
Do. ...	...	Sundry claims	...	...	...	...	...	214·04	214·04	14,525
Tabba Tabba ...	...	Sundry claims	...	·35	·35	20	...	115·62	115·62	12,965
Wodgina ...	M.Ls. 86, 87, 95	H.M. and Anchorite leases ...	...	...	...	...	...	5·00	5·00	500
Do. ...	M.L. 84 ...	(Mount Cassiterite)	...		...	...	133·52	13·85	147·37	14,184
Do. ...	M.Ls. 84, (93), (148)	Mount Cassiterite leases ...	...	...	...	...	195·50	1·60	197·10	16,913
Do. ...	...	Voided leases	...	...	...	...	37·82	6·10	43·92	4,414
Do. ...	...	Sundry claims	...	...	...	...	5·78	48·20	53·98	5,062
		Totals	...	25·35	25·35	2,446	372·62	5,259·02	5,631·64	508,181
MURCHISON GOLDFIELD.										
CUE DISTRICT.										
Poona	...	Sundry claims	...	...	...	...	...	1·52	1·52	118
Cuddingwarra ...	...	Sundry claims	...	...	...	...	...	3·20	3·20	242
		Totals	...	...	...	...	...	4·72	4·72	360
COOLGARDIE GOLDFIELD.										
COOLGARDIE DISTRICT.										
Bulla Bulling ...	...	Sundry claims	...	...	...	...	...	·15	·15	15
		Totals	...	...	...	...	...	·15	·15	15
GREENBUSHES MINERAL FIELD.										
Greenbushes ...	472	(Aqua)	...	...	...	...	...	1·50	1·50	128
Do. ...	(296)	(Central)	...	...	...	...	...	100·16	100·16	9,728
Do. ...	511	Champion	...	...	...	...	1·60	212·05	213·65	23,661
Do. ...	510	(Excelsior Extended)	...	...	...		...	·05	·05	5
Do. ...	472, 497, 510 ...	Excelsior leases	...	1·35	1·35	122	...	119·85	119·85	17,930
Do. ...	497	(Excelsior Tin Mining Co., Ltd.)	...	...	...	...	...	4·05	4·05	281
Do. ...	617	Found at Last	...	...	...	...	·57	...	·57	130
Do. ...	(35), (169), (218), (272), (287), (295), (296), (331), (375), (395), (421), (425), (428), (432), (448), (453)	Greenbushes Development Co., Ltd.	...	...	...	...	·35	971·91	972·26	87,010
Do. ...	515	Kapanga	·15	...	·15	13	33·10	·76	33·86	4,239
Do. ...	73, 233, 271, 504	King Tin leases	...	9·50	9·50	849	6·52	119·54	126·06	15,900
Do. ...	271	(King Tin North)	...	...	...	...	...	1·84	1·84	117
Do. ...	73	(Nelson)	...	...	...	...	...	22·40	22·40	1,675
Do. ...	73, 233 ...	(Nelson leases)	...	...	...	...	...	61·01	61·01	4,164
Do. ...	504	(Old Bunbury)	...	...	...	...	...	37·62	37·62	3,619
Do. ...	505, (519), 614	Scotia leases	...	2·20	2·20	200	...	56·12	56·12	5,742
Do. ...	580	Southern Cross	...	...	...	...	7·95	...	7·95	1,086
Do. ...	(565)	Turn of the Tide	...	...	...	...	...	20·46	20·46	2,689
Do. ...	(381), (435), (436) 472, (478)	(Westralian Gully Tin Co., Ltd.) ...	...	...	...	...	6·38	34·38	40·76	3,235
Do. ...	Locs. 289, 290	Clarth and others	...	...	...	...	...	318·04	318·04	28,959
Do. ...	Loc. 290 ...	McKay and Struthers ...	...	...	...	...	...	5·39	5·39	762
Do. ...	...	Voided leases	...	...	...	...	219·72	1,761·01	1,980·73	196,507
Do. ...	...	Sundry claims	...	2·66	2·66	209	71·10	6,551·37	6,622·47	507,702
		Totals	·15	15·71	15·86	1,393	347·29	10,399·51	10,746·80	915,269

TABLE XI.

QUANTITY AND VALUE OF TANTALITE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922. Quantity. Lode.	1922. Quantity. Stream.	1922. Quantity. Total.	1922. Value.	TOTAL TO DATE. Quantity. Lode.	TOTAL TO DATE. Quantity. Stream.	TOTAL TO DATE. Quantity. Total.	TOTAL TO DATE. Value.
			tons.	tons.	tons.	£	tons.	tons.	tons.	£
PILBARA GOLDFIELD.										
MARBLE BAR DISTRICT.										
Wodgina ...	86, 87, 95 ...	H.M. and Anchorite leases ...	...	...	...	...	2·25	44·80	47·05	7,340
Do. ...	...	Sundry claims	...	...	...	...	...	51·50	51·50	6,124
		Totals	...	...	...	...	**2·25**	**96·30**	**98·55**	**13,464**
GREENBUSHES MINERAL FIELD.										
Greenbushes ...	(369)	Enterprise	...	...	...	...	...	3·19	3·19	1,804
		Totals	...	...	...	...	...	**3·19**	**3·19**	**1,804**

TABLE XII.

QUANTITY AND VALUE OF PYRITIC ORE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922. Quantity.	1922. †Value.	TOTAL TO DATE. Quantity.	TOTAL TO DATE. †Value.
			tons.	£	tons.	£
MT. MARGARET GOLDFIELD.						
MT. MORGANS DISTRICT.						
Eulaminna ...	M.Ls. 4F, 5F, (11F), (12F)	West Australian Copper Co., Ltd.	3,026·45	3,752	61,687·98	38,818
Murrin Murrin...	M.L. 18F ...	Nangeroo: Nangaroo Mines, Ltd.	414·70	451	12,359·58	6,678
		Totals	**3,441·15**	**4,203**	**74,047·56**	**45,496**

† Represents the value of the sulphur only, the copper contents not having been treated.

TABLE XIII.

QUANTITY AND VALUE OF COPPER ORE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922. Quantity. Ore.	1922. Quantity. Metallic Copper.	1922. Value.	TOTAL TO DATE. Quantity. Ore.	TOTAL TO DATE. Quantity. Metallic Copper.	TOTAL TO DATE. Value.
			tons.	tons.	£	tons.	tons.	£
WEST KIMBERLEY GOLDFIELD.								
Berylton ...	... ...	Voided leases	...	...	...	13·19	2·76	200
Yampi Sound ...	M.L. (1), [221H]	Yampi Sound Copper Mine	...	...	...	92·86	22·80	1,473
Do. ...	... ...	Sundry claims	...	...	...	3·47	·36	36
		Totals	...	...	...	**109·52**	**25·92**	**1,709**
PILBARA GOLDFIELD.								
MARBLE BAR DISTRICT.								
Marble Bar ...	... ...	Voided Leases	...	...	...	11·00	1·64	90
Do. ...	... ...	Sundry claims	...	...	...	4·75	·48	25
North Pole ...	... ...	Voided leases	...	...	...	9·35	1·39	81
North Shaw ...	... ...	Voided leases	...	...	...	7·77	1·90	190
		Totals	...	...	...	**32·87**	**5·41**	**386**
NULLAGINE DISTRICT.								
Lionel	... ...	Sundry claims	...	...	...	9·00	4·75	360
McPhee's Creek	M.L. (14L) ...	Tambina	...	...	...	5·00	2·22	120
		Totals	...	...	...	**14·00**	**6·97**	**480**
WEST PILBARA GOLDFIELD.								
Croydon ...	... ...	Voided leases	...	...	...	604·00	108·65	7,333
Egina	... ...	Voided leases	...	...	...	542·00	104·15	6,643
Roebourne ...	M.L. 183 ...	(Carlow Castle: Roebourne Copper Mines, Ltd.)	...	...	...	69·00	7·80	780
Do. ...	M.L. 174 ...	Good Fortune	...	...	...	56·77	8·58	904
Do. ...	M.Ls. 174, (175)	(Good Fortune leases)	...	...	...	63·40	9·58	1,011
Do. ...	M.L. 184 ...	Good Luck	...	...	...	5·21	1·01	111
Do. ...	M.L. 167 ...	(Quod Est)	...	...	...	22·43	3·49	256
Do. ...	M.Ls. 167, 183	Roebourne Copper Mines, Ltd.	...	...	...	122·45	18·50	1,855
Do. ...	M.Ls. 144, (192), (193)	Yannery and Whundo Copper Mining Co., Ltd.	...	...	...	404·50	87·14	8,116
Do. ...	M.L. 144 ...	(Yannery Hill Copper Mine)	...	...	...	469·25	113·81	9,961
Do. ...	...	Voided leases	...	...	...	2,729·28	515·83	44,459
Do. ...	...	Sundry claims	...	...	...	77·41	13·61	800
Whim Creek ...	M.L. 34 ...	(Balla Balla Copper Mines, Ltd.)	...	...	...	2,009·00	166·33	12,036
Do. ...	M.L. 34 ...	Mons Cupri: Whim Well Copper Mines, Ltd.	...	...	...	282·50	33·75	2,979
Do. ...	Loc. 71 ...	Pilbara Copper Fields, Ltd.	164·00	36·50	2,481	2,350·50	507·81	41,584
Do. ...	Loc. 71 ...	(Whim Well Copper Mines, Ltd.)	...	...	...	72,562·75	9,343·89	604,492
Do. ...	...	Voided leases	...	...	...	30·00	5·50	2 50
		Totals	**164·00**	**36·50**	**2,481**	**82,400·45**	**11,049·43**	**743,570**

TABLE XIII.—*Quantity and Value of COPPER ORE, etc.*—continued.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.			TOTALS TO DATE.		
			Quantity.		Value.	Quantity.		Value.
			Ore.	Metallic Copper.		Ore.	Metallic Copper.	
			tons.	tons.	£	tons.	tons.	£
ASHBURTON GOLDFIELD.								
Ashburton ...	...	Sundry claims	...	...	...	6·32	·79	94
Red Hill ...	...	Voided leases	...	...	...	175·50	33·85	2,126
Uaroo	...	Voided leases	...	...	...	169·25	62·49	4,188
		Totals	...	...	...	**351·07**	**97·13**	**6,408**
PEAK HILL GOLDFIELD.								
Peak Hill ...	M.L. (35P) ...	Burra Copper Mines, Ltd.	...	...	...	25·84	8·85	943
Do. ...	M.Ls. 37P, 38P	Sonia leases	...	...	...	135·04	47·26	4,807
Do. ...	M.L. 9P ...	Sons of Gwalia	...	...	...	458·49	169·89	15,680
Do. ...	M.Ls. (29P), (30P) (31P)	(Two Sisters leases)	...	...	...	64·04	30·93	1,466
Do. ...	M.L. (31P) ...	Two Sisters North...	...	...	...	115·76	31·40	3,594
Do. ...	... ...	Voided leases	...	...	...	153·91	43·02	3,885
Do. ...	... ...	Sundry claims	...	...	...	62·03	21·96	1,837
		Totals	...	...	...	**1,015·11**	**353·31**	**32,212**
EAST MURCHISON GOLDFIELD.								
LAWLERS DISTRICT.								
Kathleen Valley	M.L. (12) ...	Shepherd	...	...	...	6·77	1·32	69
Lawlers ...	M.L. (29) ...	Bungarra	...	...	...	157·44	23·85	2,837
Do. ...	...	Sundry claims	...	...	...	74·35	13·25	1,458
		Totals	...	...	...	**238·56**	**38·42**	**4,364**
MURCHISON GOLDFIELD.								
MEEKATHARRA DISTRICT.								
Gabanintha ...	...	Voided leases	...	...	...	920·56	119·84	9,381
Do. ...	...	Sundry claims	...	...	...	34·42	9·23	1,072
Holden's Find...	..	Sundry claims	...	...	...	6·72	1·11	111
Yaloginda ...	...	Sundry claims	...	...	...	6·76	1·41	150
		Totals	...	...	...	**968·46**	**131·59**	**10,714**
DAY DAWN DISTRICT.								
Day Dawn ...	... ...	Voided leases	...	...	...	26·95	5·17	305
Do. ...	... ...	Sundry claims	...	...	...	28·61	2·93	217
		Totals	...	...	...	**55·56**	**8·10**	**522**
YALGOO GOLDFIELD.								
Mount Gibson ...	... ...	Sundry claims	...	...	...	4·99	1·10	95
Twin Peaks ...	... ...	Sundry claims	...	...	...	19·50	3·49	227
Wadgingarra ...	M.L. (6) ...	Olive Queen	...	...	...	13·91	·98	91
		Totals	...	...	...	**38·40**	**5·57**	**413**
NORTHAMPTON MINERAL FIELD.								
Geraldine ...	M.Ls. (10), (11)	Geraldine leases	...	...	...	136·50	36·05	1,992
Narra Tarra ...	Loc. 833 ...	Narra Tarra : Fremantle Trading Co., Ltd.	998·66	208·75	13,435	998·66	208·75	13,435
		Totals	**998·66**	**208·75**	**13,435**	**1,135·16**	**244·80**	**15,427**
YANDANOOKA MINERAL FIELD.								
Arrino	... ...	Sundry claims	...	...	...	126·05	18·48	1,386
Yandanooka ...	Freehold Gd. ...	Muggawa Copper Mines	...	...	...	7·50	1·20	96
Do. ...	... ...	Voided leases	...	...	...	38·00	7·95	407
		Totals	...	...	...	**171·55**	**27·63**	**1,889**
MOUNT MARGARET GOLDFIELD.								
MOUNT MORGANS DISTRICT.								
Eulaminna ...	[10C, 11C], 4F, 5F (12C, 37C)	(Mt. Malcolm Copper Mine leases) ...	...	...	...	13,516·00	1,001·98	70,754
Do. ...	[10C, 11C], 4F, 5F	(Mt. Malcolm Copper Mine leases) ...	...	...	...	3,839·00	418·00	17,065
Do. ...	[10C, 11C], 4F, 5F (12C, 37C)	(Murrin Copper Mines, Ltd.)	...	...	...	19,165·00	798·50	45,817
Do. ...	4F, 5F (11F) (12F)	West Australian Copper Co., Ltd.	...	...	...	9,794·05	1,976·08	80,199
Mt. Margaret ...	G.M.L. (66F) ...	Mt. Morven	...	...	...	11·53	2·40	163
Murrin Murrin...	18F	Nangeroo : Nangaroo Mines, Ltd.	...	...	...	6·80	3·00	160
Do. ...	... ...	Voided leases	...	...	...	1,525·29	248·04	16,662
		Totals	...	...	...	**47,857·67**	**4,448·00**	**230,820**

TABLE XIII.—*Quantity and Value of COPPER ORE, etc.*—continued.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922. Quantity. Ore.	1922. Quantity. Metallic Copper.	1922. Value.	TOTALS TO DATE. Quantity. Ore.	TOTALS TO DATE. Quantity. Metallic Copper.	TOTALS TO DATE. Value.
			tons.	tons.	£	tons.	tons.	£
MOUNT MARGARET GOLDFIELD—*continued*.								
MOUNT MARGARET DISTRICT.								
Burtville ...	M.L. (16r) ...	Dreadnought	...	...	...	2·85	·29	26
		Totals	...	...	...	**2·85**	**·29**	**26**
NORTH COOLGARDIE GOLDFIELD.								
MENZIES DISTRICT.								
Goongarrie ...	M.L. (13z) ...	Providence Copper Mining Syndicate, Ltd.	...	...	...	4·70	·42	33
Do. ...	... ...	Sundry claims	...	...	...	1·42	·40	18
		Totals	...	...	...	**6·12**	**·82**	**51**
EAST COOLGARDIE GOLDFIELD.								
EAST COOLGARDIE DISTRICT.								
Boorara ...	M.L. (100E) ...	Premier Copper Mine	...	...	...	50·67	6·22	330
		Totals	...	...	...	**50·67**	**6·22**	**330**
PHILLIPS RIVER GOLDFIELD.								
Kundip ...	G.M.Ls. 147, 179	Fair Play leases	...	...	...	130·09	131·30	11,975
Do. ...	G.M.L. 184 ...	Gem	...	·18	11	90·98	21·50	2,325
Do. ...	G.M.Ls. 151, 156	Gem Consolidated leases	...	...	...	48·00	76·75	8,327
Do. ...	M.Ls. 52, 94 ...	Harbour View Gold & Copper Co., Ltd. ...	5·28	·33	21	1,209·93	90·14	8,236
Do. ...	M.Ls. 52, 94 ...	(Harbour View leases)	...	...	...	604·36	76·80	4,524
Do. ...	M.Ls. 52, 94 ...	(Harbour View leases)	...	...	...	508·27	64·66	3,642
Do. ...	G.M.L. 98 ...	Hillsborough	...	...	...	692·84	57·11	4,710
Do. ...	M.L. 370 ...	North Harbour View	1·92	·19	25	15·72	·99	124
Do. ...	M.Ls. 52, 94 ...	(Ravensthorpe G.M. Syndicate, N.L.) ...	...	...	...	132·56	24·36	1,382
Do. ...	G.M.L. 74 ...	Two Boys	...	...	...	...	28·30	3,249
Do. ...	... ...	Voided leases	...	...	...	3,430·67	291·02	19,149
Do. ...	... ...	Sundry claims	16·39	1·99	111	109·33	17·14	1,353
Mt. Desmond ...	M.L. 203 ...	British Flag: Phillips River Gold & Copper Co., Ltd.	...	...	...	19·90	3·64	250
Do. ...	M.L. 208 ...	Desmond	...	...	...	1,392·85	164·82	16,993
Do. ...	M.L. 208 ...	(Desmond: Phillips River Gold & Copper Co., Ltd.)	...	...	...	1,234·05	215·74	14,956
Do. ...	M.L. 95 ...	Elverdton	...	...	...	7,418·57	675·84	67,229
Do. ...	M.L. 95 ...	(Elverdton)...	...	...	...	130·00	5·70	570
Do. ...	M.L. 95 ...	(Elverdton: Phillips River Gold & Copper Co., Ltd.)	...	...	...	30,574·23	2,186·64	124,252
Do. ...	M.L. 95 ...	(Elverdton: Phillips River Option Syndicate, N.L.)	...	...	...	2,946·02	401·43	22,657
Do. ...	M.L. 168 ...	(Elverton South)	...	...	...	18·48	2·39	119
Do. ...	M.L. 168 ...	Elverton South: Phillips River Gold & Copper Co., Ltd.	...	...	...	15·73	1·46	92
Do. ...	M.L. 109 ...	(Mt. Desmond)	...	...	...	198·87	30·77	1,640
Do. ...	M.L. 109 ...	Mt. Desmond: Phillips River Gold & Copper Co., Ltd.	...	...	...	1,762·22	216·76	18,128
Do. ...	M.L. 199 ...	(P.L.P.)	...	...	...	208·66	33·69	2,277
Do. ...	M.L. 199 ...	P.L.P.: Phillips River Gold & Copper Co., Ltd.	...	...	...	17·56	1·88	121
Do. ...	... ...	Voided Leases	...	...	...	1,015·17	166·71	9,770
Do. ...	... ...	Sundry claims	...	...	...	140·25	25·17	1,901
Ravensthorpe ...	M.L. 378 ...	Bickerton	...	...	...	2·45	·30	31
Do. ...	M.L. 16 ...	Marion Martin	...	...	...	2,270·63	256·94	26,496
Do. ...	M.L. 16 ...	(Marion Martin)	...	...	...	865·69	130·61	6,650
Do. ...	M.L. 16 ...	(Marion Martin: Phillips River Gold & Copper Co., Ltd.)	...	...	...	2,855·36	375·44	23,506
Do. ...	M.L. 15 ...	Mount Cattlin	...	...	...	2,178·01	142·64	15,296
Do. ...	M.L. 15 ...	(Mount Cattlin)	...	...	...	281·56	31·35	1,716
Do. ...	M.L. 15 ...	(Mount Cattlin: Mount Cattlin Copper Mining Co., Ltd.)	...	...	...	6,608·76	333·59	28,841
Do. ...	M.L. 15 ...	(Mount Cattlin: Phillips River Gold & Copper Co., Ltd.)	...	...	...	1,263·76	80·26	7,646
Do. ...	M.L. 15 ...	(Mount Cattlin: Phillips River Gold & Copper Co., Ltd.)	...	...	...	14,432·25	714·90	40,313
Do. ...	M.L. 342 ...	Surprise	...	...	...	885·05	157·92	11,914
Do. ...	... ...	Voided leases	...	...	...	6,993·36	828·33	51,484
Do. ...	... ...	Sundry claims	8·25	·83	49	1,129·45	126·02	11,031
West River ...	... ...	Voided leases	...	...	...	44·04	7·41	414
Do. ...	... ...	Sundry claims	...	...	...	150·69	25·84	2,061
		From Goldfield generally	...	...	...	1,637·88	128·64	9,760
		Totals	**31·84**	**3·52**	**217**	**95,664·25**	**8,352·90**	**587,110**
STATE GENERALLY.								
...	... ...	Voided leases	...	...	...	5·11	1·54	56
...	... ...	Sundry claims	...	...	...	13·50	2·27	193
		Totals	...	...	...	**18·61**	**3·81**	**249**

TABLE XIV.

QUANTITY AND VALUE OF IRONSTONE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			tons.	£	tons.	£
		WEST PILBARA GOLDFIELD.				
Whim Creek ...	(17), (18), (21)	Whim Well Copper Mines	...	...	100·00	300
		Totals	...	...	**100·00**	**300**
		EAST COOLGARDIE GOLDFIELD.				
		EAST COOLGARDIE DISTRICT.				
Boulder ...	(1490E) ...	Mt. Ferrum	...	...	450·00	247
		Totals	...	...	**450·00**	**247**
		STATE GENERALLY.				
		Avon	...	...	22,223·00	16,241
		Clackline	...	...	18,253·50	8,789
		Coates' Paddock	...	...	4,712·00	3,277
		Greenbushes	...	...	7,481·00	4,629
		Koolan Island—Yampi Sound	...	...	10·50	12
		Werribee	...	...	4,600·00	3,200
		Totals	...	...	**57,280·00**	**36,148**

TABLE XV.

QUANTITY AND VALUE OF LEAD ORE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.			TOTALS TO DATE.		
			Lead Ore.	Metal therefrom.	Value.	Lead Ore.	Metal therefrom.	Value.
			tons.	tons.	£	tons.	tons.	£
		NORTHAMPTON MINERAL FIELD.						
Geraldine ...	Loc. 1 ...	Geraldine Mine	...	...	...	774·59	257·13	5,139
Do. ...	M.L. 189 ...	Long Lode	38·00	11·62	86	38·00	11·62	86
Do. ...	M.L. 150 ...	Surprise	11,144·00	1,251·46	30,798	25,393·53	6,570·53	187,065
Do. ...	M.L. 158 ...	Surprise South	...	...	...	14·00	5·41	170
Do. ...	M.L. 153 ...	Three Sisters	...	...	...	6·25	3·94	112
Do. ...	M.L. 19PP ...	Wheal Lily	...	...	...	44·75	30·79	742
Do. ...	Loc. 7	Thring & Green	145·00	50·00	450	318.44	154.46	2,546
Do. ...	...	Voided leases	...	...	...	62·74	45·20	529
Do. ...	...	Sundry claims	...	...	...	327·04	175·65	3,408
Narra Tarra ...	Loc. 833 ...	Narra Tarra: Fremantle Trading Co., Ltd.	12,640·80	1,309·68	30,640	110,328·45	11,368·06	327,698
Do. ...	Loc. 118, 119 ...	Lauder & Raven (Tributers) ...	...	...	...	106·21	60·02	1,345
Do. ...	...	Sundry claims	...	...	...	238·16	34·18	442
Northampton ...	Loc. 1472 ...	Baddera: Fremantle Trading Co., Ltd.	...	...	...	129,264·56	13,888·33	317,631
Do. ...	Loc. 436 ...	Fortune Exploration Co., N.L. ...	...	...	...	123·38	51·17	1,316
Do. ...	Loc. 1146 ...	Wheal Ellen: Fremantle Trading Co., Ltd.	5,635·10	417·94	10,364	10,320·18	1,065·52	29,303
Do. ...	Loc. 436 ...	(Wheal of Fortune Extended Syndicate)	...	...	...	125·82	43·13	793
Do. ...	...	Voided leases	...	...	...	3,266·76	723·13	14,329
Do. ...	...	Sundry claims	...	...	...	222·12	132·14	2,679
Victoria ...	...	Voided Leases...	...	...	...	19·00	12·54	212
		Totals	29,602·90	3,040·70	72,338	280,993·98	34,632·95	895,545
		WEST PILBARA GOLDFIELD.						
Roebourne ...	... ...	Sundry claims	...	...	...	2·57	1·36	39
Whim Creek ...	M.L. (172) ...	Cumstock	...	...	...	104·00	46·00	1,490
		Totals	...	...	...	106·57	47·36	1,529

TABLE XVI.

QUANTITY AND VALUE OF SILVER-LEAD ORE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			tons.	£	tons.	£
		ASHBURTON GOLDFIELD.				
Ashburton ...	M.L. (3) ...	Rainbow	...	...	56·90	429
Do. ...	... ...	Sundry claims	...	...	2·83	40
Uaroo	M.Ls. (43), (49), (84)	Uaroo Silver Lead Mines, Ltd.	...	...	2,824·05	33,518
		Totals	...	...	2,883·78	33,987

TABLE XVII.

QUANTITY AND VALUE OF COAL REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			tons.	£	tons.	£
		COLLIE RIVER MINERAL FIELD.				
Collie	197, etc. ...	Amalgamated Collieries of W.A., Ltd. (Cardiff leases) ...	82,112·91	69,933	209,844·42	173,890
Do. ...	244, etc. ...	Amalgamated Collieries of W.A., Ltd. (Co-operative leases) ...	106,613·36	92,845	290,020·35	245,345
Do. ...	85, etc. ...	Amalgamated Collieries of W.A., Ltd. (Proprietary leases) ...	126,290·59	108,119	303,614·97	259,687
Do. ...	250, etc. ...	Amalgamated Collieries of W.A., Ltd. (Westralia leases) ...	33,662·89	30,270	33·662·89	30·270
Do. ...	151, etc. ...	Amalgamated Collieries of W.A., Ltd. (Scottish leases) ...	...	...	380·00	251
Do. ...	197, etc. ...	(Cardiff Coal Mining Co., Ltd.)	...	...	976,824·78	471,417
Do. ...	151, etc. ...	(Collie Boulder Coal Co., Ltd.)	...	...	71,512·70	26,139
Do. ...	244, etc. ...	(Collie Co-operative Collieries, Ltd.)	...	...	970,044·30	511,862
Do. ...	88 (part of) ...	(Collie Proprietary Coalfields of W.A., Ltd.)	...	...	477,781·55	242,918
Do. ...	85, etc. ...	(Collie Proprietary Coalfields of W.A., Ltd.)	...	...	580,392·15	289,246
Do. ...	260, etc. ...	Premier Coal Mining Co., Ltd.	44,311·99	38,158	280,558·54	186,912
Do. ...	151. etc. ...	(Scottish Collieries, Ltd.)	...	...	2,314·51	1,210
Do. ...	151, etc. ...	(Scottish Co-operative Collieries Co., Ltd.)	...	...	430,796·95	171,303
Do. ...	85, etc. ...	(The Proprietary Coal Mines of W.A., Ltd.)	...	...	693,045·34	413,755
Do. ...	88 (part of) ...	(The Proprietary Coal Mines of W.A., Ltd.)	...	...	109·00	54
Do. ...	250, etc. ...	(Westralian Coal Mining Co., Ltd.)	...	...	507,384·11	307,913
Do. ...	250, etc. ...	(Westralia Black Diamond Collieries, Ltd.)	45,451·04	42,230	125,083·24	117,827
Do. ...	...	Voided leases	...	...	25,569·85	12,930
		Totals	438,442·78	381,555	5,978,939·65	3,462,929

TABLE XVIII.

QUANTITY AND VALUE OF FIRECLAY REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF OF AREA. LEASE, CLAIM,	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
		COLLIE MINERAL FIELD.	tons.	£	tons.	£
Collie	87	Amalgamated Collieries of W.A., Ltd. ... ... (Proprietary lease)	677·80	646	677·80	646
		Totals	677·80	646	677·80	646

TABLE XIX.

QUANTITY AND VALUE OF LIMESTONE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value
			tons.	£	tons.	£
		MURCHISON GOLDFIELD.				
		CUE DISTRICT.				
Cuddingwarra ...	M.L. (3) ...	Linella	...	...	298·00	772
		Totals	...	...	**298·00**	**772**
		YILGARN GOLDFIELD.				
Southern Cross	... ...	Voided leases	...	...	2,548·85	1,607
		Totals	...	...	**2,548·85**	**1,607**
		STATE GENERALLY.				
Fremantle ...	... ...	... ...	...	...	90,858·88	15,911
		Totals	...	...	**90,858·88**	**15,911**

TABLE XX.

QUANTITY AND VALUE OF ASBESTOS REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			tons.	£	tons.	£
		PILBARA GOLDFIELD.				
		MARBLE BAR DISTRICT.				
Cooglegong ...	M.Ls 274, 275	Chrysotile No. 1 Leases	2·50	250	67·10	3,510
Soanesville ...	M.Ls. (155 etc.)	Pilbara Asbestos Co., Ltd.	...	...	42·83	1,754
		Total	**2·50**	**250**	**109·93**	**5,264**
		NULLAGINE DISTRICT.				
Lionel	M.L. 34L ...	Archern	3·00	90	3·00	90
Do. ...	M.Ls. 18L, 19L, 20L	Barnett Bros., Ltd.	135·78	5,865	276·78	14,715
Do. ...	M.Ls. 21L, 22L	Barnett Bros., Ltd.	...	...	25·00	2,000
Do. ...	M.L. 28L ...	Barnett Bros., Ltd.	...	...	2·50	200
Do. ...	M.Ls, 18L, 19L, 20L	(Barnett's Asbestos Nos. 1, 2, and 3)	...	...	163·00	5,793
Do. ...	M.Ls. 32L, 33L	Bullswool No. 2 and Junction leases	6·15	330	6·15	330
Do. ...	M.Ls. 21L, 22L	(Nullagine Nos. 1 and 2)	...	...	7·00	526
Do. ...	M.L. 29L ...	Toledo	2·00	80	16·50	696
Do. ...	...	Voided leases	...	...	4·00	100
Do. ...	...	Sundry claims	32·25	985	55·50	1,950
		Totals	**179·18**	**7,350**	**559·43**	**26,400**

TABLE XXI.

QUANTITY AND VALUE OF GADOLINITE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			tons.	£	tons	£
		PILBARA GOLDFIELD.				
		MARBLE BAR DISTRICT.				
Cooglegong ...	(M.L. 254) ...	Iverna	...	...	1·00	112
		Totals	...	...	**1·00**	**112**

TABLE XXII.

QUANTITY AND VALUE OF TUNGSTEN ORES REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

SCHEELITE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.			TOTALS TO DATE.		
			Ore.	Contents Tungstic Trioxide.	Value.	Ore.	Contents Tungstic Trioxide.	Value.
			tons.	units.	£	tons.	units.	£
NORTH COOLGARDIE GOLDFIELD.								
MENZIES DISTRICT.								
Comet Vale ...	G.M.L. 5410z...	Lake View	...	...	...	380·84	338·39	818
Do ...	... ...	Sundry claims	...	...	...	26·47	47·38	124
		Totals	...	...	...	**407·31**	**385·77**	**942**
BROAD ARROW GOLDFIELD.								
Ora Banda ...	... ...	Sundry claims	...	...	...	3·35	66·50	175
		Totals	...	...	...	**3·35**	**66·50**	**175**
COOLGARDIE GOLDFIELD.								
COOLGARDIE DISTRICT.								
Higginsville ...	... ...	Sundry claims	...	...	...	85·71	59·07	155
		Totals	...	...	...	**85·71**	**59·07**	**155**
DUNDAS GOLDFIELD.								
Norseman ...	... ...	Sundry claims	...	...	...	·41	3·98	10
		Totals	..	...	...	**·41**	**3·98**	**10**

WOLFRAM.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.			TOTALS TO DATE.		
			Ore.	Metallic contents.	Value.	Ore.	Metallic contents.	Value.
			tons.	tons.	£	tons.	tons.	£
MURCHISON GOLDFIELD.								
CUE DISTRICT.								
Callie Spring ...	M.L. (11) ...	Socialist	...	...	...	194·00	6·11	877
Do. ...	... ...	Sundry claims	...	...	...	44·64	2·30	271
		Totals	...	...	...	**238·64**	**8·41**	**1,148**
YALGOO GOLDFIELD.								
Yalgoo	M.L. (36) ...	Yandanoo King North	...	...	...	·25	·12	27
		Totals	...	...	...	**·25**	**·12**	**27**
STATE GENERALLY.								
Derby	(146H) ...	Taylor's Wolfram Reward ...	...	...	...	27·00	2·00	120
		Totals	...	...	...	**27·00**	**2·00**	**120**

TABLE XXIII.

QUANTITY AND VALUE OF MAGNESITE REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			tons.	£	tons.	£
EAST COOLGARDIE GOLDFIELD.						
BULONG DISTRICT.						
Bulong	... ...	Sundry claims	...	...	824·75	1,053
		Totals	...	...	824·75	1,053

TABLE XXIV.

QUANTITY AND VALUE OF ANTIMONY REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.			TOTALS TO DATE.		
			Ore.	Metallic contents.	Value.	Ore.	Metallic contents.	Value.
			tons.	tons.	£	tons.	tons.	£
WEST PILBARA GOLDFIELD.								
Balla Balla ...	M.L. (185) ...	Star	...	...	...	20·78	11·58	491
		Totals	...	...	...	20·78	11·58	491

TABLE XXV.

QUANTITY AND VALUE OF GYPSUM REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
		STATE GENERALLY.	tons.	£	tons.	£
Koorda ...	M.L. 280H ...	White Cross	63·00	16	727·50	638
		Totals	**63·00**	**16**	**727·50**	**638**

TABLE XXVI.

QUANTITY AND VALUE OF DIAMONDS REPORTED TO THE MINES DEPARTMENT DURING 1922, AND TOTALS TO DATE.

LOCALITY.	NUMBER OF LEASE, CLAIM, OR AREA.	REGISTERED NAME OF COMPANY OR LEASE.	1922.		TOTALS TO DATE.	
			Quantity.	Value.	Quantity.	Value.
			carats.	£	carats.	£
		PILBARA GOLDFIELD.				
		NULLAGINE DISTRICT.				
Nullagine ...	M.R.C. (6L) ...	Morgans, A. E.	...	...	...	24
		Totals	...	...	...	24

TABLE

RETURN OF ORE AND MINERALS OTHER THAN GOLD

YEAR.	COPPER.												
	COPPER ORE.										COPPER INGOT, MATTE, ETC.		Total Value of Copper Exported.
	West Pilbara Gf.		Northampton Mf.		Phillips River Gf.		State generally.		Total.		State generally.		
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	£
1850 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
1 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 ...	...	...	[2]†	7	...	...	...	...	...	7	...	...	7
4 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 ...	...	...	2	26	...	...	...	...	2	26	...	...	26
6 ...	...	...	57	1,018	...	...	...	...	57	1,018	...	...	1,018
7 ...	...	...	80	1,920	...	...	...	...	80	1,920	...	...	1,920
8 ...	...	...	433	9,531	...	...	...	...	433	9,531	...	...	9,531
9 ...	...	...	941	14,122	...	...	...	...	941	14,122	...	...	14,122
1860 ...	...	...	517	8,021	...	...	...	...	517	8,021	...	...	8,021
1 ...	...	...	409	6,339	...	...	...	...	409	6,339	...	...	6,339
2 ...	...	...	783	12,536	...	...	...	...	783	12,536	...	...	12,536
3 ...	...	...	763	12,208	...	...	...	...	763	12,208	...	...	12,208
4 ...	...	...	1,076	17,216	...	...	...	...	1,076	17,216	...	...	17,216
5 ...	...	...	886	13,290	...	...	...	...	886	13,290	...	...	13,290
6 ...	...	...	557	8,362	...	...	...	...	557	8,362	...	...	8,362
7 ...	...	...	337	5,055	...	...	...	...	337	5,055	...	...	5,055
8 ...	...	...	83	1,245	...	...	...	...	83	1,245	...	...	1,245
9 ...	...	...	155	2,325	...	...	...	...	155	2,325	...	...	2,325
1870 ...	...	...	6	90	...	...	...	...	6	90	...	...	90
1 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
3 ...	...	...	56	848	...	...	...	...	56	848	...	...	848
4 ...	...	...	67	998	...	...	...	...	67	998	...	...	998
5 ...	...	...	205	3,071	...	...	...	...	205	3,071	...	...	3,071
6 ...	...	...	279	4,185	...	...	...	...	279	4,185	...	...	4,185
7 ...	...	...	54	803	...	...	...	...	54	803	...	...	803
8 ...	...	...	9	135	...	...	...	...	9	135	...	...	135
9 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
1880 ...	...	...	8	120	...	...	...	...	8	120	...	...	120
1 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
2 ...	...	...	2	23	...	...	...	...	2	23	...	...	23
3 ...	...	...	5	75	...	...	...	...	5	75	...	...	75
4 ...	...	...	118	1,770	...	...	...	...	118	1,770	...	...	1,770
5 ...	...	...	120	1,793	...	...	...	...	120	1,793	...	...	1,793
6 ...	...	...	249	3,735	...	...	...	...	249	3,735	...	...	3,735
7 ...	...	...	23	345	...	...	...	...	23	345	...	...	345
8 ...	...	...	88	1,488	...	...	...	...	88	1,488	...	...	1,488
9 ...	...	...	112	1,904	...	...	...	...	112	1,904	...	...	1,904
1890 ...	...	...	8	136	...	...	...	...	8	136	...	...	136
1 ...	263	4,462	...	...	...	...	...	...	263	4,462	...	...	4,462
2 ...	[1]†412	6,319	155	2,377	...	...	...	...	567	8,696	...	...	8,696
3 ...	50	606	...	...	...	...	...	...	50	606	...	...	606
4 ...	...	...	...	...	...	...	...	...	...	...	...	...	...
5 ...	802	12,832	24	120	...	...	...	...	826	12,952	...	...	12,952
6 ...	6	100	...	...	...	...	...	...	6	100	...	...	100
7 ...	65	731	21	302	...	...	...	...	86	1,033	...	...	1,033
8 ...	281	3,334	75	932	...	...	...	...	356	4,266	...	...	4,266
9 ...	1,404	31,979	587	9,473	...	...	...	...	1,991	41,452	...	...	41,452
1900 ...	544	10,696	...	...	105	2,411	197	3,355	846	16,462	249	17,475	33,937
1 ...	1,058	26,464	1	10	1,205	22,107	397	6,322	2,661	54,903	880	55,866	110,769
2 ...	68	1,698	20	330	162	2,469	33	489	283	4,986	175	7,918	12,904
3 ...	4	180	25	460	302	3,538	15	349	346	4,527	1,075	33,288	37,815
4 ...	50	500	...	...	11	154	310	3,378	371	4,032	102	3,827	7,859
5 ...	...	...	...	...	80	2,808	713	8,576	793	11,384	794	53,867	65,251
6 ...	112	323	...	...	...	...	224	2,930	336	6,162	343	30,367	36,529
7 ...	...	...	...	...	...	...	3,727	61,493	3,727	61,493	1,602	141,883	203,376
8 ...	...	...	...	...	...	...	2,503	29,272	2,503	29,272	479	27,819	57,091
9 ...	...	...	...	...	...	...	6,959	59,541	6,959	59,541	833	45,100	104,641
1910 ...	...	...	...	...	...	...	6,309	27,271	6,309	27,271	1,281	68,657	95,928
1 ...	...	...	...	...	...	...	9,825	33,709	9,825	33,709	828	44,409	78,118
2 ...	...	...	...	...	...	...	9,536	58,688	9,536	58,688	28	1,136	59,824
3 ...	...	...	...	...	...	...	4,339	136,472	4,339	136,472	82	5,891	142,363
4 ...	...	...	...	...	...	...	3,913	33,654	3,913	33,654	183	4,520	38,174
5 ...	...	...	...	...	...	...	737	13,768	737	13,768	946	77,401	91,169
6 ...	...	...	...	...	...	...	650	14,971	650	14,971	457	49,862	64,833
7 ...	...	...	...	...	...	...	966	20,878	966	20,878	535	64,860	85,738
8 ...	...	...	...	...	...	...	1,643	24,877	1,643	24,877	478	41,269	66,146
9 ...	...	...	...	...	...	...	455	9,740	455	9,740	4	365	10,105
1920 ...	...	...	...	...	...	...	1,511	22,467	1,511	22,467	137	2,698	25,165
1921 ...	...	...	...	...	...	...	1,040	16,153	1,040	16,153	206	8,448	24,601
1922 ...	...	...	...	...	...	...	352	5,519	352	5,519	660	14,860	20,379
Total ...	...	...	...	...	...	...	...	...	72,734	879,236	12,357	801,786	1,681,022

[1]†*See* Woodward's Mining Handbook, Perth : By Authority, 1895 ; page 123. [2]†Weight not stated.

XXVII.

ENTERED FOR EXPORT FROM 1850 TO 1922, INCLUSIVE.

TIN.											
BLACK TIN (Dressed Tin ore).								TIN INGOT.		Total Value of Tin Exported.	YEAR.
Pilbara Gf.		Greenbushes Mf.		[3]†State generally.		Total.		Greenbushes Mf.			
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.		
tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	£	
...	...	...	...	...	...	...	...	...	...	...	1850
...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	1860
...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	1870
...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	1880
...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	8
...	...	5	300	...	...	5	300	...	...	300	9
...	...	68	5,400	...	...	68	5,400	...	...	5,400	1890
...	...	204	10,200	...	...	204	10,200	...	...	10,200	1
...	...	265	13,843	...	...	265	13,843	...	...	13,843	2
57	3,470	171	7,664	...	...	228	11,134	...	...	11,134	3
19	949	371	14,325	...	...	390	15,274	...	...	15,274	4
...	...	277	9,703	...	...	277	9,703	...	...	9,703	5
...	...	137	4,338	...	...	137	4,338	...	...	4,338	6
...	...	96	3,275	...	...	96	3,275	...	...	3,275	7
...	...	68	2,760	...	...	68	2,760	...	...	2,760	8
30	2,025	278	21,138	...	...	308	23,163	...	...	23,163	9
368	30,146	102	8,032	...	...	470	38,178	142	18,872	57,050	1900
439	34,600	68	4,895	...	...	507	39,495	97	12,607	52,102	1
248	19,698	31	2,870	...	...	279	22,568	141	16,830	39,398	2
267	20,988	25	1,868	...	...	292	22,856	235	29,2 7	52,133	3
64	4,932	24	1,389	379	20,797	467	27,118	129	16,155	43,273	4
188	16,853	119	8,177	666	51,748	973	76,778	[2]†	1	76,779	5
29	28,375	444	46,254	624	64,005	1,397	138,634	45	8,746	147,380	6
...	...	...	...	1,424	151,414	1,424	151,414	78	14,725	166,139	7
...	...	...	...	1,093	83,294	1,093	83,594	[2]†	1	83,595	8
...	...	...	...	698	62,989	698	62,989	...	...	62,989	9
...	...	...	...	500	45,129	500	45,129	...	...	45,129	1910
...	...	...	...	495	55,220	495	55,220	...	...	55,220	1
...	...	...	...	651	79,738	651	79,738	...	...	79,738	2
...	...	...	...	484	72,142	484	72,142	...	...	72,142	3
...	...	...	...	363	35,649	363	35,649	...	...	35,649	4
...	...	...	...	429	41,391	429	41,391	...	...	41,391	5
...	...	...	...	463	49,101	463	49,101	...	...	49,101	6
...	...	...	...	383	45,288	383	45,288	...	...	45,288	7
...	...	...	...	415	76,952	415	76,952	...	...	76,952	8
...	...	...	...	318	47,269	318	47,269	...	...	47,269	9
...	...	...	...	243	49,449	243	49,449	...	...	49,449	1920
...	...	...	...	67	6,485	67	6,485	...	...	6,485	1921
...	...	...	...	110	10,930	110	10,930	...	...	10,930	1922
...	...	...	...	...	...	14,567	1,377,757	867	117,214	1,494,971	Total

[2]†Weight not stated. [3]†Probably the produce of Pilbara Goldfield and Greenbushes Mineral Field.

TABLE XXVII.—*Return of Ore and Minerals other than Gold*

Year.	Silver.		‡ Lead.		‡ Lead and Silver-Lead.		Pig Lead.		Zinc Ingots and Concentrates.	
	State generally.		Northampton Mf.		State generally.		State generally.		State generally.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	ozs.	£	tons.	£	tons.	£	tons.	£	tons.	£
1850	...	...	5	55	...	...	...	...	...	...
1	...	...	...	...	...	...	...	...	...	...
2	...	...	...	...	...	...	...	...	...	...
3	...	...	[2]†	4	...	...	55	1,200	...	...
4	...	...	...	...	...	...	122	2,440	...	...
5	...	...	25	250	...	...	134	2,675	...	...
6	...	...	...	...	...	...	60	1,200	...	...
7	...	...	...	...	...	...	120	2,410	...	...
8	...	...	...	...	...	...	61	1,220	...	...
9	...	...	13	135	...	...	25	495	...	...
1860	...	...	98	985	...	...	...	...	...	...
1	...	...	79	790	...	...	...	...	...	...
2	...	...	9	90	...	...	...	...	...	...
3	...	...	230	2,300	...	...	...	...	...	...
4	...	...	80	800	...	...	...	...	...	...
5	...	...	703	8,436	...	...	...	...	...	...
6	...	...	273	3,282	...	...	...	...	...	...
7	...	...	902	10,824	...	...	[4]†3	50	...	...
8	...	...	1,100	13,206	...	...	...	...	...	...
9	...	...	699	8,394	...	...	...	...	...	...
1870	...	...	1,209	14,514	...	...	...	...	...	...
1	...	...	420	5,040	...	...	...	...	...	...
2	...	...	364	4,368	...	...	...	...	...	...
3	...	...	965	11,586	...	...	...	...	...	...
4	...	...	2,144	25,725	...	...	...	...	...	...
5	...	...	2,289	27,468	...	...	4	89	...	...
6	...	...	2,192	26,298	...	...	[4]†7	155	...	...
7	...	...	3,956	47,466	...	...	[4]†1	15	...	...
8	...	...	3,618	43,410	...	...	...	...	...	...
9	...	...	2,775	33,300	...	...	...	...	...	...
1880	...	...	1,921	15,368	...	...	[4]†5	89	...	...
1	...	...	1,401	11,204	...	...	[4]†1	20	...	...
2	...	...	1,794	14,348	...	...	...	...	...	...
3	...	...	1,038	7,266	...	...	...	...	...	...
4	...	...	696	4,872	...	...	...	...	...	...
5	...	...	465	3,255	...	...	...	...	...	...
6	...	...	611	4,277	...	...	...	...	...	...
7	...	...	471	4,710	...	...	[4]†6	120	...	...
8	...	...	532	5,320	...	...	[4]†2	40	...	...
9	...	...	250	2,500	...	...	...	...	...	...
1890	...	...	214	2,135	...	...	...	...	...	...
1	...	...	25	250	...	...	...	...	...	...
2	...	...	30	150	...	...	...	...	...	...
3	...	...	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	...	...	...
5	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...
7	...	...	[2]†	4	...	...	[4]†1	11	...	...
8	...	...	5	33	...	...	...	...	...	...
9	...	...	16	96	...	...	77	1,077	...	...
1900	28,749	3,594	27	242	...	...	...	...	...	...
1	60,869	7,609	...	...	...	...	...	...	...	...
2	83,293	9,190	...	...	...	...	...	...	...	...
3	168,113	19,153	...	...	...	...	...	...	...	...
4	399,190	45,912	...	...	...	...	...	...	...	...
5	359,744	44,278	...	...	...	...	...	...	...	...
6	282,145	37,612	...	...	...	...	...	...	...	...
7	189,265	25,382	...	...	211	1,866	...	...	73	3,390
8	168,455	18,877	...	...	518	5,006	...	...	11	98
9	176,843	18,778	...	...	211	1,199	...	...	19	244
1910	176,139	18,777	248	1,433	...	...	...	...	12	147
1	169,043	18,333	1,549	15,002	...	...	...	...	12	189
2	165,371	19,725	1,868	22,270	...	...	...	...	14	217
3	188,020	23,420	3,169	59,002	...	...	...	...	...	...
4	193,057	23,227	3,554	46,285	...	...	...	...	22	379
5	222,159	24,295	...	...	2,883	39,032	13	302	7	143
6	173,012	22,258	...	...	428	12,033	3,523	74,930	14	630
7	222,075	38,339	...	...	22	593	4,661	139,940	...	...
8	109,830	22,711	...	...	282	3,045	5,489	163,880	...	...
9	223,332	55,342	...	..	248	3,704	1,780	48,462	...	...
1920	130,692	36,605	...	...	3,427	84,743	1,930	69,136	...	...
1921	116,151	18,658	...	...	...	...	2,156	48,863	...	...
1922	118,696	18,164	...	...	...	...	2,796	69,528	...	...
Total	4,124,243	570,239	44,032	508,748	8,230	151,221	23,032	628,347	184	5,437

[2]†Weight not stated. [4]†Estimated. ‡Ore and Concentrates.

entered for EXPORT from 1850 to 1922, inclusive—continued.

Tungsten Ore.				Arsenical Ore.		Tantalite.		Non-Metallic Minerals.				Year.
Wolfram.		Scheelite.						Graphite.		Magnesite.		
State generally.		State generally.		State generally.		State generally.		State generally.		State generally.		
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	
tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	tons.	£	
...	...	...	...	...	...	...	...	...	...	...	...	1850
...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	1860
...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	1870
...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	1880
...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	1890
...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	...	...	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	...	...	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	...	...	...	...	...	...	8
...	...	...	...	...	...	...	...	...	...	...	...	9
...	...	...	...	...	...	...	...	...	...	...	...	1900
...	...	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	1	6	...	...	2
...	...	...	...	...	...	...	...	...	...	...	...	3
...	...	...	...	...	...	...	...	...	...	...	...	4
...	...	...	...	...	...	18	5,729	...	...	...	...	5
...	...	...	...	...	...	...	...	...	...	...	...	6
...	...	4	140	...	...	...	...	...	...	...	...	7
...	...	...	...	...	...	[2]†	400	...	...	...	...	8
1	100	...	...	...	...	...	...	...	...	...	...	9
2	190	...	...	...	...	...	...	...	...	...	...	1910
9	826	...	...	...	...	...	...	...	...	...	...	1
...	...	...	...	...	...	...	...	...	...	...	...	2
1	86	...	...	...	...	...	...	...	...	...	...	3
½	40	...	...	...	...	...	...	7	40	...	...	4
½	25	...	...	...	...	...	...	...	...	688	1,196	5
1	128	3	438	11	19	47	9,375	21	284	12	47	6
...	...	½	42	57	707	17	2,513	18	158	42	50	7
½	31	5	720	679	2,564	...	...	5	75	62	225	8
½	15	6	772	...	...	¼	75	...	...	...	...	9
...	...	2½	395	1,765	4,260	...	...	13	130	...	...	1920
...	...	...	...	7	16	...	...	...	...	...	...	1921
...	...	...	...	1,075	1,784	...	...	...	3	...	...	1922
15	1,441	21	2,507	3,594	9,350	...	18,092	...	696	804	1,518	Total

[2]†Weight not stated.

TABLE XXVII.—*Return of Ore and Minerals other than Gold*

YEAR.	NON-METALLIC MINERALS—*continued.*						MINERALS NOT ELSEWHERE INCLUDED.		Total Value of Minerals other than Gold exported to Date.	YEAR.
	ASBESTOS.		COAL.		MICA.					
	State generally.		Collie River Mf.		State generally.					
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.		
	tons.	£	tons.	£	tons.	£	tons.	£	£	
1850	...	...	...	...	...	...	...	...	55	1850
1	...	...	...	...	...	...	...	...	...	1
2	...	...	...	...	...	...	...	...	...	2
3	...	...	...	...	...	...	...	...	1,211	3
4	...	...	...	...	...	...	...	...	2,440	4
5	...	...	...	...	...	...	...	...	2,951	5
6	...	...	...	...	...	...	...	...	2,218	6
7	...	...	...	...	...	...	...	...	4,330	7
8	...	...	...	...	...	...	...	...	10,751	8
9	...	...	...	...	...	...	...	...	14,752	9
1860	...	...	...	...	...	...	...	...	9,006	1860
1	...	...	...	...	...	...	...	...	7,129	1
2	...	...	...	...	...	...	...	...	12,626	2
3	...	...	...	...	...	...	...	...	14,508	3
4	...	...	...	...	...	...	...	...	18,016	4
5	...	...	...	...	...	...	...	...	21.726	5
6	...	...	...	...	...	...	...	...	11,644	6
7	...	...	...	...	...	...	...	...	15,929	7
8	...	...	...	...	...	...	...	...	14,451	8
9	...	...	...	...	...	...	...	...	10,719	9
1870	...	...	...	...	...	...	...	...	14,604	1870
1	...	...	...	...	...	...	...	...	5,040	1
2	...	...	...	...	...	...	...	...	4,368	2
3	...	...	...	...	...	...	...	...	12,434	3
4	...	...	...	...	...	...	...	...	26,723	4
5	...	...	...	...	...	...	...	...	30,628	5
6	...	...	...	...	...	...	...	...	30,638	6
7	...	...	...	...	...	...	...	...	48,284	7
8	...	...	...	...	...	...	...	...	43,545	8
9	...	...	...	...	...	...	...	...	33,300	9
1880	...	...	...	...	...	...	...	...	15,577	1880
1	...	...	...	...	...	...	...	...	11,224	1
2	...	...	...	...	...	...	...	...	14,371	2
3	...	...	...	...	...	...	...	...	7,341	3
4	...	...	...	...	...	...	...	...	6,642	4
5	...	...	...	...	...	...	...	...	5,048	5
6	...	...	...	...	...	...	...	...	8,012	6
7	...	...	...	...	...	...	...	...	5,175	7
8	...	...	...	...	...	...	...	...	6,848	8
9	...	...	...	...	...	...	...	...	4,704	9
Carried forward	...	...	...	...	...	...	...	...	508,968	

entered for EXPORT from 1850 to 1922, inclusive—continued.

Year.	Non-Metallic Minerals—*continued.*						Minerals not Elsewhere Included.		Total Value of Minerals other than Gold exported to Date.	Year.
	Asbestos. State generally.		Coal. Collie River Mf.		Mica. State generally.					
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.		
	tons.	£	tons.	£	tons.	£	tons	£	£	
Brought forward	...	...	...	...	...	...	...	...	508,968	
1890	...	...	...	...	...	...	...	...	7,671	1890
1	...	...	...	...	...	...	...	...	14,912	1
2	...	...	...	...	[2]†	25	...	...	22,714	2
3	...	...	...	...	[2]†	4	...	...	11,744	3
4	...	...	...	...	...	...	...	...	15,274	4
5	...	...	...	...	[2]†	3	...	...	22,658	5
6	...	...	...	...	...	...	...	...	4,438	6
7	...	...	...	...	[2]†	209	...	...	4,532	7
8	...	...	1	1	...	...	...	...	7,060	8
9	...	...	798	772	[2]†	50	...	...	66,611	9
1900	...	...	355	350	[2]†	3	5	85	95,261	1900
1	...	...	971	969	...	...	...	4	171,453	1
2	...	...	12	12	...	...	[6]† 2	41	61,551	2
3	...	...	110	127	...	...	[7]† 22	230	109,468	3
4	...	...	11	7	...	...	7	81	97,132	4
5	...	...	108	87	...	...	62	127	192,251	5
6	...	...	86	65	...	...	10	1,035	222,621	6
7	...	...	26 *1,447	28 1,138	...	...	[8]† 96	1,447	402,906	7
8	...	...	13 *9,612 353	11 7,747 183	[2]†	10	42	2,750	176,827	8
9	...	...	*85,647	93,781	...	...	[9]† 263	735	282,650	9
1910	...	...	3 *48,876	2 38,400	...	...	½	100	200,106	1910
1	...	...	*40,063	29,344	...	...	[10]† 14	407	197,439	1
2	...	...	6 *42,602	6 30,721	...	...	[11]†	8	212,509	2
3	...	...	*54,228	39,125	...	...	5	17	336,155	3
4	...	...	*54,416	38,244	4	323	[12]† 9	635	182,996	4
5	...	...	1,667 *26,167	1,513 19,288	[2]†	26	[13]†	115	218,495	5
6	...	...	2,447 *37,590	1,857 28,387	[2]†	10	[14]†	713	265,043	6
7	...	...	*31,951	29,359	...	...	[15]†	440	343,167	7
8	...	...	*23,238	24,424	...	...	[16]† 5	97	360,895	8
9	...	...	*69,708	76,924	1	514	[17]†	116	244,050	9
1920	...	...	*78,788	104,665	[18]†	120	[19]†	223	377,416	1920
1921	...	...	*116,993	188,686	...	...	[20]†	257	293,771	1921
1922	...	...	*71,164	115,835	2	60	[21]†	1,083	243,512	1922
Total	...	16,506	799,457	872,058	...	1,357	...	10,746	5,974,256	Total

* Bunker Coal. [2] † Weight not stated. [5] † 4 cwts. [6] † Cobalt ore.

[8]† Includes—
Antimony ore, 25 tons = £630
N.E.I., 71 tons ... = 817
Total £1,447

[9]† Includes—
Other Concentrates, 29 tons = £108
N.E.I., 234 tons = 627
Total £735

[10] † Includes—
Iron ore, 9 tons ... = £7
Ores, N.E.I.. 5 tons = 400
Total £407

[11] † Includes—
Manganese, 2 tons = £4
N.E.I. ... ... = 4
Total £8

[7] † Antimony ore.

[12]† Bismuth.

[13]† Includes—
Bismuth, 1 ton ... = £37
Fireclay, 12 tons ... = 75
Manganese, 3 cwt. = 3
Total £115

[14]† Includes—
Antimony, 27 tons = £580
Bismuth, 4 cwt. 133
Total £713

[16]†Molybdenite, [18]†7 cwts.

[15]†Includes—
Antimony. 12 tons = £258
Bismuth. 9cwt. ... = 24
Molybdenite, 14 tons = 158
Total £440

[17]†Includes—
Bismuth, 1 cwt. ... = £15
Corundum. 1 ton ... = 1
Molybdenite, 7 tons = 100
Total £116

[19]†Includes—
Antimony, 2½ tons ... £45
Clay, 6 cwt. 6
Gadolinite, 1 ton 150
Iron Concentrates, 1 ton ... 17
Molybdenite, 10 cwt. ... 5
Total £223

[20]†Includes—
Barytes, 2 cwt. ... £18
Corundum, ½cwt. ... 2
Felspar, 1 ton... ... 47
Jarosite, 12cwt. ... 5
Manganese, 16 tons ... 145
Pottery clay, 3½ tons.... 40
Total £257

[21]†Includes—
Barytes, 19 tons £73
Felspar, 60 tons 485
Gypsum, 2 tons 4
Molybdenite, 51 tons ... 505
Pottery clay, 1 ton ... 16
Total ... £1,083

PART III.—ALL MINES.

TABLE XXVIII.

MILLING AND CYANIDING PLANTS ERECTED IN THE RESPECTIVE GOLDFIELDS, DISTRICTS, AND MINERAL FIELDS ON THE 31ST DECEMBER, 1922, AND THE TOTAL VALUE OF MINING MACHINERY.

Mining Centre and Lease or Area.	Name of Mine, Company, or Works.	Milling.									Cyaniding.			Value of all Mining Machinery.
		Batteries.	Other Mills.											
		Number of Heads of Stampers.	Prospecting Mills.	Ball Mills.	Griffin Mills.	Huntington Mills.	Puddlers.	Other Crushers.	Flint Mills.	Grinding Pans.	Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	
	PILBARA GOLDFIELD.													
	MARBLE BAR DISTRICT.													
Bamboo Creek. 795 ⋀ *Elsie.* G.M.L. 792 *Lalla Rookh.* R.C. 112 *Marble Bar.* 815 694 ⋀	Bulletin	10	...	...	...	...	...	...	...	...	...	...	...	...
	State Battery, Bamboo Creek	5	...	...	...	...	...	...	...	1	5	...	...	...
	Trio	3	...	...	...	...	...	...	...	...	...	...	...	...
	Lalla Rookh	10	...	...	...	...	...	...	...	...	5	...	...	...
	Ironclad	10	...	...	...	...	...	...	...	...	...	...	...	...
	Jo Jo	5	...	...	...	...	...	...	...	...	...	...	...	...
	State Battery, Marble Bar	5	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**48**	...	...	...	...	...	...	...	**1**	**10**	...	...	**£11,360**
	NULLAGINE DISTRICT.													
Eastern Creek. M.A. 11L *Middle Creek.* P.A. 96L *20-Mile Sandy.* ⋀	Doherty's Reward	10	...	...	...	...	...	...	...	...	4	...	...	...
	Barton	10	...	...	...	...	...	...	...	1	6	...	...	...
	State Battery, 20-Mile Sandy	5	...	...	...	...	...	...	...	1	6	...	...	...
	Total	**25**	...	...	...	...	...	...	...	**2**	**16**	...	...	**£3,339**
	WEST PILBARA GOLDFIELD.													
Pilbara. (168) *Station Peak.* M.A. 14 *Weerianna.* M.A. 12	Black Prince	...	1	...	...	...	...	...	...	...	...	...	...	...
	Pilgrim's Rest	10	...	...	...	...	...	...	...	...	...	...	...	...
	Portemlnna	10	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**20**	**1**	...	...	...	...	...	...	...	...	...	...	**£2,525**
	PEAK HILL GOLDFIELD.													
Mt. Egerton. ⋀ *Peak Hill.* M.A. 13P ⋀ ⋀	State Battery, Mt. Egerton	5	...	...	...	...	...	...	...	...	...	...	...	...
	Connelly's Battery	10	...	...	...	...	...	...	...	2	...	...	...	...
	Purcell's Works	...	...	...	...	...	...	...	...	...	4	...	...	...
	State Battery, Peak Hill	5	...	...	...	...	...	...	...	1	...	...	...	...
	Total	**20**	...	...	...	...	...	...	...	**3**	**4**	...	...	**£9,534**
	EAST MURCHISON GOLDFIELD.													
	LAWLERS DISTRICT.													
Kathleen Valley. 382 *Lawlers.* 1212 1171 M.A. 11 M.A. 30 58, etc. *Sir Samuel.* ⋀	Yellow Aster	5	...	...	...	...	...	...	...	...	4	...	...	...
	Daisy Queen G.M. Co., N.L.	10	...	...	...	...	...	...	...	...	5	...	...	...
	Great Eastern	5	...	...	...	...	...	...	...	1	6	...	...	...
	Sands Retreatment Works	...	...	...	...	...	...	...	...	...	4	...	...	...
	Try It	5	...	...	...	...	...	...	...	...	...	...	...	...
	Waroonga G.M. Co., Ltd.	10	...	...	...	...	...	1	...	1	4	...	...	...
	State Battery, Sir Samuel	5	...	...	...	...	...	...	...	...	2	...	...	...
	Total	**40**	...	...	...	...	...	**1**	...	**2**	**25**	...	...	**£14,556**
	WILUNA DISTRICT.													
Gum Creek. (226J) *Mt. Keith.* ⋀ *Wiluna.* ⋀ 6J, 4J, etc.	Alma May	5	...	...	...	...	...	...	...	...	4	...	...	...
	State Battery, Mt. Keith	5	...	...	...	...	...	...	...	...	...	...	...	...
	State Battery, Wiluna	10	...	...	...	...	...	...	1	...	...	3	1	...
	Western Machinery Co.,	30	...	...	...	...	...	...	...	4	...	...	2	...
	Wiluna Gold Mines.	15	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**65**	...	...	...	...	...	...	**1**	**4**	**4**	**3**	**3**	**£28,829**
	BLACK RANGE DISTRICT.													
Curran's Find. 641B *Maninga Marley.* 203B *Sandstone.* 12B. 883B ⋀ *Youanmi.* ⋀ 863B, etc.	Red White and Blue	5	...	...	...	...	...	...	...	...	6	...	...	...
	Havilah Gold Mine	10	...	...	...	...	...	...	...	1	2	...	...	...
	Yuanmi G.Ms., Ltd.	20	...	...	...	...	...	...	...	...	...	...	2	...
	Nous Verrans	3	...	...	...	...	...	...	...	...	...	...	...	...
	State Battery, Black Range	10	...	...	...	...	...	...	...	...	5	...	...	...
	State Battery, Youanmi	5	...	...	...	...	...	...	...	...	2	...	...	...
	Yuanmi G.Ms., Ltd.	20	...	1	...	...	...	...	1	2	6	3	...	...
	Total	**73**	...	**1**	...	...	...	...	**1**	**3**	**21**	**3**	**2**	**£95,606**

TABLE XXVIII.—*Milling and Cyaniding Plants erected in the respective Goldfields, Districts, etc.*—continued.

Mining Centre and Lease or Area.	Name of Mine, Company, or Works.	Milling. Batteries. Number of Heads of Stampers.	Milling. Other Mills. Prospecting Mills.	Ball Mills.	Griffin Mills.	Huntington Mills.	Puddlers.	Other Crushers.	Flint Mills.	Grinding Pans.	Cyaniding. Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	Value of all Mining Machinery
	MURCHISON GOLDFIELD.													
	CUE DISTRICT.													
Cuddingwarra. 1860	Big Bell	10	...	...	...	...	...	...	...	1	12	...	...	...
Cue. 203	Cue No. 1	20	...	...	...	...	...	...	...	1	4	...	...	...
(1889)	Gem of Cue Extended	15	...	...	...	...	...	...	...	...	...	...	...	...
2017	Hidden Treasure G.M.	3	...	...	...	...	...	...	...	...	...	...	...	...
1148, etc.	Mararoa G.M. Co., N.L.	...	...	...	...	...	...	...	...	...	6	...	...	...
∧	State Battery, Cue	5	...	...	...	...	...	...	...	...	5	...	...	...
Reedy's Find. 1977	Emu	5	...	...	...	...	...	...	...	...	...	...	...	...
Tuckabianna. (1914)	Triplicate	...	...	...	...	...	...	...	...	...	3	...	...	...
Tuckanarra. ∧	State Battery, Tuckanarra	10	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**68**	...	...	...	...	...	...	...	**2**	**30**	...	...	**£35,359**
	MEEKATHARRA DISTRICT.													
Gabanintha. (1324N)	Hamburg Belle	5	...	...	...	...	...	...	...	...	3	...	...	...
T.L. 202H.	B. S. Moore	...	...	...	...	...	...	...	...	...	3	...	...	...
Holden's Find. 1291N	Waterloo	5	...	...	...	...	...	...	...	...	...	...	...	...
Meekatharra. 477N	Fenian	15	...	...	...	...	...	5	...	1	...	1	1	...
555N	Ingliston G.M. Co., N.L.	10	...	...	...	...	...	...	...	...	...	...	...	...
475N	Ingliston Consols Extended	15	...	...	...	...	...	...	...	3		...	...	...
(1438N)	Ingliston Extended	...	...	...	...	...	...	...	...	2	2	2	1	...
533N	Marmont	10	...	...	...	...	...	...	...	...	...	...	...	...
(931N)	Queenhills G.Ms., Ltd.	2	...	...	...	...	...	...	...	...	...	...	1	...
∧	State Battery, Meekatharra	5	...	...	...	...	...	...	...		5	...	...	...
Nannine. 166N	Nannine	10	...	...	...	...	...	...	...	2	3	...	...	...
	Total	**77**	...	...	...	...	...	5	...	**8**	**16**	**3**	**3**	**£57,655**
	DAY DAWN DISTRICT.													
Day Dawn. 1D, etc.	Great Fingall Consolidated, Ltd.	40	...	...	...	...	...	...	3	6	14	8	...	...
(138D)	Murchison Associated	10	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**50**	...	...	...	...	...	...	**3**	**6**	**14**	**8**	...	**£6,310**
	MT. MAGNET DISTRICT.													
Lennonville. 964M	Empress	5	...	...	...	...	...	...	...	1	...	...	...	...
∧	State Battery, Lennonville	...	...	...	...	...	...	...	...	...	3	...	3	...
Mt. Magnet. 1156M	Leap Year	5	...	...	...	...	...	...	...	1	...	...	...	...
1013M	Mars	...	...	1	...	...	...	...	...	...	8	...	...	...
1075M	New Havelock	5	...	...	...	...	...	...	...	...	3	...	...	...
∧	State Battery, Boogardie	5	...	...	...	...	...	...	...	...	5	...	...	...
P.A. 902M	T. W. Austin	...	1	...	...	...	...	1	...	...	...	...	...	...
	Total	**20**	**1**	**1**	...	...	...	**1**	...	**2**	**19**	...	**3**	**£15,673**
	YALGOO GOLDFIELD.													
Field's Find. (850)	Commodore	3	...	...	...	...	...	...	...	...	...	...	...	...
Goodingnow. ∧	State Battery, Payne's Find	5	...	...	...	...	...	...	...	...	5	...	...	...
Gullewa. P.A. 538	W. A. Jenkins	...	1	...	...	...	...	...	...	...	...	...	...	...
Noongal. 953	Revival	5	...	...	...	...	...	...	...	...	...	...	...	...
Nyounda. 880	Gnow's Nest G.M., Ltd.	10	...	...	...	...	...	1	...	2	8	...	...	...
Warriedar. (708)	Mag's Luck	10	...	...	...	...	...	...	...	...	...	12	...	...
∧	State Battery, Warriedar	5	...	...	...	...	...	...	...	...	5	...	...	...
Yalgoo. M.A., 17	Ivanhoe	5	...	...	...	...	...	...	...	...	...	...	...	...
Yuin. 712	Bullrush Gold Estates, N.L.	20	...	...	...	...	...	...	...	5	...	...	...	...
	Total	**63**	**1**	...	...	...	...	**1**	...	**7**	**18**	**12**	...	**£32,314**
	MT. MARGARET GOLDFIELD.													
	MT. MORGANS DISTRICT.													
Linden. 344F	Bindah	5	...	...	...	...	...	...	...	...	3	...	...	...
∧	State Battery, Linden	10	...	...	...	...	...	...	...	...	5	...	...	...
341F	Torquay	5	...	...	...	...	...	...	...	1	4	2	...	...
Mt. Margaret. (314F)	Mt. Morven	5	...	...	...	...	...	...	...	...	...	...	...	...
Mt. Morgans. (325F)	Millionaire	5	...	...	...	...	...	...	...	...	...	...	...	...
5F	Westralia Mt. Morgans Mines, N.L. ...	10	...	...	...	...	...	...	...	3	...	2	1	...
Yundamindera. 357F	Big Stone	5	...	...	...	...	...	...	...	...	2	...	...	...
	Total	**45**	...	...	...	...	...	...	...	**4**	**14**	**4**	**1**	**£10,505**

TABLE XXVIII.—*Milling and Cyaniding Plants erected in the respective Goldfields, Districts, etc.*—continued.

Mining Centre and Lease or Area.	Name of Mine, Company, or Works.	Milling.									Cyaniding.			Value of all Mining Machinery.
		Batteries.	Other Mills.											
		Number of Heads of Stampers.	Prospecting Mills.	Ball Mills.	Griffin Mills.	Huntington Mills.	Puddlers.	Other Crushers.	Flint Mills.	Grinding Pans.	Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	
	MT. MALCOLM DISTRICT.													
Lake Darlot.	State Battery, Lake Darlot	10	...	...	...	...	...	...	...	...	...	...	...	...
Leonora.														
M.A. 10C	Chaffers G.M. Co. (1916), Ltd.	5	...	...	...	...	...	...	...	...	...	...	...	...
263C	Gwalia Central G.Ms., Ltd.	5	...	...	...	...	...	...	...	...	...	...	...	...
1530C	Leonora Gold Blocks	10	...	...	...	...	...	...	...	...	1	...	...	...
190C, etc.	Sons of Gwalia, Ltd.	...	...	...	...	...	...	...	4	...	...	...	1	...
	State Battery, Leonora	10	...	...	...	...	...	...	...	...	5	...	...	...
Mt. Clifford.														
1329C	Victory No. 1	5	...	...	...	...	...	...	...	...	...	...	...	...
Mt. Malcolm.														
(1175C)	North Star: Malcolm Prospecting Co., N.L.	10	...	...	...	...	...	...	...	...	...	...	...	...
Pig Well.														
(1295C)	Starlight G.M. Syndicate, N.L.	10	...	...	...	...	...	...	...	1	...	...	...	...
	Total	**65**	...	...	...	...	...	...	**4**	**1**	**6**	...	**1**	**£246,044**
	MT. MARGARET DISTRICT.													
Duketon.														
M.A., 22T	Mulga Queen	10	...	...	...	...	...	...	...	...	4	...	...	...
Laverton.														
715T	Lancefield G.Ms., Ltd.	...	...	5	...	...	...	1	...	8	...	6	3	...
(1897T)	Mary Mac G.M. Co., N.L.	10	...	...	...	...	...	...	...	4	3	1	...	...
	State Battery, Laverton	10	...	...	...	...	...	...	...	...	5	...	...	...
	Total	**30**	...	**5**	...	...	...	**1**	...	**12**	**12**	**7**	**3**	**£20,479**
	NORTH COOLGARDIE GOLDFIELD.													
	MENZIES DISTRICT.													
Comet Vale.														
5217Z	Gladsome	10	...	...	...	...	...	...	...	2	9	...	...	...
Goongarrie.														
(5414Z)	New Boddington G.M. Syndicate, Ltd. ...	10	...	...	...	...	...	...	...	...	...	...	...	...
Menzies.														
M.A., 60Z	Lady Harriet	5	...	...	...	...	...	...	...	...	4	...	...	...
4931Z, etc.	Menzies Consolidated G.Ms., Ltd.	20	...	...	...	...	...	...	...	9	14	4	1	...
(3100Z, etc.)	Menzies Mining & Exploration Corp'n, Ltd.	10	...	...	...	...	...	...	...	...	8	...	1	...
Mt. Ida.														
5481Z	State Battery, Mt. Ida	5	...	...	...	...	...	...	...	...	...	...	...	...
	Unexpected South	5	...	...	...	...	...	...	...	1	...	...	...	...
	Total	**65**	...	...	...	...	...	...	...	**12**	**35**	**4**	**2**	**£23,726**
	ULARRING DISTRICT.													
Mulline.														
324U	Riverina South G.M. Co., N.L.	10	...	...	...	...	...	1	1	2	...	4	...	...
	State Battery, Mulline	10	...	...	...	...	...	...	...	...	...	...	...	...
M.A. 11U	Young Australia	10	...	...	...	...	...	...	...	1	...	...	...	...
	Total	**30**	...	...	...	...	...	1	1	**3**	...	**4**	...	**£27,712**
	NIAGARA DISTRICT.													
Kookynie.														
769G	Two D's.	...	...	1	...	...	...	...	...	3	...	10	...	...
Niagara.														
	State Battery, Niagara	10	...	...	...	...	...	...	...	...	...	...	...	...
Tampa.														
M.A., 62G	Grafter	5	...	...	...	...	...	...	...	1	2	...	...	...
	Total	**15**	...	**1**	...	...	...	...	...	**4**	**2**	**10**	...	**£3,436**
	YERILLA DISTRICT.													
Edjudina														
1011R	Neta	10	...	...	...	...	...	...	...	1	...	...	...	...
Yarri.														
	State Battery, Yarri	10	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**20**	...	...	...	...	...	...	...	**1**	...	...	...	**£2,663**
	BROAD ARROW GOLDFIELD.													
Bardoc.														
1833W	Zoroastrian	5	...	...	...	...	...	1	...	...	...	...	...	...
Siberia.														
1399W, etc.	Associated Northern Blocks (W.A.), Ltd. ...	...	...	1	...	2	3	1	...	10	7	...	2	...
1371W	Gimblet South	10	...	...	...	...	...	...	...	...	...	...	...	...
1289W	Lady Evelyn	5	...	...	...	...	...	...	...	...	...	...	...	...
(1736W)	Pole	5	...	...	...	...	...	...	...	...	...	...	...	...
	State Battery, Ora Banda	5	...	...	...	...	...	...	...	...	...	...	...	...
	State Battery, Siberia	5	...	...	...	...	...	...	...	...	...	...	...	...
	Total	**35**	...	**1**	...	**2**	**3**	**2**	...	**10**	**7**	...	**2**	**£63,420**

TABLE XXVIII.—*Milling and Cyaniding Plants erected in the respective Goldfields, Districts, etc.*—continued.

Mining Centre and Lease or Area.	Name of Mine, Company, or Works.	Milling.									Cyaniding.			Value of all Mining Machinery
		Batteries.	Other Mills.											
		Number of Heads of Stampers.	Prospecting Mills.	Ball Mills.	Griffin Mills.	Huntington Mills.	Puddlers.	Other Crushers.	Flint Mills.	Grinding Pans.	Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	
	NORTH-EAST COOLGARDIE GOLFIELD.													
	KANOWNA DISTRICT.													
Gordon.														
1385X	Pride of the Morning	...	...	...	...	1	...	...	...	...	...	...	...	...
Kanowna.														
1389X	Golden Valley	5	...	...	...	...	...	...	...	1	...	...	...	...
M.A., 19X	Martin's Battery	15	...	...	...	...	...	...	...	1	...	...	...	...
12X, etc.	North White Feather	20	...	...	...	...	...	...	...	...	...	...	...	...
Mulgarrie.														
1426X	Palm	...	...	...	...	1	...	...	...	...	...	...	...	...
	Total	40	...	...	...	2	...	...	...	2	...	...	...	£6,200
	KURNALPI DISTRICT.													
Kurnalpi.														
M.A. 5K	Success	5	...	...	...	...	...	...	...	...	...	...	...	...
Mulgabbie.														
M.A., 4K	Simmons' Battery	...	1	...	...	...	...	...	...	...	...	...	...	...
	Total	5	1	...	...	...	...	...	...	...	...	...	...	£150
	EAST COOLGARDIE GOLDFIELD.													
	EAST COOLGARDIE DISTRICT.													
Boulder.														
38E, etc.	Associated G.Ms. of W.A., Ltd. and Reduced	...	...	7	...	...	...	1	...	20	...	6	7	...
35E	Eureka	...	...	...	...	1	...	...	...	1	...	...	...	...
351E, etc.	Golden Horseshoe Estates Co., Ltd.	100	...	1	...	...	3	6	15	24	20	22	20	...
M.A, 71E	Great Boulder No. 1, Ltd.	10	...	...	...	...	...	...	...	...	...	...	...	...
66E	Great Boulder Pers. G.M. Co., Ltd., in Liq.	...	...	8	...	...	...	1	2	17	...	24	13	...
16E, etc.	Great Boulder Proprietary G.Ms., Ltd. ...	...	1	6	13	...	2	8	...	20	...	23	7	...
946E	Ironsides North	10	...	...	...	...	...	...	...	1	2	...	...	...
31E	Ivanhoe Gold Corporation, Ltd.	100	...	...	...	...	...	3	2	25	32	13	3	...
15E, etc.	Lake View and Star, Ltd.	75	...	1	...	...	...	7	8	21	...	27	17	...
281E, etc.	North Kalgurli (1912), Ltd.	20	...	...	...	...	...	2	...	...	4	...	1	...
6E, ETC.	Oroya Links, Ltd.	50	...	11	...	...	1	...	2	17	...	7	3	...
1208E, etc.	South Kalgurli Consolidated, Ltd.	40	...	4	...	...	...	1	...	7	...	5	7	...
Kalgoorlie.														
796E	Bonnie Lass (Raven's Battery)	10	...	...	...	...	...	...	...	...	...	...	...	...
3643E	Hainault Sulphide Plant	...	...	1	...	...	...	...	...	1	7	...	...	...
M.A., 7E	Hannans Central	20	...	...	...	...	...	1	1	...	8	4	2	...
4526E, etc.	Hannans Reward, Ltd.	5	...	...	...	...	...	...	...	...	7	...	...	...
4001E	Hidden Secret	5	...	1	...	...	...	...	...	...	...	...	...	...
L.C., 353E	Lone Hand	...	...	...	...	1	...	...	...	1	7	...	...	...
Wombola.														
4770E	Great Hope North	10	...	...	...	...	...	...	...	...	6	...	...	...
	Total	455	1	40	13	2	6	30	30	155	93	131	80	£1,108,702
	COOLGARDIE GOLDFIELD.													
	COOLGARDIE DISTRICT.													
Burbanks.														
(134), etc.	Burbanks Birthday G.Ms., Ltd.	...	...	...	...	...	...	...	...	1	9	...	...	...
M.A., 77	Burbanks Main Lode	...	...	...	...	...	...	...	1	...	...	4	...	...
(2160)	Lady Robinson	10	...	...	...	...	...	...	...	...	...	...	...	...
Coolgardie														
5135	Coolgardie Redemption	10	...	...	...	...	...	...	...	...	...	...	...	...
5147	Garden Gully	5	...	...	...	...	...	...	...	...	...	...	...	...
4567	Griffiths Gold Mine	10	...	...	...	...	...	...	...	...	6	...	...	...
M.A., 11	New Bayley's Mine, Ltd.	...	...	...	...	...	...	...	...	...	1	4	...	...
	State Battery, Coolgardie	10	...	...	...	...	...	...	...	...	6	...	...	...
Gibraltar.														
4580	Lloyd George	...	...	...	...	1	...	...	...	2	6	...	...	...
4603	Reform	5	...	...	...	...	...	...	...	...	...	...	...	...
St. Ives.														
	State Battery, St. Ives	5	...	...	...	...	...	...	...	...	5	...	...	...
Widgiemooltha.														
M.A., 63	Highgate	3	...	...	...	...	...	...	...	1	...	...	...	...
M.A., 280	Imperial	5	...	...	...	...	...	...	...	...	...	...	...	...
	Total	68	...	...	...	1	...	...	1	4	33	8	...	£23,584
	KUNANALLING DISTRICT.													
Carbine														
338	Carbine	10	...	...	...	...	...	...	...	2	...	...	...	...
25-Mile.														
6968	Blue Bell	5	...	...	...	...	...	...	...	...	7	...	...	...
(8718)	Shamrock	5	...	...	...	...	...	...	...	...	...	...	...	...
6458	Star of Fremantle	10	...	...	...	...	...	...	...	...	4	...	...	...
	Total	30	...	...	...	...	...	...	...	2	11	...	...	£7,480

TABLE XXVIII.—*Milling and Cyaniding Plants erected in the respective Goldfields, Districts, etc.*—continued.

Mining Centre and Lease or Area.	Name of Mine, Company, or Works.	Milling.									Cyaniding.			Value of all Mining Machinery.
		Batteries.	Other Mills.											
		Number of Heads of Stampers.	Prospecting Mills.	Ball Mills.	Griffin Mills.	Huntington Mills.	Puddlers.	Other Crushers.	Flint Mills.	Grinding Pans.	Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	
	YILGARN GOLDFIELD.													
Bullfinch.														
914, etc.	Bullfinch Proprietary (1919), Ltd.	20	...	...	...	...	...	...	2	2	...	4	3	...
Forrestonia.														
2909	Great Southern	5	...	...	...	...	...	...	...	...	...	...	...	...
Golden Valley.														
3248	Manxman Battery	5	...	...	...	...	...	...	...	...	4	...	...	...
Greenmount.														
550	Sunbeam	5	...	...	...	...	...	...	...	1	...	...	...	...
M.A. 25	Transvaal	20	...	...	...	...	...	...	...	...	...	...	...	...
Kennyville.														
911	Edna May Battler G.M. Co., N.L.	10	...	...	...	...	...	...	...	2	5	2	...	...
570	Great Leviathan	5	...	...	...	...	...	...	...	...	...	...	...	...
Marvel Loch.														
3217	Firelight	...	...	...	...	1	...	...	...	...	...	...	...	...
3069, etc.	Golden Butterfly G.M. Co., N.L.	10	...	...	...	...	...	...	...	1	5	...	...	...
719, etc.	Great Victoria	10	...	...	...	...	...	...	...	1	12	...	...	...
M.A., 23	Howlett's Battery	5	...	...	...	...	...	...	...	...	4	...	...	...
Mt. Jackson.														
(1933)	Butcher Bird No. 1	5	...	...	...	...	...	...	...	...	...	...	...	...
Parker's Range.														
(508)	Australia	5	...	...	...	...	...	...	...	...	5	...	...	...
2801	Scots Greys	5	...	...	...	...	...	...	...	...	...	...	...	...
724	Spring Hill G.M. Co., N.L.	10	...	...	...	...	...	...	...	1	4	...	...	...
Southern Cross.														
3232	Fraser's Central G.Ms., N.L.	...	...	...	...	1	...	...	...	...	...	...	...	...
Westonia.														
2291, etc.	Edna May Central G.M.s, N.L.	10	...	...	...	...	...	...	...	2	8	...	...	...
3257	Edna May Deep Levels G.M. Co., N.L. ...	10	...	...	...	...	...	...	...	1	5	...	...	...
M.A. 43	G. N. B. Smith	...	...	...	...	...	...	...	...	...	6	...	...	...
P.A., 1263	Recovery	5	...	...	...	...	...	...	...	1	...	...	...	...
	Total	**145**	...	...	...	**2**	...	...	**2**	**12**	**58**	**6**	**3**	**£68,652**
	DUNDAS GOLDFIELD.													
Norseman.														
1209	Hoffman	2	...	...	...	...	...	...	...	...	...	...	...	...
M.A., 18	Rawlings, Bullen and Rumble	10	...	...	...	...	...	...	...	...	4	...	...	...
/\	State Battery, Norseman	5	...	...	...	...	...	...	...	...	6	...	...	...
	Total	**17**	...	...	...	...	...	...	...	...	**10**	...	...	**£14,386**
	PHILLIPS RIVER GOLDFIELD.													
Kundip.														
/\194H	Flag	5	...	...	...	...	...	...	...	...	...	...	...	...
184	Gem	5	...	...	...	...	...	...	...	...	...	...	...	...
151	Gem Consolidated	5	...	...	...	...	...	...	...	...	...	...	...	...
M.L., 52	Harbour View Gold and Copper Co., Ltd. ...	10	...	...	...	...	...	...	...	...	...	...	...	...
74	Two Boys	10	...	...	...	...	...	...	...	...	...	...	...	...
Ravensthorpe.														
M.A., 5	Floater	10	...	...	...	...	...	1	...	...	...	...	...	...
P.A. 188	J. Dunn	5	...	...	...	...	...	...	...	...	2	...	...	...
	Total	**50**	...	...	...	...	...	**1**	...	...	**2**	...	...	**£10,300**
	STATE GENERALLY.	...	...	1	...	...	...	1	...	...	...	...	..	...
	Total	...	...	**1**	...	...	...	**1**	...	...	...	...	...	**£30,000**

TABLE XXVIII.—*Milling and Cyaniding Plants erected in the respective Goldfields, Districts, etc.*—continued.

GOLDFIELD.	DISTRICT.	MILLING. Batteries. Number of Heads of Stampers.	MILLING. Other Mills. Prospecting Mills.	Ball Mills.	Griffin Mills.	Huntington Mills.	Puddlers.	Other Crushers.	Flint Mills.	Grinding Pans.	CYANIDING. Leaching Vats.	Agitating Vats.	Vacuum Filters and Presses.	Total Value of all Mining Machinery.
	GOLD MINING.													£
KIMBERLEY	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...
PILBARA	Marble Bar	48	...	...	...	...	...	...	...	1	10	...	...	11,360
	Nullagine	25	...	...	...	...	...	...	...	2	16	...	...	3,389
WEST PILBARA	... ...	20	1	...	...	...	...	...	...	...	...	...	...	2,525
ASHBURTON	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...
GASCOYNE	... ...	...	...	...	...	...	...	...	...	...	...	...	...	...
PEAK HILL	... ...	20	...	...	...	...	...	...	...	3	4	...	...	9,534
EAST MURCHISON ...	Lawlers	40	...	...	...	...	...	1	...	2	25	...	...	14,556
	Wiluna	65	...	...	...	...	...	...	1	4	4	3	3	23,829
	Black Range	73	...	1	...	...	...	...	1	3	21	3	2	95,606
MURCHISON	Cue	68	...	...	...	...	...	...	...	2	30	...	...	35,359
	Meekatharra	77	...	...	...	...	...	5	...	8	16	3	3	57,655
	Day Dawn	50	...	...	...	...	...	...	3	6	14	8	...	6,310
	Mt. Magnet	20	1	1	...	...	...	1	...	2	19	...	3	15,673
YALGOO	... ...	63	1	...	...	...	...	1	...	7	18	12	...	32,314
MT. MARGARET ...	Mt. Morgans	45	...	...	...	...	...	...	...	4	14	4	1	10,505
	Mt. Malcolm	65	...	...	...	...	...	...	4	1	6	...	1	246,044
	Mt. Margaret	30	...	5	...	...	...	1	...	12	12	7	3	20,479
NORTH COOLGARDIE ...	Menzies	65	...	...	...	...	...	...	...	12	35	4	2	23,726
	Ularring	30	...	...	...	...	...	1	1	3	...	4	...	27,712
	Niagara	15	...	1	...	...	...	...	...	4	2	10	...	3,436
	Yerilla	20	...	...	...	...	...	...	...	1	...	...	...	2,663
BROAD ARROW	... ...	35	...	1	...	2	3	2	...	10	7	...	2	63,420
N.E. COOLGARDIE ...	Kanowna	40	...	...	...	2	...	...	...	2	...	...	...	6,200
EAST COOLGARDIE ...	Kurnalpi	5	1	...	...	...	...	...	...	...	...	...	...	150
	East Coolgardie	455	1	40	13	2	6	30	30	155	93	131	80	1,108,702
	Bulong	...	...	...	...	...	...	...	...	...	...	...	...	...
COOLGARDIE	Coolgardie	63	...	...	...	1	...	...	1	4	33	8	...	23,584
	Kunanalling	30	...	...	...	...	...	...	...	2	11	...	...	7,480
YILGARN	... ...	145	...	...	...	2	...	...	2	12	58	6	3	68,652
DUNDAS	... ...	17	...	...	...	...	...	...	...	...	10	...	...	14,336
PHILLIPS RIVER	... ...	50	...	...	...	...	...	1	...	...	2	...	...	10,300
STATE GENERALLY	... ...	...	...	1	...	...	...	1	...	...	...	...	...	30,000
	Total, Gold Mining Machinery ...	**1,679**	**5**	**50**	**13**	**9**	**9**	**44**	**43**	**262**	**460**	**203**	**103**	**£1,975,449**
	LEAD MINING.													
NORTHAMPTON, M.F.	... ...	...	...	...	...	...	...	7	...	...	...	...	...	39,155
	Total, Lead Mining Machinery ...	...	...	...	...	...	...	7	...	...	...	...	...	**£39,155**
	TIN MINING.													
PILBARA	Marble Bar	...	...	...	...	1	...	2	...	...	...	...	...	25,300
GREENBUSHES TINFIELD ...	... ...	...	...	...	...	1	...	4	...	...	...	...	...	16,872
	Total, Tin Mining Machinery ...	...	...	...	...	2	...	6	...	...	...	...	...	**£42,172**
	COPPER MINING.													
WEST PILBARA	... ...	...	...	...	...	...	...	5	2	1	...	...	...	66,000
MT. MARGARET	Mt. Morgans	...	...	...	...	...	...	...	...	...	...	...	...	4,250
PHILLIPS RIVER	... ...	...	...	...	...	...	...	10	2	2	...	...	...	71,250
	Total, Copper Mining Machinery ...	...	...	...	...	...	...	15	4	3	...	...	...	**£141,500**
	COAL MINING.													
COLLIE RIVER COALFIELD ...	... ...	...	...	...	...	...	...	...	...	...	...	...	...	116,136
	Total, Coal Mining Machinery ...	...	...	...	...	...	...	...	...	...	...	...	...	**£116,136**
	ASBESTOS MINING.													
PILBARA	Nullagine	...	...	...	...	...	...	...	...	...	...	...	...	4,200
	Total, Asbestos Mining Machinery ...	...	...	...	...	...	...	...	...	...	...	...	...	**£4,200**
Total Machinery other than Gold Mining		...	...	...	...	2	...	28	4	3	...	...	...	**£343,163**
Total, all Mining Machinery		**1,679**	**5**	**50**	**13**	**11**	**9**	**72**	**47**	**265**	**460**	**203**	**103**	**£2,318,612**

APPENDIX.

ROYAL MINT, PERTH BRANCH.

Subject to the Regulations, any person may deposit gold at the Mint in his own name. Those who cannot attend personally for the purpose may send the gold by an agent, under Police escort, or by Post.

A circular can be obtained from the Deputy Master of the Mint giving all necessary information for intending depositors, Coining Regulations, etc., etc.

Forms for use in connection with gold sent to the Mint by post can be obtained at the Mint.

Charges for Assaying, Refining, and Coinage.

Gross Weight of Deposit in ounces.	Mint Charge.	Gross Weight of Deposit in ounces.	Mint Charge.	Gross Weight of Deposit in ounces.	Mint Charge.
Up to and including—	£ s. d.	Up to and including—	£ s. d.	Up to and including—	£ s. d.
24	0 5 0	400	4 3 4	1,300	10 4 2
30	0 6 3	410	4 5 5	1,400	10 16 8
40	0 8 4	420	4 7 6	1,500	11 9 2
50	0 10 5	430	4 9 7	1,600	12 1 8
60	0 12 6	440	4 11 8	1,700	12 14 2
70	0 14 7	450	4 13 9	1,800	13 6 8
80	0 16 8	460	4 15 10	1,900	13 19 2
90	0 18 9	470	4 17 11	2,000	14 11 8
100	1 0 10	480	5 0 0	2,100	15 4 2
110	1 2 11	490	5 2 1	2,200	15 16 8
120	1 5 0	500	5 4 2	2,300	16 9 2
130	1 7 1	520	5 6 8	2,400	17 1 8
140	1 9 2	540	5 9 2	2,500	17 14 2
150	1 11 3	560	5 11 8	2,600	18 6 8
160	1 13 4	580	5 14 2	2,700	18 19 2
170	1 15 5	600	5 16 8	2,800	19 11 8
180	1 17 6	620	5 19 2	2,900	20 4 2
190	1 19 7	640	6 1 8	3,000	20 16 8
200	2 1 8	660	6 4 2	3,100	21 9 2
210	2 3 9	680	6 6 8	3,200	22 1 8
220	2 5 10	700	6 9 2	3,300	22 14 2
230	2 7 11	720	6 11 8	3,400	23 6 8
240	2 10 0	740	6 14 2	3,500	23 19 2
250	2 12 1	760	6 16 8	3,600	24 11 8
260	2 14 2	780	6 19 2	3,700	25 4 2
270	2 16 3	800	7 1 8	3,800	25 16 8
280	2 18 4	820	7 4 2	3,900	26 9 2
290	3 0 5	840	7 6 8	4,000	27 1 8
300	3 2 6	860	7 9 2	4,100	27 14 2
310	3 4 7	880	7 11 8	4,200	28 6 8
320	3 6 8	900	7 14 2	4,300	28 19 2
330	3 8 9	920	7 16 8	4,400	29 11 8
340	3 10 10	940	7 19 2	4,500	30 4 2
350	3 12 11	960	8 1 8	4,600	30 16 8
360	3 15 0	980	8 4 2	4,700	31 9 2
370	3 17 1	1,000	8 6 8	4,800	32 1 8
380	3 19 2	1,100	8 19 2	4,900	32 14 2
390	4 1 3	1,200	9 11 8	5,000	33 6 8

For every additional 100ozs. the charge is increased by 12s. 6d.

NOTE.—Additional charges are collected when base metals in a deposit exceed 2 per cent. of its weight.

The following table illustrates the operation of these charges in case of gold of the value of £3 17s. 10½d. an ounce:—

Weight of Deposit.	Rate of Charge per ounce.	Amount of Charge.	Net Value of Deposit.
ozs.	d.	£ s. d.	£ s. d.
50	2.5	0 10 5	194 3 4
100	2.5	1 0 10	388 6 8
600	2.3	5 16 8	2,330 8 4
1,000	2.0	8 6 8	3,885 8 4
5,000	1.6	33 6 8	19,435 8 4
10,000	1.55	64 11 8	38,872 18 4

NOTE.—A proportion of silver in deposits of gold is paid for by the Mint as follows:—

In deposits under 1,000ozs. gross: all silver in excess of 8 per cent. of the weight of the deposit after melting.
" from 1,000 " to 5,000 " " 6 " " " " "
" " 5,000 " " 10,000 " " 5 " " " " "
" " 10,000 " upwards " " 4 " " " " "

The rate at which payment for silver is made is liable to fluctuation.

RATES FOR CARRIAGE OF GOLD ON GOVERNMENT RAILWAYS.

	Distance not over—									
	10 miles	25 miles.	50 miles.	100 miles.	150 miles.	200 miles.	250 miles.	300 miles.	400 miles.	500 miles.
Bullion or unmanufactured Gold, per 100ozs.	s. d. 3 9	s. d. 4 6	s. d. 5 3	s. d. 6 9	s. d. 8 3	s. d. 9 9	s. d. 11 3	s. d. 12 9	s. d. 15 0	s. d. 17 3

1s. 6d. per 100ozs. for every additional 100 miles, or part thereof.

To find the value per ounce of gold sent from a mine to the Mint.—Divide the standard gold by the weight before melting, and multiply the result by £3 17s. 10½d. For instance, supposing the Mint return to show:—

	Ozs.
Weight before melting	47.41
Standard gold	38.19

he calculation would be as follows:—

4741)3819.0(.805
3792.8
26200
23705
2495

.805 × £3 17s. 10½d. =
.805 × £3.894
.805
19470
311520
£3.134(670)
20
s. 2.680
12
d. 8.160 = £3 2s. 8d., value per ounce of gold as produced, at the mine.

By Authority: Fred. Wm. Simpson, Government Printer, Perth.