

1888.
NEW ZEALAND.

THE MINING INDUSTRY
(GENERAL ANNUAL REPORT ON).

Presented to both Houses of the General Assembly by Command of His Excellency.

The SECRETARY of MINES to the Hon. the MINISTER of MINES.
Mines Department, Wellington, 10th July, 1888.
SIR,— I have the honour to forward the general annual report on the mining industry of New Zealand for the twelve months ended the 31st March, 1888, together with the reports of the Inspecting Engineer, Inspectors of Mines, Wardens, and Water-race Managers for the same period, which enter into the details of the mines and works in connection therewith for the several districts.
I have, &c.,
JAMES MCKERROW,
Secretary of Mines.
The Hon. G. F. Richardson, Minister of Mines.

MINES REPORT.

ALTHOUGH New Zealand contains ores of nearly all the principal metals, yet mining operations on an extensive scale have been confined to gold and coal.

The surface-deposits in both cases naturally received attention in the first instance; but that stage has long been passed and attention given to winning the deeper-seated deposits and to the parent-rock of the gold and other metals found in association with it. Nature guards her treasures so well that mining enterprise is always confronted with some problem requiring the exercise of the highest skill and science for its solution. In the North Island the problem at present is how best to separate the gold, silver, and other metals found in combination in certain lodes in the Thames District. In the Middle Island the difficulty is in treating stone containing arsenic, antimony, and sulphur, associated with gold. In the alluvial workings the problem is how best to work the river-beds and sea-beaches by dredges. Several plans are about to be tried, and, as there are hundreds of miles of coast-line and river-beds in the Middle Island auriferous, much interest is centred on the numerous companies that have taken up frontages of beach to be worked on the dredging process, which may be termed wholesale relatively to the process of saving the gold at present adopted by the individual miner, by means of matting or blanketing and the copper plate on the washing-tables.

Before remarking on the various divisions of the mining industry it will be well to show the results for the year 1887, and their relation to those of the former year; also the total values of New Zealand mineral products from the 1st January, 1853, to the 31st December, 1887.

Name of Metal or Mineral.	For Year ending 31st December, 1886.		For Year ending 31st December, 1887.		Total from 1st Jan., 1853, to 31st Dec., 1887.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Oz.	£	Oz.	£	Oz.	£
Gold	227,079	903,569	203,869	811,100	11,220,598	44,042,576
Silver	12,108	2,946	20,809	3,453	497,465	124,721
Total gold and silver ..	239,187	906,515	224,678	814,553	11,718,063	44,167,297
Mineral Produce, including Kauri-gum—	Tons.	£	Tons.	£	Tons.	£
Copper-ore	20	390	..	..	1,392	17,787
Chrome-ore	..	..	..	..	5,666	37,367
Antimony-ore	62	1,784	134	3,989	989	13,504
Manganese-ore	328½	1,316	305	895	12,656½	45,314
Hæmatite-ore	..	..	..	..	51	220
Mixed minerals	445	1,846	144	4,142	13,686	55,822
Coal exported	46,136	52,133	43,719	44,143	194,184	198,957
Coke exported	497	715	183½	266	3,639	5,854
Coal consumed in colony ..	488,217	244,108	514,901	257,451	4,266,610	2,133,305
Kauri-gum	4,920½	257,653	6,791	362,449	111,191½	4,305,601
Total quantity and value of minerals ..	540,626½	559,945	566,177½	673,335	4,610,065	6,813,731
Value of gold and silver as above ..	..	906,515	..	814,553	..	44,167,297
Total value of minerals produced, including gold and silver	..	1,466,460	..	1,487,888	..	50,981,028

From this it will be seen that the total for the year 1887 of mineral products shows an increase in value of £21,428, which is due to the yield of kauri-gum more than compensating for the falling-off in the yield of gold.

GOLD.

The amount and value of gold obtained within any specified period in the colony cannot be accurately ascertained; but, as the whole of it, with the exception of what is used in the colony—a comparatively small quantity—is exported, the Customs returns may be taken as giving a close approximation of the yield for the periods to which they refer. The falling-off for the year 1887 is £92,469, as compared with 1886. Again, comparing the export for the six months ended the 30th June, 1888, with the corresponding six months of 1887, there is a falling-off in value of £13,580. The decrease is almost entirely in the alluvial fields of the West Coast and Otago.

The yield of gold from quartz is fairly constant from year to year, as the following statement, covering a period of four years, for the two principal quartz-mining districts—viz., Auckland and Reefton—will show. The returns are for the twelve months ending the 31st March in each case:—

District.	1884-85.		1885-86.		1886-87.		1887-88.	
	Quartz.	Gold.	Quartz.	Gold.	Quartz.	Gold.	Quartz.	Gold.
	Tons.	Oz.	Tons.	Oz.	Tons.	Oz.	Tons.	Oz.
Auckland,—								
Coromandel	456	3,201	550	3,382	305	4,170	1,923	6,774
Thames and Ohinemuri	31,496	37,705	35,998	61,540	34,827	38,142	35,207	39,354
Te Aroha	11,042	9,506	6,552	4,489	4,743	3,658	7,166	2,918
	42,994	50,412	43,100	69,411	39,875	45,970	44,296	49,046
Reefton	34,349	23,997	27,198	14,591	23,930	21,143	24,403	16,775
Totals	77,343	74,409	70,298	84,002	63,805	67,113	68,699	65,821

Coromandel shows an increase in the quantity of stone crushed and also in the yield of gold, principally due to the vigorous prosecution of the Kapanga Mine. Thames and Ohinemuri show but little variation in the number of tons crushed, and with the exception of the year 1885-86 the yield of gold is very regular. The large yield for 1885-86 is due to rich stone having been obtained from the Cambria Mine. The returns from the Te Aroha field have been steadily getting less year by year, but notwithstanding this there is a prospect of this field being worked yet with more success. The Reefton district shows a large falling-off in the yield of gold last year, which is in a great measure due to two of the regular dividend-paying mines—Welcome and Keep-it-Dark—producing very low-grade stone during the year. In the latter mine, however, the reef now found at the lower levels gives promise of better returns for this year.

The quartz-mines in the Lake District of Otago have not given returns last year quite up to their usual average. At the end of Roughridge, Ida Valley, two old claims which had been worked at different times in the course of the last twenty years, and latterly abandoned for several years, were reopened last year, and from 400 tons of stone the handsome return of 820oz. was obtained. At Serpentine, which has gone through a somewhat similar experience to that of Roughridge, payable gold has been struck at several points along a low-level adit, 900ft. long, following the general course of the reef.

On the Old-Man Range, above Bald Hill Flat, White's reef yielded 830oz. of gold from 820 tons of stone. This mine is at a very high level, about 3,000ft. above the sea, and can only be worked for seven or eight months in the year.

The vicissitudes of failure and success which have attended quartz-mining in New Zealand go to show that persevering and well-directed efforts are almost sure of their reward. The Kapanga Mine already referred to, the Phoenix Mine at Skippers, and the Globe at Reefton, may be taken as examples of what capital and skill can accomplish; while failures, which could be quoted by the dozen, go to show that it is futile for persons without adequate means to engage in an enterprise requiring a large preliminary outlay before success can be achieved. Notwithstanding the failures, observation strengthens the conviction that there will yet be a very great development of quartz-mining in the colony.

DREDGING-PLANTS.

Since the introduction of the Wellman dredger, which was constructed to work the bed of the Clutha River, Otago, a large number of dredging-claims have been taken up; but, unfortunately, the pipes sent out from England with this dredger were found to be far too small to be of any real utility in carrying on dredging-operations. The holders of the claims recently taken up are waiting to see this new appliance properly tested before commencing their operations. The novel feature of this dredge is that it lifts the gravel by means of suction produced by a centrifugal pump, the manner hitherto of raising gravel from the beds of rivers being by bucket-dredges.

A large number of claims have also been taken up on the ocean beaches on the west coast of the Middle Island, and also on the east coast, between the mouth of the Clutha River and the Bluff. Mr Brooke-Smith has introduced what is termed the Ball dredger (similar in construction to Wellman's), and is at present erecting one on the Five-mile Beach in the Okarito district, Westland. Should these dredges be successful there will be a large field opened out. Mr. McQueen, of Dunedin, who placed a steam-bucket dredger in the Clutha in 1881, which has been in successful operation ever since, is now building a steel pontoon bucket-dredge at Granite Creek, on the ocean beach, about twenty miles north of Westport. The machinery is to be driven by a turbine, fed through a flexible piping from a water-race.

SILVER.

The silver hitherto exported is that obtained in the process of refining the gold. No metallurgical works have as yet been erected to treat silver ores, but a company proposed to erect works either at Karangahake or near Te Aroha. Over a hundred tons of ore, containing gold and silver, were shipped during last year to Europe for treatment, and the returns received are reported as very satisfactory.

ANTIMONY.

The principal-antimony workings in the colony at the present time are at Endeavour Inlet, Queen Charlotte Sound. A company has been working here for the last three or four years, and has lately, after erecting smelting-works and spending about £25,000, been re-formed in London with a larger capital, in order to carry on the workings on a more extensive scale. During last year 134 tons of ore and refined antimony were forwarded to London, valued at £3,989.

At Waipori, in Otago, the antimony-mine which was opened out in former years is again taken up, and 10 tons of ore have lately been broken out for the purpose of forwarding to England for treatment, with the view of inducing a company with sufficient capital to work the mine.

MANGANESE.

At the Bay of Islands and other places in the Auckland Provincial District manganese is found. During last year 305 tons have been shipped to England, valued at £895.

MIXED MINERALS.

The principal ores coming under this head are those containing gold and silver, associated with other metallic substances, of which 144 tons forwarded to Europe for treatment were valued at £4,142.

COPPER.

Copper is found in many parts of the colony. It was worked on the Island of Kawau by the Aberdeen Company more than forty years ago, and subsequently at the Dun Mountain, Nelson. The latest copper-workings were in this locality, at the Champion Mine, where before the mine was properly opened out operations had to be suspended for want of capital. The workings have been at a standstill for over a year; but efforts are now being made to resuscitate the enterprise by floating a company with a larger capital. Recently indications of copper have been discovered in the Ruahine Range, near Maharahara, Hawke's Bay. Several applications for prospecting licenses have been granted.

COAL.

This industry is steadily progressing. In 1878 the output from the mines was only 162,218 tons, and last year it amounted to 558,620 tons, being about three and a half times as great as it was ten years ago. In 1886 the output was 534,353 tons, thus showing an increase over last year of 24,267 tons. The quantity of coal imported last year was 107,230 tons, being a decrease from the previous year's import of 12,643 tons, thus showing—as every previous year has done—that New Zealand coal is steadily gaining on the imported article. Taking the output of the mines in the colony and the quantity imported, they amount to 665,850 tons, as against 654,226 tons for the year 1886.

The quantity of coal exported last year, according to the Customs returns, was 44,129 tons, but, of this, 31,178 tons was used for coaling direct mail-steamers, thus leaving the net actual exports to other countries at 12,951 tons. The actual exports for 1886 were 2,862 tons, showing an increase in exports of 10,089 tons. Although the 31,178 tons referred to as being used for coaling direct mail-steamers are included in the table of exports, they may be justly included in the consumption of the colony, as in last year's report. Upon this basis the quantity of coal consumed within the colony last year was 652,899 tons, as against 651,364 tons in 1886, or the slight increase of 1,535 tons.

Referring to Table No. 7, it is satisfactory to observe that the increased output consists principally of 31,916 tons of bituminous coal, while there has been a small decrease of 7,649 tons in the inferior classes of coal.

NUMBER OF COAL-MINES AND MEN EMPLOYED.

The number of mines standing on the list last year was 126, as against 110 for the year previous, but this increase has been more in the number of lignite-quarries, which can hardly be termed mines. The only real increase in the number may be set down as four, three of which employ from five to ten men each, and one over twenty-one men.

The total number of men employed in coal-mining was 1,499, as against 1,605 for the previous year, or a decrease in the number of employed of 106, while the increased output from the mines amounts to 24,276 tons. The explanation of this is that a great amount of dead work was done in the previous year. For instance, the Wallsend Mine at Greymouth had 136 men during 1886, engaged mostly in preliminary work, the actual output being only 1,506 tons.

The average output per man last year was 372 tons, as against 333 tons for the previous year. By referring to Table No. 9, attached, it will be seen that the largest output was in mines where twenty-one men and upwards were employed. The average in the larger workings was 406 tons per man, while in lignite-workings it was only 223 tons. The difference is easily accounted for, as lignite is only worked to supply local requirements.

FUTURE PROSPECTS OF THE COAL-MINES.

With regard to the future prospects of the coal-mining industry, it has now arrived at that stage where any great increase in the output will depend on an export trade, which cannot have any

great development until the improvements to the harbours of Westport and Greymouth are sufficiently advanced to admit of large vessels loading up for foreign ports. Even with a much larger output of coal in the colony than is necessary for its own requirements, it cannot be expected that the importation of coal from New South Wales will altogether cease, for a certain quantity will come as ballast on vessels trading between the two colonies.

ACCIDENTS IN COAL-MINES.

Notwithstanding the precautions taken by the department to provide for the safety of the workmen employed in the coal-mines, the number of accidents during the twelve months ended the 31st March last has been unusually large. There were in all thirty-one accidents, four of which proved fatal. This is at the rate of one accident for every 17,697 tons of coal won, or one fatal accident for every 139,655 tons, whereas during the previous year there were only seventeen accidents, or at the rate of one for every 31,432 tons of output, and none of them were fatal. This shows the necessity of having the mines carefully looked after; but, even with all the supervision that can possibly be exercised over them, accidents cannot be always prevented. The workmen themselves show great carelessness in many instances; and when this can be proved—which is often a difficult matter—it is the duty of the Inspectors to take proceedings against them. This has been done in several cases. It is due to those having the management of the mines in which accidents occurred during last year to state that in each case, inquiries having been made, it was found that no blame attached to them.

The department endeavours to carry out the general spirit of the Act so as to secure the safety of the workmen; but without the cordial co-operation of the managers, and above all of the workmen themselves, this desirable end cannot be attained.

KAURI-GUM.

It is no doubt somewhat fanciful to include the resinous exudation of the kauri pine (*Dammaris Australis*) in a mines report, as though it were a mineral substance. It has this, however, in common with minerals, that it is dug out of the ground, and to some extent its crystallization has been altered since it became buried there. The deposits extend more or less over the northern portion of the Auckland Provincial District, in the forests, and extensively in open country and the sites of ancient forests, of which, but for this valuable product, not a vestige remains to mark the spot where ages ago the magnificent kauri reared its noble stem and adorned the landscape with groves of beauty and sublimity such as no other tree-growth can surpass.

The extensive use of the gum as a varnish in America and Europe has for many years led to a large export trade. The value of the export in 1887 was £362,449, or equal to nearly one-half the value of the gold export of the colony for the same year. The search for the gum is engaged in by both Europeans and Maoris, and at certain seasons of the year as many as ten thousand persons are engaged in connection with this industry. The gum-digger in the matter of outfit has greatly the advantage of the gold-digger: he requires neither water-race, nor sludge-channel, nor crushing machinery, nor other costly preliminary of time or money, but, accoutred with a steel-tipped prod, a spade, and a bag, he goes forth in search of treasure-trove, and, although he cannot indulge in the dreams of sudden wealth which fascinate the gold-seeker, he is sure, at least, of always averaging a fair wage.

This general and equal distribution of the gains of the gum-industry throughout the district is of more value to the community than the more splendid but irregular gains of the gold-seeker. In the notice of this industry, however, it should be observed that its pursuit has a tendency to foster roaming and irregular habits, unfavourable to after application to steady industry; and it is even thought that, while the gumfields last, the improvement of the district north of Auckland, an area of about three million acres, will not be so rapid in the cultivation of the soil and in fruit-growing, for which it is peculiarly well adapted, as it would be were there no gumfields.

The statistics of the industry show that, from its commencement in 1853 to the 31st March, 1888, the quantity exported was 113,247½ tons, representing a value of £4,407,023. Hitherto the right to dig gum on the Crown lands had, in some instances, been secured by some one leasing a large area, erecting a store, and only allowing those to dig within his area who traded with him. This led to some evils, which it is proposed to obviate by issuing licenses at ten shillings per annum, conferring on the holder the same right to dig on the Crown lands that the miner's right confers on the goldfields. Rangers have been appointed to see that no digging is carried on in the forests except during the five winter months, from the 1st May to the 30th September, when there is but little risk of the destruction of the forest by accidental fire.

EARNINGS OF MINERS.

Gold-mining.—The number of persons engaged in gold-mining on the 31st March last was 11,720, and at the end of the previous year 11,782, making the average number throughout the year 11,751. The value of gold exported for the twelve months ended the 31st March being £766,330, gives an average earning for miners of £65 4s. 3d.; for the year previous it was £80 12s. 7d.

Coal-mines.—The number of men and boys engaged in coal-mining at the end of 1887 was 1,499; and, as at the end of the previous year the number was 1,605, the average for 1887 may be stated as 1,552. Taking the cost of hewing the coal and other labour in working the mines at 6s. per ton, the average earning will be about £108 per man.

VALUE OF PLANT, MACHINERY, AND OTHER WORKS IN CONNECTION WITH GOLD-MINING.

The value of machinery and plant in connection with gold-mining at the end of last year was estimated as follows:—

Machinery and plant employed in alluvial and quartz-mining	...	£508,921
Water-races, exclusive of those maintained by the department	...	727,637
Tail-races ...	...	170,717
Dams and reservoirs ...	...	105,364
Sluices ...	...	16,734

1,529,373

Water-races constructed and maintained by the department	...	370,198
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Total...	...	...	...	...	£1,899,571
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The above arranged in provincial districts gives for—

Auckland ...	...	...	...	...	£250,348
Marlborough ...	...	...	...	...	7,970
Nelson ...	...	...	...	...	590,491
Westland ...	...	...	...	...	428,184
Otago ...	...	...	...	...	622,578

£1,899,571

MINING AND AGRICULTURAL LEASES.

There are 340 licensed holdings, gold-mining leases, and special claims, having an aggregate area of 6,690 acres, on which an annual rental of £5,574 15s. is paid. There are also 345 agricultural leases held within mining districts, whose annual rental is £2,545 14s. 3d.

GOLDFIELDS REVENUE.

The amount of revenue collected for the twelve months ending the 31st March last for miners' rights, licenses, &c., was £17,189 5s. 10d., and from gold-duty £20,108 5s. 10d., making a total of £37,297 11s. 8d. This is paid to the local bodies of the district from which the revenue arises. The total of goldfields revenue collected since 1857 amounts to £2,196,849 9s. 10d.

WATER-RACES.

The water-races controlled and maintained directly by the Mines Department are the Waimea-Kumara, Nelson Creek, and Argyle. The gross receipts from these, derived from sales of water and channel-fees, for the twelve months ending the 31st March last, amounted to £11,897 14s., and the expenditure on maintenance for the same period was £7,843 1s. 5d; thus leaving a balance over the working-expenses of £4,054 12s. 7d. To take these water-races separately, the Waimea-Kumara gives a surplus on the working of £4,125 17s. 4d., Nelson Creek shows a deficit of £128 13s. 8d., and the Argyle a surplus of £57 8s. 11d. The Mount Ida Water-race, which is managed by a Trust, showed last year a surplus of £99 1s. 8d on the working-expenses for the first time since its construction.

The Mikonui Water-race, an extensive work, estimated to cost about £90,000, has only been partially constructed, owing to the difficulties encountered in constructing the long tunnel, about two miles, the work on which has been stopped for several years. The lower end of the race, about three miles in length, having a series of short tunnels, was let to the Mont d'Or Company for £100 a year; but, on consideration of the company re-timbering the tunnels, the rent has recently been reduced to £50.

The total expenditure on all the water-races and drainage- and sludge-channels has been £510,191 10s. 11d., of which amount £469,392 18s. 8d. was expended on works undertaken wholly by Government, and £40,798 12s. 3d. was paid as subsidies and loans to companies and local bodies for the construction of works of this character. The water-races controlled by Government are—

Waimea-Kumara, which cost	...	...	...	...	£173,363	7	1
Nelson Creek ...	...	...	...	...	90,722	10	8
Argyle ...	...	...	...	...	14,701	15	3
Mikonui ...	...	...	...	...	25,644	9	6
Mount Ida, managed by a Trust	...	...	...	...	65,766	3	8
Total ...	...	...	...	...	£370,198	6	2

The surplus on the working of these water-races last year amounted to £4,248 14s. 4d., or nearly 1½ per cent on the capital value.

SCHOOLS OF MINES.

As already mentioned, the miner is confronted with the problem of how to treat the ores in which gold, silver, and other metals occur in combination. One important step towards its elucidation has already been made in teaching him how to recognise the constituent metals in the ores. Dr. Black, Professor of Chemistry and Metallurgy at the Otago University, during each of the summer vacations of the last three years, visited the principal mining districts, delivering lectures on chemistry and teaching miners the tests to apply in the detection of the various metals. The results have been well worthy of this labour, for the miners, from their calling, being of a very observant nature, have profited greatly by the scientific instruction. It has literally been a case of the seed falling on good ground and producing fruit many fold.

It is largely due to Dr. Black's labours and to the attempts at smelting by the La Monte process that the miners of the Thames realised, as they now do, the presence of the silver and other

metals that were being shot out on the heap of tailings like so much rubbish. A great incentive has been given to prospect new fields, for in the simple tests the miner has learned to apply he is armed with a talisman to unlock the secrets of nature. It is true that it is one thing to know what is in an ore, and quite another to dissociate the metals composing it, on the large scale. But we are on the right track of discovery in having awakened the spirit of inquiry among so many intelligent men, who are supplied at various points with the means of pursuing their inquiries in the laboratory. On account of the expense it is of course impossible to equip and maintain laboratories on all the goldfields. But, recognising the importance of keeping this spirit of inquiry alive, well-equipped laboratories are maintained both at the Thames and Reefton—the two principal quartz-mining districts—in charge at each place of an officer trained under Dr. Black. At the Thames Mr. Montgomery has charge, and Mr. Fenton at Reefton. Their duties are to make analyses, and teach the miners, old and young, in the chemistry of their work. It is reasonable to hope that the outcome of so much intelligent application will be the discovery of a method of treating the ores so as to make the most refractory of them yield up their wealth.

The expenditure on Schools of Mines since their inauguration has been as follows :—

			£	s.	d.
Subsidies towards the erection of buildings	...	...	511	12	3
Chemicals and mineralogical specimens	...	...	699	15	2
Salaries of teachers and travelling expenses	...	...	5,654	8	7
Total	...	...	£6,865	16	0

In addition to this the liabilities amounted at the end of March last to £337 4s. 3d., exclusive of £600 which was authorised as subsidy towards the erection of a testing-plant in connection with the Thames School of Mines.

DEPARTMENTAL.

As required by the Mining and Coal Mines Acts, a Board of Examiners was appointed to test the qualifications of applicants for the certificate of competency required by managers of mines.

There have been six applications, but only two came up for examination, of whom one passed.

The work of the Mines Department proper requires no great number of officers. The water-races, sludge-channels, and construction of roads and tracks are directed by the Inspecting Engineer, Mr. H. A. Gordon, who also divides the work of inspection under the Mining and Coal-mines Acts with Mr. Binns, who is solely engaged in that duty, and with the occasional assistance of Mr. John Gow, but whose principal duty is the charge of the Nelson Creek Water-race. Mr. George Wilson inspects the Thames and Te Aroha districts under the Mining Act. The local charge of the Waimea-Kumara Water-race and Sludge-channel is under Mr. James Dand, and of the Charleston Water-race under Mr. Denis Doyle. The reports of those officers and the Wardens of the several goldfields for the year will be published simultaneously with this report.

While the success of the mining-industry rests mainly with the intelligence and energy of those engaging in it, the department can materially assist by the collection and dissemination of information bearing on the most improved methods of mining in practice here and in other countries. It is but right to acknowledge the endeavours of Mr. Gordon in this respect, and on whom also rests the main executive work of the department.

JAMES MCKERROW.

No. 1.

TABLE showing the QUANTITY and VALUE of GOLD ENTERED for DUTY for EXPORTATION from NEW ZEALAND for the Years ending the 31st March, 1886, and 1887, and the TOTAL QUANTITY and VALUE from 1857 to 31st March, 1888.

Name of Goldfield.	Port of Entry.	Year ending 31st March, 1888.		Year ending 31st March, 1887.		Increase or Decrease for Year ending 31st March, 1887.		Total Quantity and Value from January, 1857, to 31st March, 1888.	
		Quantity.	Value.	Quantity.	Value.	Increase.	Decrease.		
Auckland ..	Auckland ..	Oz. 31,986	£ 126,723	Oz. 32,051	£ 127,390	Oz. ..	Oz. 65	Oz. 1,554,687	£ 5,787,415
Wellington ..	Wellington	..	..	47	169	..	47	188	706
Marlborough	Picton ..	..	..	399	1,430	..	..		
	Nelson ..	176	656	78	293	..	..		
	Blenheim ..	944	3,400	..	..	..	..		
		1,120	4,056	477	1,723	643	..	54,974	212,087
Nelson	Nelson ..	1,987	7,378	2,543	9,508	..	..		
	Dunedin ..	112	448	115	458	..	..		
		2,099	7,826	2,658	9,966	..	559	225,711	896,390
West Coast	Nelson ..	1,593	6,334	1,004	3,918	..	..		
	Westport ..	8,783	35,131	17,106	68,223	..	..		
	Greymouth	55,581	222,304	66,284	261,387	..	..		
	Hokitika ..	29,121	116,482	32,597	130,388	..	..		
	Wellington	..	..	7	30	..	..		
		95,078	380,251	116,998	463,946	..	21,920	4,828,967	19,169,881
Canterbury ..	Dunedin ..	..	..	..	..	..	..	24	96
Otago ..	Dunedin ..	55,451	219,539	73,259	293,447	..	..		
	Invercargill	6,227	24,482	3,898	15,187	..	..		
	Riverton ..	..	..	2,693	10,772	..	..		
		61,478	244,021	79,850	319,406	..	18,372	4,608,755	18,185,037
	Totals ..	191,961	762,877	232,081	922,600	..	40,320	11,273,306	44,251,612

No. 2.

TOTAL QUANTITY AND VALUE OF GOLD ENTERED FOR DUTY FOR EXPORTATION FROM THE 1st JANUARY, 1857, TO THE 31st DECEMBER, 1887. (This return shows the produce of the various goldfields. Gold entered at Nelson from Hokitika, Greymouth, and Westport is put under the head of "West Coast," and from Invercargill and Riverton under the head of "Otago.")

Year.	Auckland.		Nelson.		Marlborough.		West Coast.		Otago.		Wellington.		Canterbury.		Total.	
	Oz.	Value. £	Oz.	Value. £	Oz.	Value. £	Oz.	Value. £	Oz.	Value. £	Oz.	Value. £	Oz.	Value. £	Oz.	Value. £
1857	..	..	10,437	40,422	..	..	..	..	..	..	..	..	..	..	10,437	40,422
1858	..	1,192	13,226	51,272	..	..	..	..	..	..	..	..	..	..	13,226	51,272
1859	..	..	7,336	28,427	..	..	..	..	..	..	..	..	..	..	7,336	28,427
1860	..	..	4,538	17,585	..	..	..	..	..	..	..	..	..	..	4,538	17,585
1861	..	..	6,335	24,552	..	..	..	..	..	..	..	..	..	..	6,335	24,552
1862	..	..	10,422	40,386	..	..	..	..	..	..	..	..	..	..	10,422	40,386
1863	..	4,098	14,410	55,841	..	..	..	..	..	..	..	..	..	..	14,410	55,841
1864	..	4,483	12,137	47,080	..	..	..	..	..	..	..	..	..	..	12,137	47,080
1865	..	3,448	7,650	29,643	..	..	..	..	..	..	..	..	..	..	7,650	29,643
1866	..	5,449	9,123	35,918	..	..	..	..	..	..	..	..	..	..	9,123	35,918
1867	..	17,463	5,999	38,396	..	..	..	..	..	..	..	..	..	..	5,999	38,396
1868	..	18,277	10,631	42,524	..	..	..	..	..	..	..	..	..	..	10,631	42,524
1869	..	168,874	12,244	48,692	..	..	..	..	..	..	..	..	..	..	12,244	48,692
1870	..	434,687	10,014	40,056	..	..	..	..	..	..	..	..	..	..	10,014	40,056
1871	..	319,146	8,175	32,700	..	..	..	..	..	..	..	..	..	..	8,175	32,700
1872	..	1,188,708	13,697	54,786	..	..	..	..	..	..	..	..	..	..	13,697	54,786
1873	..	369,841	5,642	22,158	..	..	..	..	..	..	..	..	..	..	5,642	22,158
1874	..	487,123	4,577	17,866	..	..	..	..	..	..	..	..	..	..	4,577	17,866
1875	..	305,068	14,018	55,862	..	..	..	..	..	..	..	..	..	..	14,018	55,862
1876	..	292,156	221,905	870,627	..	..	..	..	..	..	..	..	..	..	221,905	870,627
1877	..	403,627	220,454	17,223	..	..	..	..	..	..	..	..	..	..	220,454	17,223
1878	..	55,982	37,901	134,235	..	..	..	..	..	..	..	..	..	..	37,901	134,235
1879	..	42,720	176,416	3,222	..	..	..	..	..	..	..	..	..	..	176,416	3,222
1880	..	35,516	141,326	13,089	..	..	..	..	..	..	..	..	..	..	141,326	13,089
1881	..	33,059	131,007	8,289	..	..	..	..	..	..	..	..	..	..	131,007	8,289
1882	..	41,291	163,618	2,064	..	..	..	..	..	..	..	..	..	..	163,618	2,064
1883	..	36,087	143,564	2,159	..	..	..	..	..	..	..	..	..	..	143,564	2,159
1884	..	42,989	170,416	2,798	..	..	..	..	..	..	..	..	..	..	170,416	2,798
1885	..	32,271	128,140	9,979	..	..	..	..	..	..	..	..	..	..	128,140	9,979
1886	..	30,637	121,564	10,829	..	..	..	..	..	..	..	..	..	..	121,564	10,829
1887	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	1,543,734	5,743,966	225,495	896,602	54,820	211,510	4,802,318	19,063,316	4,594,019	18,127,380	188	706	24	96	11,220,598	44,042,576

No. 3.

TABLE showing the TOTAL QUANTITY of MINERAL ORES, the Product of Mines other than Gold and Kauri Gum, EXPORTED from the Colony up to 31st December, 1887.

Year.	Silver.		Copper Ore.		Chrome Ore.		Antimony Ore.		Manganese Ore.		Hematite Ore.		Mixed Mineral Ore.		Coal.		Coke.		Kauri Gum.		Totals.	
	Oz.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.
1853	..	£	..	£	..	£	..	£	..	£	..	£	..	£	..	£	..	£	830	15,972	830	£
1854	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,661	23,864	1,661	23,864
1855	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	355	4,514	355	4,514
1856	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,440	18,591	1,440	18,591
1857	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,522	35,251	2,522	35,251
1858	..	..	351	5,000	..	25	..	..	..	..	..	..	..	..	..	..	..	..	1,811	20,037	1,811	20,037
1859	..	..	245	2,605	8	120	..	..	..	..	..	..	..	..	..	..	..	..	2,010	20,776	2,010	20,776
1860	..	..	137	1,590	116	1,440	..	..	..	..	..	..	..	..	..	..	..	..	1,046	9,851	1,046	9,851
1861	..	..	110	1,300	52	520	..	..	..	..	..	..	..	..	..	..	..	..	856	9,888	856	9,888
1862	..	..	51	1,024	3,843	24,719	..	..	..	..	..	..	..	..	..	..	..	..	1,103	11,107	1,103	11,107
1863	..	..	..	..	595	4,318	..	..	..	..	..	..	..	..	..	..	..	..	1,400	27,026	1,400	27,026
1864	..	..	..	..	768	4,910	..	..	..	..	..	..	..	..	..	..	..	..	2,228	60,500	2,228	60,500
1865	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,867	46,060	1,867	46,060
1866	..	..	..	..	281	1,315	..	..	..	..	..	..	..	..	..	..	..	..	2,535	70,572	2,535	70,572
1867	..	..	246	2,700	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,685	77,491	2,685	77,491
1868	..	..	84	977	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,690	72,493	2,690	72,493
1869	11,063	2,998	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,850	111,307	2,850	111,307
1870	37,123	11,380	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4,391	175,074	4,391	175,074
1871	80,272	23,145	7	120	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5,054	167,958	5,054	167,958
1872	37,064	9,910	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4,811	154,167	4,811	154,167
1873	36,187	9,850	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,834	85,816	2,834	85,816
1874	40,566	10,380	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,569	79,986	2,569	79,986
1875	29,085	7,569	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,231	138,523	2,231	138,523
1876	12,693	3,171	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	189	109,294	189	109,294
1877	33,893	7,556	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72	3,638	72	3,638
1878	23,019	5,755	6	115	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,445	118,348	3,445	118,348
1879	20,645	4,512	55	1,105	..	..	..	..	..	..	..	..	..	..	..	..	..	..	132,975	23,019	132,975	23,019
1880	20,005	4,500	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3,229	147,535	3,229	147,535
1881	18,885	4,236	5	36	..	..	..	..	..	..	..	..	..	..	..	..	..	..	242,817	20,005	242,817	20,005
1882	5,694	1,286	9	41	..	..	..	..	..	..	..	..	..	..	..	..	..	..	253,788	18,885	253,788	18,885
1883	16,826	3,785	46	678	..	..	..	..	..	..	..	..	..	..	..	..	..	..	260,369	5,694	260,369	5,694
1884	24,914	5,125	106	106	..	..	..	..	..	..	..	..	..	..	..	..	..	..	336,606	16,826	336,606	16,826
1885	16,624	3,169	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	342,151	24,914	342,151	24,914
1886	12,108	2,946	20	390	..	..	..	..	..	..	..	..	..	..	..	..	..	..	299,762	16,624	299,762	16,624
1887	20,809	3,453	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	257,639	12,108	257,639	12,108
Totals	497,465	124,721	1,392	17,787	5,666	37,367	989	13,504	12,656	45,314	220	13,636	55,822	194,594	199,464	3,639	5,854	111,191	4,305	601,437	343,907	4,805,654

NOTE.—Export of coal included 410 tons, value £507, of foreign produce.

No. 4.

TABLE showing the Value of GOLDFIELDS REVENUE, including GOLD DUTY, since 1860 to 31st March, 1887, and the Amount of same for Year ending the 31st March, 1888.

Name of District.	Gold Duty, Year ending 31st March, 1888.	Goldfields Revenue, Year ending 31st March, 1888.	Total Amount of Goldfields Revenue and Gold Duty, from 1860 to 31st March, 1888.
To value of goldfields revenue and gold duty, from 1860 to 31st March, 1887. (<i>Vide</i> Table No. 10, Mines Report, 1887)	£ s. d.	£ s. d.	£ s. d.
Auckland	3,292 13 5	4,802 13 10	2,159,551 18 2
Wellington		5 0 0	..
Nelson	4,642 16 5	4,868 3 7	..
Marlborough	119 8 7	96 3 0	..
Canterbury	0 17 6	59 16 8	..
Westland	5,096 3 1	2,121 12 7	..
Otago	6,956 6 10	5,235 16 2	37,279 11 8
Totals	20,108 5 10	17,189 5 10	2,196,849 9 10

No. 5.

TABLE showing the INCREASED PRODUCTION of COAL, Year by Year, during the last Ten Years, and the DECREASE of COAL IMPORTED for the same Period.

Year.	Coal raised in the Colony.		Coal imported.		
	Tons.	Yearly Increase.	Tons.	Plus or Minus.	Increase and Decrease.
1878	162,218	..	174,148	..	..
1879	231,218	69,000	158,076	—	16,072
1880	299,923	68,705	123,298	—	34,778
1881	337,262	37,339	129,962	+	6,664
1882	378,272	41,010	129,582	—	380
1883	421,764	43,492	123,540	—	6,042
1884	480,831	59,069	148,444	+	24,904
1885	511,063	30,232	130,202	—	18,242
1886	534,353	23,290	119,873	—	10,329
1887	558,620	24,267	107,230	—	12,643

No. 6.

TABLE showing the OUTPUT of COAL from the various Mining Districts, and the Comparative INCREASE and DECREASE, for the Years 1886 and 1887, together with the TOTAL APPROXIMATE QUANTITY of COAL produced since the Mines were opened.

Name of District.	Output of Coal.		Plus or Minus.	Increase or Decrease.	Approximate Total Output of Coal up to 31st December, 1887.
	1886.	1887.			
	Tons.	Tons.		Tons.	Tons.
Kawakawa	30,775	35,078	+	4,303	650,480
Whangarei, Kamo, and Whauwhau	30,947	15,265	—	15,682	193,594
Waikato	43,072	48,367	+	5,295	367,688
Pelorus			..	..	711
West Wanganui	4,168	3,783	—	385	24,939
Westport	119,929	116,242	—	3,687	517,758
Reefton	2,809	1,786	—	1,023	30,448
Greymouth	130,485	162,170	+	31,685	931,480
Malvern	14,072	11,681	—	2,391	219,645
Timaru	650	172	—	478	1,748
Otago	141,697	144,741	+	3,044	1,578,239
Southland	15,749	19,335	+	3,586	100,207
Totals	534,353	558,620	+	24,267	4,618,937

No. 7.

TABLE showing the DIFFERENT CLASSES of COAL from the MINES in the COLONY.

Name of Coal.	Output of Coal.		Plus or Minus.	Increase or Decrease.	Approximate Total Output of Coal up to the 31st December, 1887.
	1886.	1887.			
	Tons.	Tons.		Tons.	Tons.
Bituminous	285,357	317,273	+	31,916	2,125,132
Pitch	83,179	81,048	-	2,131	722,639
Brown	154,305	142,113	-	12,192	1,641,589
Lignite	11,512	18,186	+	6,674	129,577
Totals	534,353	558,620	+	24,267	4,618,937

No. 8.

TABLE showing the NUMBER of COAL-MINES in OPERATION, the NUMBER of MEN EMPLOYED, and the OUTPUT of COAL per MAN.

Number of Mines working.	Number of Miners employed in each Mine.	Total Number of Men employed.	Output of Coal during 1887.	Average Output per Man.
			Tons.	Tons.
87	1 to 4 men in each	162	36,197	223
15	5 to 10 "	85	31,283	368
8	11 to 20 "	118	31,038	263
16	21 men and upwards	1,134	460,102	406
126		1,499	558,620	372

No. 9.

RETURN showing the QUANTITY and VALUE of COALS IMPORTED INTO and EXPORTED FROM NEW ZEALAND during the Year ended the 31st December, 1887.

Imported.			Exported.		
Countries whence imported.	Quantity.	Value.	Countries to which exported.	Quantity.	Value.
	Tons.	£		Tons.	£
United Kingdom	3,158	4,873	United Kingdom*	31,178	35,109
Queensland	588	421	New South Wales	4,279	2,853
New South Wales	103,114	102,632	Victoria	2,485	1,579
Victoria	370	362	Fiji Islands	2,605	1,699
			Hongkong	3,436	3,273
			United States of America on the East Coast	7	9
			South Sea Islands†	139	128
Totals	107,230	108,288	Totals	44,129	44,650

* Included in exportation to United Kingdom, 410 tons, value £507, of foreign coal; the remainder is New Zealand produce. † Included in exportation to South Sea Islands, 60 tons, value £60, of foreign coal; the remainder is New Zealand produce.

Department of Trade and Customs,
Wellington, 28th April, 1888.

W. T. GLASGOW,
Secretary.

No. 10.

NUMBER of MINERS EMPLOYED during the Years ending 31st March, 1888, and 1887.

Mining District.	Alluvial Miners.		Quartz-miners.		Totals.		Grand Totals.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1888.	1887.
AUCKLAND—								
North Hauraki	..	..	300	..	300	..	300	150
South Hauraki	..	..	871	..	871	..	871	986
Te Aroha	..	..	76	..	76	..	76	102
MARLBOROUGH—								
Pelorus	90	..	..	..	90	..	90	60
Wairau	50	..	..	..	50	..	50	40
NELSON—								
Wangapeka	47	..	..	..	47	..	47	13
Collingwood, Takaka, and West Wanganui	225	..	75	..	300	..	300	165
Inangahua	133	266	390	..	523	266	789	850
Ahaura	500	200	..	..	500	200	700	670
Charleston	250	..	..	..	250	..	250	252
Westport, including Addison's, Northern Terraces, Waimangaroa, North Beach, Mokihinui, Karamea, and Lower Buller Valley	327	4	27	..	354	4	358	218
Lyell	50	20	120	..	170	20	190	210
Murchison	200	20	..	..	200	20	220	260
Owen	10	..	40	..	50	..	50	..
WESTLAND—								
Ross	200	30	40	..	240	30	270	..
Waimea and Stafford	..	..	..	..	..	..	..	370
Totara	..	..	..	..	..	..	..	396
Hokitika and Kanieri	305	90	..	..	305	90	395	585
Kumara	400	30	..	..	400	30	430	420
Greymouth	330	270	..	..	330	270	600	575
Arnold	230	190	..	..	230	190	420	555
Greenstone	120	60	..	..	120	60	180	225
Okarito	89	1	..	..	89	1	90	74
Jackson's Bay	30	..	..	..	30	..	30	56
OTAGO—								
Hindon	40	5	12	..	52	5	57	50
Tuapeka	480	420	40	..	520	420	940	912
Clyde	33	20	..	..	33	20	53	53
Cromwell	320	150	30	..	350	150	500	461
Alexandra	130	100	20	..	150	100	250	223
Roxburgh	156	120	..	..	156	120	276	189
Black's	135	40	3	..	138	40	178	210
Tapanui	60	30	..	..	60	30	90	..
Waikaia, Upper Waikaia, Nokomai, Waikaka, and Waikawa	158	150	..	..	158	150	308	307
Longwood and Merrivale	37	..	3	..	40	..	40	..
Orepuki	120	..	..	..	120	..	120	406
Roundhill	80	350	..	..	80	350	430	..
Wakatipu Goldfields—Arrow, Macetown, Cardrona, Kawarau, Bracken's, and Motatapu	250	50	50	..	300	50	350	292
Naseby	170	140	..	..	170	140	310	260
Queenstown	250	100	250	..	500	100	600	575
Kyeburn and Clarke's	..	..	..	..	..	..	..	145
Hamilton, Sowburn, &c.	45	15	..	..	45	15	60	70
Hyde and Fullerton's	70	27	4	..	74	27	101	47
Serpentine	12	10	9	..	21	10	31	25
Macrae's, Strath-Taieri, and Shag Valley	50	65	..	..	50	65	115	135
Maerewhenua	40	..	..	..	40	..	40	42
St. Bathans and Ida Valley	135	20	10	..	145	20	165	148
SUMMARY.								
AUCKLAND	..	..	1,247	..	1,247	..	1,247	1,238
MARLBOROUGH	140	..	..	..	140	..	140	100
NELSON	1,742	510	652	..	2,394	510	2,904	2,638
WESTLAND	1,704	671	40	..	1,744	671	2,415	3,256
OTAGO	2,771	1,812	431	..	3,202	1,812	5,014	4,550
Totals	6,357	2,993	2,370	..	8,727	2,993	11,720	11,782

[Approximate Cost of Paper.—Preparation, nil; printing (1,975 copies), £12 11s. 6d.]

By Authority: GEORGE DIDSBURY, Government Printer, Wellington.—1888.