(No. 71.)

1886.

PARLIAMENT OF TASMANIA.

REPORT OF THE SECRETARY OF MINES, 1885:

(INCLUDING INSPECTOR OF MINES' REPORT.)

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

REPORT OF THE SECRETARY OF MINES.

Office of Mines, Hobart, 27th July, 1886.

SIR,

I HAVE the honor to submit my Report for the year ending 30th June, 1886, upon the Mines Branch of the Lands and Works Department, with a few remarks upon the progress and condition of the Mining industry of the Colony.

Officers and their Work.

The Staff in Hobart, Launceston, and in the Western and North-Western Districts has, during the last few months undergone many and important changes; other Districts remain the same as last year.

Early in February last the Secretary of Mines, Mr. Bernard Shaw, was removed to another branch of the Public Service; and I may be permitted to say that the removal of that officer is a severe loss, not only to this branch, but to the Mining industry generally, inasmuch as he possessed in an eminent degree ability and knowledge, which secured not only the loyal support and co-operation of his subordinates, but the entire confidence of the Mining community. I succeeded Mr. Shaw in charge of the branch. The Commissioner of the Western District, Mr. W. H. Glover, who had hitherto been stationed at Reminé, Trial Harbour, has been placed in charge of the Northern and Southern Mining Districts, and stationed at Launceston, where, in addition to his duties as Commissioner, he fills the offices of Visiting Magistrate for George Town, Beaconsfield, and Lefroy, and Commissioner of the Court of Requests at the two last-named places. The performance of these various duties involve a large amount of labour and travelling, and it is necessary that the Commissioner should continue to have a competent and experienced Registrar in his Office in Launceston. The Staff of the Launceston Office consists of a Commissioner, a Registrar, a Junior Clerk, and a Draftsman, all of whom are fully employed. Early in this year an effort was made to dispense with the services of the Draftsman, but the inconvenience was found to be so great that he was restored to his position. The maintenance of such an office at this station is undoubtedly a necessity.

The office of Commissioner for the Western District, rendered vacant by the removal of Mr. Glover, has been filled by the appointment of Mr. Henry L. Crowther, who will be stationed at Waratah, where he will also perform the duties of Stipendiary Magistrate and Commissioner of the Court of Requests; the latter duties it is understood are of a very light character, and will leave the Commissioner ample time for the fulfilment of his more important Mining duties, which, for the present, it is considered can be efficiently performed with Waratah as head quarters. The work of the Commissioner for the Western District is arduous and laborious, involving long and wearisome journeys over almost impassable tracks, and through difficult and comparatively unknown country. On account of its remoteness and inaccessibility, it is more than otherwise necessary that the legitimate prospector, whom it is especially desirable to encourage in every possible manner, should be afforded the protection of a judicial officer, ready at any moment to proceed to any part of his district to investigate and settle the various disputes which may and do arise; without such protection, the class of men who, if ever it is to be done at all, may be expected to prospect and develop the Mineral resources of this wild but promising district will not venture into the country: and I have only to reiterate the statement made last year by my predecessor, "that the continued maintenance of a Commissioner at the West Coast is indispensable."

The North-Western District.—Since the removal of the Officer, who, in addition to various other offices filled that of Commissioner of Mines for the North-Western District, no fresh appointment has been made, nor is one necessary; the small amount of work to be done in this District can at present readily be performed by the Commissioners of the adjoining Districts.

The Eastern District.—The Office of Commissioner here is still combined with that of Stipendiary Magistrate and Commissioner of the Court of Requests. Although there have not of late been many matters of importance for the Commissioner to adjudicate upon, he has made occasional visits to the various portions of his District, and dealt with such matters as required his attention.

The North-Eastern District.—The Commissioner, who is also Stipendiary Magistrate and Commissioner of the Court of Requests, is very constantly engaged in holding Courts for the hearing of mining disputes in the various centres of his wide and important district. Owing to the impetus lately acquired by the tin-mining industry, the work of the Commissioner has very largely increased, and will, no doubt, continue to increase.

Mining Registrars are maintained at Gladstone, Scottsdale, Moorina, and St. Helen's, and afford very great facilities for the transaction of business to those engaged in mining.

The Inspector of Mines has furnished a full report of his work in connection with the Regulation of Mines Act, 1881 and 1884. It is satisfactory to note that mining accidents in this Colony are, in proportion to the number of men employed, diminishing in frequency and importance,—a result which, I submit, may, in a large degree, be attributable to the working of the Acts in question. In addition to his work as Inspector of Mines, this officer has been employed by the Government, and also by private individuals and companies, at their expense, to make geological examinations and reports of various parts of the country; notably during the past year among those effected for the Government, are the reports upon the Blue Tier Tin, and Scamander Silver-Gold deposits. These reports are much valued among mining men; and it is beyond dispute that the maintenance in connection with the Department of an officer possessing scientific geological knowledge, is a valuable help to the mining community, and will materially aid in the development of an industry which, in this Colony as yet, may be said to be only in its infancy.

The Bailiff of Mines has continued to perform a useful work: his visits to the various parts of the Colony check illegal mining, the unauthorised occupation of Crown lands, and other irregularities, to an extent which more than justifies the expenditure entailed.

The Foremen in charge of diamond drills are under the immediate control of the Commissioner of Gold Fields in Launceston, whose report is annexed (Appendix A). No work has been done by the drills this year on account of the Government; all work done has been for private individuals and companies,—so far, I regret to say, without any direct benefit to those interested.

Drill No. 1 is now boring for coal at Belmont, near Longford; and drill No. 2 for a sub-basaltic deposit of tin at Mount Bischoff.

The arrears of work at the Hobart Office have been very considerably overtaken by the temporary employment here of the Registrar from Launceston. The additional strength thus acquired has resulted in the construction of an accurate and convenient register of leases, in the compilation and issue of a number of correct and reliable charts, and various other matters which sadly needed reducing to order and method. There is still, I regret to say, a large arrear of unregistered papers, which it is very essential should be dealt with, but which the current work of the office, now and for some time past daily on the increase, renders the present staff unable to cope with. The staff in this office are industrious and loyal, but without some additional assistance, for a time at any rate, I am convinced that we shall be unable to bring the work up to the standard which should obtain in a well-regulated office.

Maps of Mining Districts.

During the past year the very necessary work of compiling reliable plans of the various Mining Districts has occupied much attention, with the result that plans of eight districts are now complete, and obtainable at small cost from the various Registrars. There yet remain 10 to be completed. This is a most important work, and will require constant attention, otherwise the charts will be worse than useless.

Mining Companies Acts.

The working of these Acts is becoming better understood than formerly by the managers of companies and others interested. The winding-up proceedings are conducted in Hobart in the Supreme Court, and in Launceston in the Bankruptcy Court. The official liquidator, under the now repealed Act of 1869, has lately, I understand, completed the unavoidably tedious process of winding up the several companies placed in his hands.

Deep Sinking Vote.

During the Session of 1885 the Parliament took its first step towards assisting the mining industry by a direct money grant. The sum of £5000 was voted for the payment of grants for the encouragement of deep sinking for minerals, upon the pound-for-pound principle. Regulations have been framed providing, amongst other things, that no mining operations shall be deemed to be deep sinking unless a depth of 400 feet from the natural surface shall be first attained. Under these regulations sums of £1000 each have been set aside for the New Native Youth and West New Chum Gold Mines at Lefroy; the Moonlight and Lefroy Gold Mines at Beaconsfield; and the West Cumberland Tin Mine at Heemskirk. Arrangements are now in progress to carry out the work at the several mines; and it may fairly be anticipated that the result will justify the

wisdom of Parliament in making this provision, and will be the means of leading to the passing of an annual vote of increased amount, to be expended under carefully-drawn safeguards, not only in sinking below 400 feet, but in the encouragement of the prospector and the working miner.

Water Supply to the North-Eastern District.

Various schemes for supplying this important District with water to enable the vast stores of mineral wealth which it is known to contain to be adequately worked, and without which the extensive stanniferous leads and terrace deposits will for ever lay dormant, are still under consideration. In addition to the scheme proposed last year, plans of which were prepared by Mr. C. J. Burke, C.E., that gentleman is now engaged in preparing plans of other schemes for the consideration of Parliament. The question is one of vital importance.

General Remarks.

The work of consolidating and amending the Mineral Lands Regulations is in progress. Other matters, such as the conditions under which beds of rivers may be worked; the establishment of reserves for the deposit of tailings; the formation of Mining Boards, and several other most desirable measures which would tend to greatly facilitate mining operations, have occupied my attention; but the press of the daily office work has, during the brief period of my having charge of this Branch, alone prevented my taking the necessary steps to enable me to recommend these and other much-needed additions to our Mining Laws and Regulations.

Reports of Commissioners.

Mr. Commissioner Glover, in charge of the Northern and Southern Mining Districts, which includes the gold-fields to the north east of Launceston, writes as follows:—"Short as has been the period during which I have had an opportunity of observing the mining industry of the Northern District, I cannot but feel impressed with a conviction that a manifest revival of enterprise is steadily setting in, and this without the spurious impulse which characterised the so-called mining operations of the past. In proof of this, I may cite six claims at Beaconsfield alone, viz., the Cosmopolitan, Little Wonder, the Moonlight, Dally's United, the Denmark, and the Ophir, which, having for a very considerable time laid almost dormant—some of them entirely so—have, within the last few months, resumed operations, and, either under new and more enterprising proprietors, or for other causes, undergone a wholesome change to energy and *bonâ fide* purpose. These mines, which a few months ago were silent and all but deserted, are now emitting the sounds of the steam-whistle and the rattle of machinery: the two last-named are engaged in mining on a deep alluvial lead known to exist on the line of their workings,—in fact the Denmark has reached this lead at over 100 feet in depth, and is now driving upon and prospecting it. The Drainage Union is now at length beginning to justify its formation, and the great outlay attendant thereon, by the obvious diminution of water and the consequent facilities afforded for deeper working in the adjacent mines. To these circumstances, together with the stimulus given to deep mining by the Parliamentary grant in aid, and the more sound and *bonâ fide* feeling which now prevails in mining enterprise, is due the manifest revival presented at Beaconsfield. There have been crushed for the year ending June 30, 1886, 17,390 tons of quartz, yielding 21,196 ozs. of gold. The average number of miners employed on this field was 320. With reference to the other important field, Lefroy, the same spirit of energy and *bona fide* enterprise is unmistakable; in illustration of this I may point to four claims, viz., the Unity, Richards and party, the Prince of Wales, and the Duke of Argyle, which had for a considerable time past been in a state of slumber, but have, during the last few months, awakened into activity. The claim known as 'Peden's' has also, by the recent discovery of what is reported to be a valuable reef, added another enterprise to these revived operations. Here, also, the Parliamentary grant to the West New Chum mine has assisted in infusing a hopeful spirit into those interested in this once flourishing gold-field. This mine, from which such magnificent yields were formerly obtained, will now start to sink from its present depth, 426 feet, in the hope of again retrieving its fortunes. The New Native Youth, the deepest mine in the Colony, has also received a portion of the Parliamentary vote, and will doubtless shortly resume active operations. The average number of miners employed on this field has been 120.

The Lisle Gold Field is still confined to surface alluvial, and has yielded during the past year about 3000 ounces, the average number of miners employed being 80. During the year some promise has been made of the old Denison Field again coming to the front; up to the end of June, however, but one crushing of 10 tons has been got out, which yielded at the rate of an ounce to the ton. The works at the Bangor Slate Quarry continue to be prosecuted with great vigour, and excellent slate is being produced; this mine is held mainly by Victorian capitalists, who employ a large number of miners, chiefly Welsh and Cornishmen, imported specially for the purpose, and the industry is now assuming large proportions."

Writing of the Eastern District, Mr. Commissioner Dawson reports:—"The state of mining has generally improved throughout this district since my last report of June, 1885. The satisfactory price of tin has stimulated the working of the poorer areas of tin ground; the great drawbacks are the want of water and the scarcity of suitable labour. The whole output from this district is raised

from alluvial workings, chiefly by Chinese, on tribute; where wages men are employed preference is given to Europeans. This has been an exceptionally dry season, the ore raised has consequently been somewhat less than last year; the quantity shipped from George's Bay for the year ending 30th June was 578 tons. The rate of wages for good miners is from 7*s*. to 9*s*. per day, and good men can always find employment at those rates. Consequent upon the completion of the railway a large number of men have been set free for other employment, who will doubtless find their way to the mines. Lode-mining is now receiving considerable attention owing to the recent discoveries at the Blue Tier, and I venture to think that there is every prospect of that class of mining being prosecuted with success, not only at the Blue Tier, but elsewhere in the neighbourhood. The number of men employed in the tin mines of this district is 340, of which two-thirds are Chinese. The construction of the railway to St. Mary's, and the facilities of transit thereby likely to be afforded, has led to the opening up of some of the vast deposits of coal for many years known to exist in this district; the Mount Nicholas and Cornwall Companies are now actively developing their respective properties, and upwards of 200 men are employed in connection with coal mining, and during the past 12 months upwards of 4000 acres of land have been leased for coal mining; fresh so-called discoveries of coal are of daily occurrence, not only at Mount Nicholas, but at several places on the south side of the Break o' Day River, extending for several miles. The deposits of silver and gold on both the northern and southern sides of the Scamander River have lately attracted some attention; the report thereon by Mr. Thureau, F.G.S., is well worthy of perusal. There is now very little gold mining done in the Eastern District." Mr. Dawson concludes his report with these words, "taking up ground with the idea of forming 'bogus' companies is now a thing of the past: the mining operations now carried on throughout this district may with all honesty be designated *legitimate mining*."

Of the North-Eastern District, Mr. Commissioner O'Reilly writes:—"Mount Victoria is the only gold-field in this district in which mining operations have been carried on during the last 12 months, and the prospects of that field have not materially advanced; active mining operations of any extent have only been carried on at one claim, the Mount Victoria. At that mine an 18-head battery, driven by water power, has been constantly at work; about 45 miners are employed, and the yield of gold for the half-year has been 1463 ounces. Some little work is going on at the Mercury Claim, 79 ounces of gold being the yield for the last quarter. Some prospecting is also being done, showing that working miners have still faith in the field. A little prospecting has been done at Waterhouse, and the country from Mount Horror to Branxholm has received some attention,—experienced men speak of it very hopefully." Of the tin-mining industry the Commissioner says: "Operations have been carried on with increased vigour, and satisfactory progress, since my last report, and the healthy feeling I then indicated has been very fully sustained, considerably enlarged production having resulted from the various workings carried on by several of the claim-holders. At the Upper Cascade and Ringarooma locality more confidence is felt, and many claims have resumed work with improving prospects; the yield from this locality for the past quarter was 30 tons, and 38 men employed. In the Branxholm neighbourhood operations are carried on with satisfactory results, although a large portion of the richest deposits have been worked out; a deep lead is being worked here with much care and skill by the Arba Company, some 51 tons of ore having been raised within the last three months. At Ruby Flat several claims are at work with apparent success; it is understood that a lode has been struck on one of these claims, with good indications, leading to the belief, among those competent to judge, that rich lodes will yet be found to exist in the range extending backwards to the Upper Cascade River. At Branxholm the several claims are on the whole in a progressive condition; the premier claim of the district, that of the Messrs. Krushka, continues to yield magnificent returns with every prospect of permanency for many years; for the last quarter the yield from this claim has averaged 60 tons per month. The Briseis and Triangle Claims are pushing ahead under many difficulties. At the North Brothers' Home Claim there is a new departure from the former system of mining by stripping, to tunnelling under the hill which overlies the mineral deposit, one of which tunnels extends some 600 feet: during the past year the output of tin has frequently reached one ton per day; during the past six months nearly 100 tons have been raised. A very considerable mining settlement, with substantial buildings, is rapidly being formed at this place.

From the vicinity of Moorina the yield of tin is satisfactory, and there remains a large area of payable terrace ground still to be worked. There are many Chinese employed here, and they are found to be an industrious, orderly class of men. Between Moorina and Gladstone there is an extensive area of tin-bearing country only waiting a supply of water for its development. A notable instance of tributers doing well upon ground where company management fails, is here exhibited in the case of the Pioneer Claim. In the neighbourhood of the Wyniford River operations have been extensively carried on during the past year with profitable results, and every prospect of enlargement in the future. A large number of Chinese are at work here also, and have formed a camp of a somewhat superior character to those elsewhere in the district. There is every reasonable prospect of this locality continuing to progress in a satisfactory manner, there being a large area of tin-bearing country to be worked.

At Gladstone, or Mount Cameron, the great drawback to progress is the want of a permanent supply of water. The Esk and the Mount Cameron Hydraulic Companies supply many claims with water; were it not for this, mining would be at a standstill for the greater portion of the year.

A large extent of country which was formerly held by companies for speculative purposes has, since the recent forfeiture of leases, come into the hands of working miners, to the great advantage of the country. The output of ore from the Empress Claim, worked on tribute here, has during the last 18 months been 151 tons, with 9 men employed. Owing to the amount of deadwork to be done this quantity of ore was practically raised in 12 months. This claim paid the Esk Company the sum of £482 for water for the year. Should the Government succeed in obtaining the sanction of Parliament to a scheme for water supply, there is every reasonable prospect of this locality supporting a very large mining population. There are now 120 Europeans and 100 Chinese engaged in mining there." The Commissioner adds, "that the recent forfeiture of leases has proved of great benefit, a large number of such sections having been taken up by working miners, who are actively carrying on operations. No less than 178 applications, embracing an area of 4860 acres, have been received in this district during the year. Prospecting is going on with great energy, being much stimulated by the high price ruling for tin. The ore shipped from the N.E. District for the year ending 30 June, 1886, was 2023 tons, being a very considerable increase upon the quantity shipped in the corresponding period of 1885; the total number of miners employed in the district being 586 Europeans and 383 Chinese." Mr. O'Reilly thus concludes his report: "The state of mining in this district has very materially progressed during the past year, with every reasonable prospect of future expansion and increased productiveness, and I feel quite satisfied that this important industry is now established in a sound, progressive, and permanent manner."

Of the Western Mining District, Mr. Commissioner Glover, who, up to May last was in charge, writes as follows:—"Any record of proceedings in the Western Mining District for the year ending June, 1886, must be almost exclusively confined to the gold-field known as King River. Here the four comparatively permanent mining operations are still being prosecuted with prospects of complete success. Three of these are carried on by co-operative working parties, two of which are on Whyte's Creek engaged in ground-sluicing; on one claim the working face is some sixty feet in height, and contains gold throughout, but in such extremely fine particles as to require the most effective gold-saving appliances, a want which only facilities for the transport of machinery are needed to supply. The holders of the other of these alluvial claims have been principally engaged in a systematic work of construction of races to convey water to their claims, as well as a tail-race, which, at the lower end, will be of such depth as to require a surface width of twenty-five feet. These operations are now sufficiently advanced to enable sluicing to be commenced. There are several small parties working, with apparent contentment, upon ordinary alluvial claims. The quartz mine of the King River Company at Lynch's Creek has been, for the past 12 months, fully opened out and prepared, awaiting the transport of the battery and other necessary machinery from Macquarie Harbour. Seeing, however, that only about 4 miles of the track of 22 miles has been accomplished since January, the production of gold from this mine may be considered a somewhat remote event. In my report on this gold-field in September last I detailed the particulars of the operations of a party of six men, known locally as 'The Mount Lyell Prospecting Association,' in search of the reef from which large quantities of gold, found on a lower ridge connecting Mounts Lyell and Owen, had been derived: this party, which has been vigorously prosecuting the enterprise for some three years past, has at last achieved success, the discovery of the lode having been reported in June. This lode is said to be of exceptional richness and great width. In September last several prospectors directed their attention to the region south of King River, in the neighbourhood of Mount Sorell. One of these, P. Flanigan, succeeded in discovering rich alluvial gold, and obtained the maximum reward claim of five acres; he is associated with 3 others, and they are said to have 2 years' work before them. Several other surface alluvial claims of great richness have been taken up in the same neighbourhood, but I have not been informed of any more recent development in this direction. In my reports I have frequently expressed the opinion that the tract of country laying between Mount Sorell on the south, and Mount Lyell on the north of King River is destined to become the premier gold-field of Tasmania, and the great impediment to the fulfilment of that destiny is the want of even the most moderate facilities of access in the way of tracks. On the Corinna gold-field but little has been done during the past year, the greater part of its inhabitants having been drawn away by the attractions of the discoveries south of King River. Nothing further has transpired on the reward claims held by Weetman and Crockford at Long Plain: the sections are still being prospected. At the Specimen Reef, the only claims which have ever been worked, and which are held by the registered Company of that name, have been in abeyance for some time pending arrangements for obtaining fresh capital for effectually prospecting the reef. On the leases at Rocky River, the site of the discovery of the celebrated nuggets, nothing has transpired, although the search for the reef is still being prosecuted. The approximate yield of gold from the Western District for the year ending June, 1886, is 2500 ounces. With reference to the tin-field of Mount Heemskirk, the forfeiture of all but two of the leases held under the Mineral Lands Act has had the beneficial effect of enabling co-operative working parties to take up small sections for alluvial tin, and these, together with persons who have availed themselves of the recent regulation enabling them to work for tin under Miners' Rights, have been working with satisfactory results. About 50 tons of tin ore was raised during the year, and new discoveries of deposits are constantly occurring.

The Silver-Lead Claims near Mount Zeehan have remained dormant during the year; and I have not been able to ascertain the fate of the 16 cwt. of ore obtained from them and exported from the Colony for assay last year."

Condition of the Mining Industry.

Few persons, excepting perhaps those beneficially interested, care to take the trouble involved in looking into the facts before forming an opinion regarding the actual condition of this industry. The majority are content to remember the days, now happily gone by, when wild excitement prevailed,—sections, since proved not to be worth sixpence, were valued at thousands of pounds,—when everyone was going to be rich as if by magic,—and to compare that state of things with the present, when there is little or no excitement, and to argue therefrom that the industry is dead. Bnt when we take the facts that two leading mines have paid over a million of money in dividends ; that many of our mines, notably the smaller tin claims, are yielding handsome returns ; and if we travel through the various mining centres and see what is going on, the undoubted conclusion to be drawn is that the mining industry, yet in its infancy, is steadily, surely progressing. The annexed returns show the comparative condition of the industry ; and taking into consideration that a wave of depression has been passing over, not Tasmania in particular, but the world generally, and which has affected mining as well as other industries, added to the fact that the exceptional dryness of the earlier months of this year has materially affected the output of tin ore, I submit that whilst there have been in the past, and no doubt in the future will be, failures in the most legitimate and promising mining ventures,—such risks being inevitable in a business which is of necessity so largely speculative in its nature,—there is no room to doubt but that the honest straightforward work of winning the mineral from the ground has progressed, is progressing, and is now in a healthy, sound, and hopeful condition.

I have the honor to be,
Sir,
Your most obedient Servant,
F. BELSTEAD, *Secretary of Mines.*

The Hon. the Minister of Lands and Works.

APPENDIX A.

DIAMOND DRILLS.

Statement of Work done.

Year.	*Locality.*	*Direction of Bore.*	*No. of Bores.*	*Total Distance bored.*	*Average Cost per foot.*
	No. 1 Drill.			feet.	*s. d.*
1882-3	Back Creek—For Gold	Vertical	7	1330	10 9
1883..	Lefroy—For Gold.....	Ditto	4	1011	5 3
1884..	Tarleton—For Coal	Ditto	1	401	5 6
1886..	Longford—For Coal (now in progress)	Ditto	2	1585	4 0½
		Total	14	4327	
	No. 2 Drill.				
1882..	Beaconsfield—For Gold	Horizontal, underground	1	68	No record.
1883..	Mangana—For Gold	Ditto	1	546	15 1
1884..	Guy Fawkes Gully, near Hobart—For Coal	Vertical, surface	1	612	5 6
1885..	Malahide Estate, near Fingal—For Gold ..	Ditto	5	1397	5 6
1886..	Carr Villa, near Launcesion—For Coal	Ditto	1	571	5 4
1886..	Waratah—For Tin (now in progress).....	Ditto	3	596	3 10
		Total	12	3790	

Aggregate Number of Bores 26
Total distance bored ..... 8117 feet

30*th June*, 1886.

W. H. GLOVER, *Commissioner of Gold Fields.*

DIAMOND DRILLS.

REPORT of Strata passed through in Boring for Coal on the CARR VILLA ESTATE.

BORE HOLE.	STRATA.	FT.	IN.
	Surface Shaft	6	0
	Variegated Clay	78	0
	Lignite	0	4
	Red Clay	2	0
	Blue Sandy Clay	24	9
	Sandy Clays with Lignite	50	0
	Black Clay and Lignite	2	0
	Blue Clay with Sandstone Pebbles	39	3
	Brown Clay	27	6
	Blue and Black Clays with Lignite	86	0
	Black Clay and Lignite	1	0
	Blue Sandy Clay	4	0
	Lignite	0	3
	Sandstone	12	11
	Blue Clay	13	2
	Black Clay and Lignite	2	6
	Fossiliferous Sandstone	29	3
	Lignite	0	3
	Soft Blue Sandstone and Lignite and Leaf-beds	73	1
	Blue Sandy Drift and Lignite	20	0
	Brown Clay	9	0
	Brown Clay and Pebbles	9	5
	Blue Clay with Gravel and Lignite	16	3
	Greenish Sandstone	8	0
	White Sandstone	8	3
	Greenish Sandstone	5	2
	Hard Blue Sandstone gradually passing into Greenstone or Diabase of a soft to a very dense description	42	6
	TOTAL	570	10

REPORT of Strata passed through in Boring for Coal at BELMONT, *near* LONGFORD.

BORE HOLE.	STRATA.	FT.	IN.	TOTAL FT.	IN.
	Surface Shaft	13	6	13	6
	Clay with veins of Ironstone	41	11	55	5
	Drift with Quartz Stones	7	4	62	9
	Sandy Clay	28	7	91	4
	Clay with Lignite	98	1	189	5
	Clay and Sandy Drift	68	10	258	3
	Concretionary Drift with Lignite	25	0	283	3
	Sandy Clay with Lignite	21	0	304	3
	Drift	39	9	344	0
	Drift with Sandy Clay and Wood	57	9	401	9
	Red Clay	55	0	456	9
	Sandstone	20	2	476	11
	Sandstone with seams of Lignite and Red Clay	21	6	498	5
	Hard Mud Shale	31	10	530	3
	Mud Shale and Sandstone	10	1	540	4
	Shale showing Fossils.	11	10	552	2
	Shale and Sandstone	25	10	578	0
	Hard Brittle Slate	5	2	583	2
	Shale	19	5	602	7
	Shale with veins of Carbonate of Lime	7	9	610	4
	Shale and Sandstone	11	5	621	9
	Shale with veins of concretionary Sand and Lignite	6	10	628	7
	Mud Shale and Sandstone	10	5	639	0
	Concretionary Sand and Lignite	8	9	647	9
	Layers of Mud Shale and soft mullocky Sand and Wood	42	3	690	0

REPORT of Strata passed through in Boring for Tin at WARATAH.

No. 1.

BORE HOLE.	STRATA.	FT.	IN.
	Surface Shaft	6	6
	Rotten Basalt	19	5
	Rotten Basalt and Boulders	39	2
	Hard Basalt	7	0
	Mud Stone	35	11
	Blue Slate	4	3
	TOTAL.	112	3

No. 2.

BORE HOLE.	STRATA.	FT.	IN.
	Surface Shaft	6	6
	Rotten Basalt	12	6
	Rotten Basalt and Hard Boulders	9	10
	Hard Basalt Boulders	6	2
	Soft Basalt	10	3
	Brown Clay (a few Stones at 80 feet)	74	9
	Brown Clay and decayed Wood	72	7
	Wash	19	5
	Blue Slate	2	1
	TOTAL	214	1

No. 3.

BORE HOLE.	STRATA.	FT.	IN.
	Basalt	31	0
	Black Clay	94	6
	White Clay and Stones	29	6
	Mud Stone	24	7
	White Sandy Clay and Boulders	11	1
	White Sandy Clay	11	2
	White Sandy Clay and Boulders	8	11
	Mud Stone	4	0
	Blue Clay and Boulders	9	3
	Conglomerate	20	8
	Hard Blue Rock	9	2
	Conglomerate	7	4
	Blue Slate	2	7
	TOTAL	267	9

No. 1.

COMPARATIVE Statement of Gold exported from Tasmania during the first half of each year since 1879 : *compiled from Customs Returns only.*

HALF YEAR.	QUANTITY.	VALUE.
From 1st January to 30th June, 1880	29,301 ounces	£115,606
,, ,, 1881	27,852 ,,	£108,146
,, ,, 1882	18,195 ,,	£69,274
,, ,, 1883	22,148 ,,	£86,512
,, ,, 1884	17,346 ,,	£65,509
,, ,, 1885	22,413 ,,	£85,133
,, ,, 1886	11,150 ,,	£42,132

No. 2.

RETURN showing the Quantity of Gold obtained from Quartz during the Years 1880, 1881, 1882, 1883, 1884, 1885, *and for the first half-year of* 1886.

YEAR.	QUANTITY.	VALUE.
1880	34,345 ounces	£130,622
1881	45,776 ,,	£174,956
1882	36,215 ,,	£137,183
1883	36,672 ,,	£138,060
1884	30,540 ,,	£114,630
1885	33,266 ,,	£124,234
Half-year ended 30th June, 1886	10,136 ,,	£37,644

Compiled from Returns furnished by the Proprietors of Crushing Machines and checked with Customs Entries of Exports.

No. 3.

COMPARATIVE Statement of Tin exported from Tasmania during the first half-year of each year since 1879.

HALF YEAR.	QUANTITY.	VALUE.
From 1st January to 30th June, 1880	1655 tons	£160,638
,, ,, 1881	1807 ,,	£158,464
,, ,, 1882	1570 ,,	£158,953
,, ,, 1883	2008 ,,	£184,424
,, ,, 1884	1922 ,,	£152,615
,, ,, 1885	2157 ,,	£160,354
,, ,, 1886	1623 ,,	£150,650

No. 4.

RETURN of the Number and Area of Leases under "The Mineral Lands Act" and "The Gold Fields Regulation Act" in force on the 1st July, 1885, applied for during the Year ending 30th June, 1886, cancelled during the Year ending 30th June, 1886, and remaining in force on the 30th June, 1886.

Nature of Lease.	*In force on 1st July, 1885.*		*Applied for during year ending 30th June, 1886.*		*Cancelled during the year ending 30th June, 1886.*		*In force on 30th June, 1886.*	
	No.	Area.	No.	Area.	No.	Area.	No.	Area.
		A. R. P.		A. R. P.		A. R. P.		A. R. P.
Under "The Mineral Lands Act," for tin, &c., at a rental of 5*s.* an acre	1011	43,511 0 0	161	4590 0 0	523	22,986 0 0	649	25,115 0 0
For coal and slate, at 2*s.* 6*d.* an acre rent	29	3999 0 0	23	4318 0 0	6	1340 0 0	46	6977 0 0
Under "The Gold Fields Regulation Act"	207	1976 1 37	91	833 2 9	154	1417 2 9	144	1392 1 17

In addition to the above, the following applications for Leases are now in process of being dealt with :—

Under "The Mineral Lands Act," for Tin, No. 144, Area 3395 acres.
" " " for Coal, No. 14, Area 2080 acres.
Under "The Gold Fields Regulation Act," No. 69, Area 611 acres.

No. 5.

RETURN showing the Number of Prospectors' Protection Orders issued at Launceston during the half year ending 30th June, 1886, and the Districts for which the same were issued.

No. issued.	*Districts.*
11	Lefroy, County of Dorset.
5	Denison "
4	Waterhouse "
1	Lisle "
7	Beaconsfield, County of Devon.
1	Winkleigh "
1	River Forth "
1	Minnow River "
2	Port Sorell "
2	West Coast, County of Montagu.
TOTAL 35	

REPORT of the INSPECTOR OF MINES *for the Year* 1885.

Inspector of Mines Office, Launceston, December, 1885.

SIR,

I HAVE the honor to submit my Fourth Report as Inspector of Mines, from the 1st of January to the 31st December, 1885, inclusive.

The result of the administration of the two Regulation of Mines Acts of 1881 and of 1884 as one Act, is now presented for consideration; these comprise lists of accidents which have taken place in the mines of Tasmania during the year, returns and tables explaining the former, a summary of the work performed by the Inspector, descriptions of new mining appliances and processes, and some remarks on the mineral and metalliferous deposits examined and reported on.

A very marked decrease in the number of both fatal and non-fatal accidents, and their character, has been recorded during the present year, showing for 1884 at 41, and for 1885 at 23 (this year). This is a very satisfactory feature indeed, as proving that the mining managers have exerted themselves in the direction of preventing accidents where possible, and, likewise, that the miners have carried on their operations with more care and attention to themselves.

One case only deserves reprobation, where an old experienced miner (46 years of age) was severely hurt through recklessly placing blasting powder into a hole which had been, but twenty minutes before, fired with a heavy charge of dynamite; showing that amongst a certain class of old miners their old customs cling to them still, and which, happily, is not found amongst our younger miners.

It would still, however, in the face of the gradual reduction in the total number of accidents, be useful if, what is giving so general satisfaction in England and in some of the Colonies, the "*primâ facie*" Section were made a part and portion of our Regulation of Mines Acts, which Section provides that: "*Any accident occurring in a mine shall be* primâ facie *evidence that such accident occurred through some negligence on the part of the owner*," thus throwing the onus of proving the opposite on the owner and his servants.

The Inspector of Mines has inspected during the year most of the principal mining districts, in several instances each several times; viz.—

District.	*Description of Mining.*
Blue Tier	Tin.
George's Bay	Tin.
Mount Claude	Silver-Lead.
Pieman River (Corinna)	Gold.
Long Plains	Gold.
Mount Zeehan	Silver-Lead.
Beaconsfield	Gold.
Longford	Coal.
Lefroy	Gold.
Branxholm	Tin.
Brothers' Home	Tin.
Stonehenge, Parattah, Mount Seymour (Midland Counties)	Coal and Lime.
Fingal	Coal.
St. Mary's	Coal.
Mount Malcolm	Coal.
Bangor	Slate.

General Rules: Sect. 11, *Rule* XV.—There have been no accidents or breakages reported from our deeper mines in regard to the safety hooks and safety cages in use.

Rule XXI.—In accordance with the provisions of the Act, thirty-seven steam boilers were examined and subjected to the prescribed hydraulic test, showing an increase of nine upon the number dealt with last year, the results being, with some exceptions, satisfactory; viz.—

	Boilers.	*Total.*
At Lefroy:		
For the first six months	4	
Ditto second ditto	6	
	—	10

At Beaconsfield:		
First six months	13	
Ditto second ditto	11	
At Alpine G. M. Co., Mangana	2	
At Bangor Slate Quarries	1	
	—	27
Total		37

These steam boilers so tested were owned by the following proprietaries; viz.—

At Lefroy:—		
The New Native Youth Gold Mining Company (battery)	1	
United Chum Company, 1; West New Chum Company, 2	3	
New Chum Company	2	
	—	6
At Beaconsfield:		
Florence Nightingale Company	4	
Lefroy Company, 4; Nil Desperandum Company, 1	5	
Tasmania Gold Mining Company (battery)	3	
Golden Gate (pumping and winding)	2	
Messrs. Masters' Pyrites Works	1	
	—	15
At Mangana:		
Alpine Gold Mining Company		2
At Bangor Slate Quarries Association		1
Total		24

or six more boilers than in the preceding year.

Remarks.—A want of attention is exhibited on the part of some of the companies in regard to the state of their steam boilers in the way of remedying defects during the time intervening between these very necessary tests. As a matter of fact, it cannot be concealed that the more prominent and wealthy proprietaries are found to be wanting considerably in those respects, impelling the Inspector to take more rigorous action in future. The failure in some cases to obtain by means of the hydraulic pump, in the first instance, the average working pressure was several times noticed, and when that was at last obtained, then a safe "test" pressure could only be got after repeated attempts, showing leakages at the safety and blow-off valves and elsewhere, and immediately the hydraulic pump had been disconnected, the pressure, instead of remaining stationary for some time, fell back rapidly below working pressure, as by that time the water had cooled considerably, and thus a source of great danger to the employees was indicated. Notices were served on the proprietaries through the mining and battery managers when the usual certificates were issued from this Office, calling particular attention to these matters, and requesting that a general overhaul should be made of the boilers and connections before the next half-yearly tests, or, otherwise, the Inspector would be compelled to disallow their further use if again found wanting in above respects, and until a thorough repair would enable the boilers to maintain the test-pressure for some hours after the disconnection of the hydraulic pump. It was also there and then recommended that, with greater depth, all of these companies should have at least one spare boiler to fall back upon in cases of disallowance, accident, or repairs.

It appears from papers read recently before the Victorian Engineers' Association by the Messrs. Wannan, C.E., and Meekinson, Travelling Inspector of Boilers and Mining Machinery for the Mining Department of Victoria, that not less than 784 mining steam boilers in that Colony are under supervision, and that in eleven years four explosions occurred (killing one and injuring five men), equal to 8624 boilers for one year, or one explosion for each 2156 boilers; Great Britain has one for every 2115 boilers.

It has been recommended to form in these colonies Steam-users Insurance Companies, as in England, including inspection and insurance of lives of employees, and machinery, but owing to competition in Great Britain between the various companies, a spirit of gambling has been resorted to for premiums, and thus most of these companies do not now conduct the inspections in a satisfactory manner; and it is concluded, after all, Government inspection, on rational principles, is the best.

Having thus far been fortunate to have escaped any serious boiler explosions, it still becomes a very serious matter for consideration, bearing in mind the fact that our boilers having been used for years must have become deteriorated in consequence, that their present state, if not materially improved upon, and more care and attention shown, even these periodical tests under the Act will not avail, and sooner or later a catastrophe will occur.

Five mining companies made application for special rules to be granted to them by the Hon. Minister of Lands and Works.

One tin mining company was directed to cease working in a dangerous place until certain precautions had been taken.

In accordance with Section No. 2 of the Regulation of Mines Acts, 1881 and 1884, the under-mentioned Mining Companies have, after some delay, sent in their underground plans and sections. The delay was partly caused by the flooded state of the mines, and occurred from causes not altogether excusable, as mine-owners should certainly know by this time that such plans should be filed in this office in January of each year ; viz.—

1. The Mount Bischoff T.M. Company, Registered, Waratah.
2. West Bischoff T.M. Company, Registered, Waratah.
3. Stanhope T.M. Company, Limited, Waratah.
4. Tasmania G.M. Company, Registered, Beaconsfield.
5. Florence Nightingale G.M. Company, Registered, Beaconsfield.
6. Lefroy G M. and D.U. Company, Registered, Beaconsfield.
7. Moonlight G.M. Company, N.L., Beaconsfield.
8. Little Wonder G.M. Company, Registered, Beaconsfield.
9. New Chum G.M. Company, Registered, Lefroy.
10. West New Chum G.M. Company, Registered, Lefroy.

The practical and economical value of the Mines Department possessing these underground plans and sections of our mines has been frequently demonstrated by the public availing itself of the opportunity thus afforded for enquiries, inspection, and for obtaining valuable information which otherwise would not be obtainable, not counting the knowledge the State derives from the same sources.

Accidents.

During the year 1885 the total number of miners killed and injured whilst following their various avocations is as follows ; viz.—

Fatal Accidents from January to December, 1885, *inclusive.*

Date of Accident.	Consecutive Number.	Description of Mining.	Locality.	Married.	Single.	Date of Death.	Age.	Names.
February 28th	1	Tin	Blue Tier	1	...	February 28th	32	Kee Chum. (2 children.)
April 4th	2	Tin	Weldborough	...	1	April 4th	28	William Wilson.

Non-Fatal Accidents during the same period.

Date of Accident.	Consecutive Number.	Description of Mining.	Locality.	Married.	Single.	Age.	Names.
February 2nd	1	Gold	Beaconsfield	...	1	22	Thomas Trembath.
February 5th	2	Gold	Ditto	...	1	...	John Hancock.
February 28th	3	Tin	Waratah	...	...	...	Edwin Cunningham.
May 13th	4	Tin	Ditto	...	1	24	Thomas Mitchell.
May 16th	5	Tin	Ditto	...	1	16	George Hayes.
June 8th	6	Gold	Lefroy	...	...	...	John Hollow.
June 11th	7	Gold	Beaconsfield	1	...	61	John Selleck.
June 18th	8	Tin	Branxholm	1	...	32	William Smyth.
August 31st	9	Tin	Waratah	1	...	29	Alexander Ferguson.
September 22nd	10	Gold	Lefroy	1	...	33	W. H. Fletcher.
September 25th	11	Tin	Blue Tier (Lower Junction)	...	1	21	Thomas Hart.
October 22nd	12	Tin	Waratah	...	1	27	William Fuller.
November 14th	13	Gold	Beaconsfield	1	...	27	George Scales.
November 14th	14	Gold	Ditto	...	1	22	John Wright.
November 14th	15	Gold	Ditto	...	...	...	John Moore.
November 14th	16	Gold	Ditto	...	...	...	George Scales.
November 14th	17	Gold	Ditto	...	...	...	John Wright.
November 14th	18	Coal	Bruni Island	1	...	36	James Bennett.
November 19th	19	Tin	Waratah	1	...	46	Luke Furse.
December 1st	20	Tin	Branxholm	...	1	43	E. Gundry.
December 21st	21	Tin	Waratah	...	1	28	Albert Batton.

MEMO.—Total fatal accidents during the year, 2 ; total non-fatal accidents, 21 ; grand total of all mining accidents, 23.

Some of the above mining accidents were but of a slight nature, and scarcely within the meaning of the Acts; but the persons liable under its provisions evidently sought to be safe, and reported all kinds of accidents, however trivial they may have been in some instances.

Particulars as to Fatal Accidents.

Kee Chum was working in an alluvial tin-mining claim, and a tree standing in an exposed position suddenly fell upon the man at work, killing him on the spot.

William Wilson, whilst engaged in ground-sluicing, was covered up and killed by a fall of earth and gravel, the height of which was only 15 to 18 feet; the fall of the bank was quite unexpected, and after careful enquiry the jury called together for an inquest returned a verdict of "accidental death."

Particulars as to Non-fatal Accidents.

A lad was struck severely by some rock falling upon him near where a shoot was being constructed.—A miner working in a shaft was struck on the head by some timber that fell from above down the shaft, and as some dirt fell subsequently, he got into the bucket to see where it came from, when something knocked him off the bucket, and a nasty cut on his head resulted.—A miner having secured the workings on a lode with timber saw a large flake of rock detaching itself, and in trying to escape he jumped down to the next set of timber. Some of the rock must have overtaken him, as he was found pinned against a prop, sustaining very severe contusions.—A lad in a tin-dressing shed cleaned up some machinery before being ordered to do so, and his hand was caught by the plunger-pump on the down stroke of its piston, crushing and lacerating same very severely.—A flake of rock fell upon a miner working in a shaft, whilst "logging" up.—Through a fall of earth a miner's leg was forced across a large boulder of rock, and from the superincumbent weight of the gravel a simple fracture of the bones resulted.—A miner was incapacitated for several weeks by a stone falling only from a height of 8 feet 6 inches.—A comrade of a miner turning the drill was struck inadvertently on the arm, causing same to be fractured.—A miner was severely hurt through a fall of rock; a piece of granite weighing about 5 cwts. became loose after a blast, and a man was sent up above the tramway to dislodge it with a crowbar; he did not succeed in doing so, but of itself the stone suddenly dropped, causing a fracture of the leg upon which it fell.—A boulder fell from the top of some waterfalls where mining timber was being moved, causing severe injuries to a miner.—Five men were hurt, whilst engaged both at the surface and below, through the surface men carelessly losing control over a capstan whilst lowering and shifting pump-rods, after changing a "bucket."—A wedge-like piece of rock fell upon and injured a miner, owing to invisible "greasy joints."—A mining foreman's (or "captain of a shift") face, eyes, and wrist were severely injured by his very recklessly and incautiously putting two handfulls of powder in a hole exploded but 20 minutes previously by means of a charge of dynamite.—A miner got his collar-bone broken and thigh severely injured by a fall of alluvial gravel.—A miner, whilst trucking, got the small bones of his leg broken through being jammed between two trucks.

The Tables and Appendices to this Report for 1885 give in detail the nature of each separate accident, whether fatal or otherwise, and these may be classified under the following various heads; viz.:—

By fall of earth, trees, timber, &c.	13
By explosions	1
By machinery	9
By falling down shafts or other workings	*Nil.*
TOTAL	23

These accidents occurred in the following Mining Districts, and they stand, according to their frequency, in the following order; viz.:—

Beaconsfield	8
Waratah	7
Blue Tier	2
Branxholm	2
Lefroy	2
Weldborough	1
Bruni Island	1
TOTAL	23

Or twelve accidents occurred in this year in the tin, ten in the gold, and one in the coal mining districts, or eighteen less than last year.

The percentage of fatal and non-fatal accidents has been, per ratio, much reduced, which is a very satisfactory feature with the administration of the Regulation of Mines Acts. The almost immediate expansion of a most valuable branch of our mining industry,—viz., coal,—promises most likely to increase the outside duties of the Inspector of Mines, and in all probability it will be necessary to provide special local supervision to bear upon that particular branch of mining, as is done elsewhere, and for registering the output of coal and for other purposes from those new mines close to the Fingal and St. Mary's line of railway.

Improvements in Mining Appliances.

It would appear as if, in the gold-producing colonies, a stationary point had been reached in the processes following the crushing of auriferous quartz, as no alteration has for years taken place in the tables covered either by copper-plates, "silvered" by mercury, or coated previously by coin silver by means of galvano-electricity and the ordinary blanket "streaks," to induce amalgamation more or less. The latest successes in other gold countries in that direction should therefore command the serious attention of our mine-owners, and chiefly our battery managers. The hitherto unconditional necessity of employing quicksilver in our crushing and amalgamating appliances causes a large expenditure in the way of "silvered" copper-plates and ripples outside and also inside the boxes, the tedious washing-off process, together with the retorting of the amalgam, all of which entail, besides a considerable waste of time, an unavoidable loss of mercury, which is most frequently not taken into account, or is placed to the cost of the whole process.

There are now two new processes before the owners of crushing machines of California and Nevada, U.S.A., in which quicksilver is entirely dispensed with, and, in consequence, much poorer ore or quartz can be manipulated with some profit, whilst the richer quartz gives much more advantageous returns.

At the Alta mine a simple mechanism, invented by the company's engineer, was shown to be the agency of simply water in a common syphon. The principle of this simple invention was first illustrated by employing 100 well-made bullets of ordinary size, *i.e.*, 50 composed of lead and 50 of tin. These were dropped into the shorter arm of the syphon by means of a short tube inserted near the orifice. The lead bullets, without exception, immediately fell to the bottom of the tub of water now being emptied by the syphon, and they were caught in a basin, whilst the tin bullets, being of less specific gravity, were carried up through the syphon and dropped into a vessel on the outside of the tub which was receiving the water through the syphon The next step of the experiment was the sifting with a spoon instrument a quantity of crushed ore into a simple apparatus surrounding the shorter arm of the syphon, and a similar result followed of a still more interesting and beautiful order. The metalliferous portions (gold or silver, and sulphurets) went to the bottom of the tub and were caught in a basin, whilst all the lighter sand and raff of every description went up through the syphon and was deposited in a vessel receiving the water on the outside. Of the eight different siftings of crushed ore that were experimented upon, the finest, or eighth, appeared to show up the test to the greatest perfection.

The Hon. Mackey (the well-known millionaire) remarked, when witnessing the experiment of the syphon, that had the discovery of the syphon been made fifteen years sooner he would have, from his mines and mills, saved more than a million dollars in quicksilver alone (£200,000). By this process a relief is found from the crushing weight of expense heretofore involved in the manipulation of auriferous or argentiferous quartz on account of the absence of that very costly article quicksilver, which absence will cause to vastly cheapening the process, giving the miner a much fairer chance to be reimbursed for all his outlay, toil, and expense.

At the Brunswick "mill" or crushing machines, where 56 stamps are employed, a new concentrator, called the "Golden Gate," has been introduced with great success by Mr. Armstrong, the superintendent or manager, and a great many of these machines have been ordered by the mine and battery-owners throughout the Golden States.

The method of separation at the Brunswick differs from that at the Alta only in one particular; the suction in the one case is wrought by a syphon, and in the other by an air-pump. These machines are so simple as hardly to require any extended explanation. What has been said in regard to the process of the syphon as an ore separator will apply here, only on a larger scale. A long extended and broad metallic plate, over which the newly-crushed ore from the batteries is passed in one direction by a jigging process of the plate, whilst a sweeping current of water of thin dimensions is sent in the opposite, constitute the main features involved. The lighter material is lifted from near one end of the plate by suction lips and carried from the mill as dead waste, whilst over the edge of the opposite end of the metallic plate the mineral drops into a large metallic bath ready to receive it. Mr. Armstrong lifted a shovelful of the metalliferous portion from the bath,

and it unmistakably showed at once what was being done by the water process without the aid of that most costly article—quicksilver. It was proved that 95 per cent. of the metalliferous components were saved by this process, and in some instances the full assay value. These residues, in order to give up their gold or silver, need only to be thoroughly roasted in a close furnace, and afterwards mixed with borax and smelted in a cupel, when the process is complete, without loss of quicksilver and in much less time than it generally takes to "wash off."

No person or persons were prosecuted during the year for breaches of "The Regulations of Mines Act, 1881," 45 Vict. No. 8, or of "The Regulation of Mines Act, 1884."

In 1885, 1040 letters, telegrams, and memos. were dealt with in this office, including 165 accidents, added to which are eleven steam boilers' certificates,—making 1051 in all, or an increase of clerical work of 729 since the year in which the Regulation of Mines Act came into force. This does not, however, include the copious reports furnished by myself on Water Supply and Mining Easement, and, as a mining geologist, of various important Mining Districts in the west, north-west, north-east, and eastern parts of the Island.

The Mineral and Metalliferous Deposits.

The Inspector of Mines, in his many duties, has been afforded during the year good opportunities of examining, in the field and underground, newly discovered and other already known formations belonging to our mineral and metalliferous deposits. He has likewise tested many minerals, ores, and rocks brought to him, *qualitatively*, in the dry or wet assay, and by blow-pipe examination, as well as a mining geologist and as a mineralogist. The information thus obtained, to which should be added that derived from the plans and sections of the underground surveys of mines over 200 feet deep, cannot be too highly appreciated, as the collated information points to and confirms the opinion, heretofore expressed, of an almost illimitable mineral and metalliferous wealth existing in this Island, comprising tin, coal, gold, lime, iron, slate, building stone (both superior basalt and sandstone), and, in a lesser degree, silver-gold, silver-lead, manganese, antimony, arsenic, nickel, and others.

The Blue Tier Tin Mining District was carefully examined at the latter part, and at the commencement of the present year (1885), and the views formed of same were embodied in an exhaustive report illustrated by a geological sketch plan and several sections.

It appears to be quite a feature with most of our mining lands that in the first excitement following a discovery every inch of ground is taken up and held, but a fraction of it is, however, really worked, leaving a smaller portion to be prospected more or less. This has obviously the tendency of needlessly impoverishing those embarking their capital in the mining industry by their holding sections after sections on speculation, that their diligently working nelghbours may discover something enabling these speculators either to dispose of their interests, improved without their doing anything, at a profit, or of their very infrequently commencing operations themselves on deposits which might have been discovered otherwise a long time previously. It is a question requiring some consideration, whether in cases of "lodes" and "dyke" which have only a longitudional extension along their strike, and not laterally, as their width is not extensive in most cases, the present "square block" system is beneficially affecting the prospecting and the development of these important deposits, or otherwise. In other countries, experience of it—square block system—has been found to retard progress, which is here also the case in many or most instances. Were the miners granted oblong blocks of land on lodes or dykes, with all the dip and underlay, mining would attract on account of the additional security, and be much more sought after than it is now by capitalists.

At the Blue Tier and at other mining centres all this has been observed, and after the gradual exhaustion of the rich alluvial a progressively very rapid decrease in the population followed for obvious reasons; this led to as rapid increase of the now predominating Chinese element, and tends still further to exclude the "permanent" colonists. However that may be, over-speculation, mismanagement, and the want of a copious constant water supply have all had their effect, and thus when at present more capital is required for the development of the lodes and dykes, it cannot be obtained in a manner that would alone lead to success.

The Coal Measures at and near Fingal, St. Mary's, Longford, and, in a lesser degree, through same not having yet been properly opened, in the Counties of Monmouth and Somerset, have also been examined. In the two first-named localities the unlimited supply of "unused wealth," in the shape of good serviceable steam, and probably also of gas coal, is every day becoming more apparent, and soon the railway will enable the mine-owners to forward their coal for home consumption and for export. The deposition of these numerous coal seams above each other as separated by sandstones and shales—eleven of which I have now examined—and the great facilities for working same by means of adits driven on their course into the sides of the mountains from the

principal valley, cannot well be surpassed anywhere, and should reduce the price of coal in the Colony and outside of the same. There is a large extent of these coal measures on the Mount Nicholas side of Break-o'-Day Rivulet from its junction with Dry Creek to a little distance north of St. Mary's, in which region excellent coal has been found to occur in seams, from about 2 feet to 14 feet in thickness. On the opposite side of the valley, or in the Mount Malcolm Ranges, the coal continues regularly, but the workings there are not nearly on so extensive a scale; but it was observed that at both places the coal greatly improved on being followed under a solid "roof." Numerous tests, by steam users—blacksmiths and engineers—have been made in this and the other Colonies with good and highly satisfactory results in general, bearing out my report of the 9th August, 1883, drawing attention to the great future value of this combustible in the direction of creating an export trade, and the initiation of manufactories of every description, together with a large home consumption.

So far, at or near Longford but one seam of coal, 3 feet 10 inches thick, has been discovered, upon Mr. Mason's Norwich estate, at only about 25 feet from the surface; this coal is preferred for domestic use to that of the Mersey, as it is much more free of sulphur, and it has been found useful and somewhat cheaper than firewood for steam purposes where high pressures are not required. The first site for the Diamond Drill, No. 1, was selected, by request, by me, on Mr. Ritchie's Belmont estate, on the supposition that the Norwich seam—or seams, as there are several—would continue in that direction in their dip at a distance of 2½ miles, and drilling has been since started.

In the Midland Counties the coal measures were examined during an extensive tour of principally Messrs. Sydney Page and W. Burbury's estates, and very encouraging indications were found, as well as the perished outcrops of coal, but no attention has yet been devoted to their development, though other valuable minerals were anticipated to occur which did not as far as could be seen.

Gold.—The Beaconsfield gold quartz mines do not show any deterioration, but rather an improvement in the two leading mines; but in all the mines there the water has been and is very heavy to cope with in the deep levels; it is anticipated that the powerful pumping plant of the Lefroy, and in a minor degree of the Dally's United and Florence Nightingale Companies will cause a reduction, and facilitate the prospecting of all the mines at the various depths reached. This field presents a very healthy appearance, and holds out very promising prospects for the future.

At Lefroy but few companies have been working, and the leading mines give but little employment to miners, from some cause or another. The New Native Youth Company is still idle, and on the New Chum line of reef—the most regular in the Colony—the lode has in the deeper levels split into several branches, but the indications are now very reassuring, and besides that, other "side" lines of reef have been found rich near the surface. The belt of country in which the New Chum lodes occur deserves further attention, and, as the speediest and most economical means, the mine-owners should obtain the use of No. 2 Diamond Drill to bore, at various levels, horizontally across this most promising formation. The character of the rocks, and the width of the auriferous belt or formation, is such as to place this proposal in the most advantageous position.

The whole of the auriferous country south of the alluvial deposits near Upper Ringarooma on the outlet of the Dorset River, as well as Mount Victoria proper (quartz), Kerrigan's (Dan's Rivulet), Black Boy, Mangana, and Tullochgorum (alluvials), were carefully inspected, and a report (No. 61, 1885) was published, with a plan exhibiting the position and strike of the reefs as found thereabouts.

With a more mature experience of all these, and of the Western gold-fields also, I have not seen a single point that would alter my conclusions and practical deductions so frequently expressed, in *any one instance*. Given the capital, enterprise, and *rational* management required for systematically opening and developing these otherwise "vein" or "reef" gold deposits, as well as alluvial, it is certain that, by steadfast, solid, and judicious mining—*not "paper mining"*—many payable and profitable concerns will yet be found in our Colony, the feasibility and probability of which new discoveries no competent person can for a moment deny.

In this connection I may be permitted to refer to the very disappointing state of affairs regarding the "recorded" yields of gold each year as against the "actual" and altogether unattested production of gold which leaves the Colony in a surreptitious manner, and causing the gold returns of the other Colonies and elsewhere to be augmented at our expense and loss, by depriving Tasmania of the substantial advantages which follow in the wake of an increasing, settled, and industrious mining population, because the encouragement given to mining fosters others—for one is dependent on the other in a very great degree. As shown by Great Britain, America, Germany, and other countries, the mineral wealth of any country is an absolute necessary element to any commercial supremacy of that country; and, as such, the mineral resources form a highly important trust of the authorities. There is just this difference between the agricultural and mineral wealth—that the mineral resources of a country are of a certain quantity, which may be exhausted, and then they ought to be fostered and economised; without which their exhaustion will be followed by the decline of the commercial supremacy of such country.

There is procurable evidence of but a mere fraction of the gold produced in Tasmania being sold to the banks or other buyers here, the greater portion of it being taken away, where, owing to the higher prices obtainable, as controlled by the Royal Mints at Melbourne and Sydney, the miners realise much larger profits than they are likely to be offered here, and, in fact, the local banks do not care for buying gold at all. Under these circumstances it would be exceedingly useful to adopt the Queensland and other precedents, by means of which the Customs Act provides that all gold or valuable minerals (diamonds at the Cape) shipped from any port, or which leave the Colony in other ways, are liable to forfeiture, and the offenders are liable to punishment besides, if not *weighed* and *examined* by the Custom House or other officers appointed for the purpose, but without any expense to or disclosure of the name or names of the owners, shippers, or others. And it would be likewise advisable, owing to the important issues involved, to arrange if possible with the Masters of the Royal Mints referred to, to accept the several parcels of gold consigned by the banks, and advance a fair standard value to the sellers, leaving the accounts for each sample to be adjusted after their assay, and deducting only actual mint and shipping charges, should the latter be insisted upon, out of the Consolidated Revenue of the Colony. It would be quite easy to adopt safeguards against possible fraud by adopting a low standard price, until experience has been had as to the average value of the gold from each particular district.

In this manner our mining industry would be indirectly fostered, the number of miners would sensibly be augumented, and they would at least be placed on equivalent terms with those of other Colonies, and would, instead of spending our gold product elsewhere and outside the Colony, in land, houses, business, &c., be induced to do that in the country which enriched them, and cause them to settle here to the benefit of this community at large.

As regards the Mount Victoria Gold Field, it will be remembered that scores of leases were taken up in the first instance, chiefly on speculation, and before the reefs were thoroughly tested, and owing to gross mismanagement or from other causes, seven-eighths of such holdings were abandoned. Following that period, a more practical and intelligent course on economical lines has been followed by the companies still remaining at work, and to judge from all appearances that district will not only in the near future recover its prestige, but the profitable and remunerative extension of operations will follow.

At *Black Boy* (Mathinna) the crushing and other mining machinery having been sold and removed, rendered it quite impossible for miners to remain and persist in tracing the lodes—so very profitable at one time—to greater depths.

The same may almost be said of the Mangana District, though the Alpine Company have wrought their reef with payable results against the serious drawback that the richer stone occurs and dips beneath their upper adit level, and owing to financial weakness the company was compelled to cease, temporarily it is hoped, operations. If the deep adit in which the No. 2 Diamond Drill was wrought some time ago could be extended into the belt of country which contains these rich reefs, the company would doubtless experience a long career of a more profitable character than ever before.

The Tullochgorum Deep Lead Company have persisted in putting down a great number of bores over a confined area, and, in fact, the Diamond Drill (No. 2) has been used, as it were, either to establish or to disestablish the existence or otherwise of a deep pliocene system of ancient water-courses containing auriferous gravels and free gold, and also to prove the correctness of the results said to have been obtained by previous hand-bores. After a careful examination, I felt it necessary to come to a conclusion adverse to the company's prospects, the particulars of which will be found in my Report No. 61, 1885.

Tin.—The celebrated *Brothers' Home* Tin Mines were also officially inspected during the year. On the north side of the Ringarooma River the North Brothers' Home Company were hydraulically sluicing the whole side of a hill over 110 feet in height; the clays and stanniferous gravels are there capped by a thick stratum of basalt the removal of which together, owing to the indurated and concretionary character of this pliocene deposit overlying the forty feet of tin gravel, has been proved so far an unremunerative operation. Although the methods now employed for working such high "faces" of tin deposits (85 feet to 110 feet) were much improved upon in accordance with the Inspector of Mines' directions, the continuous slipping of immense flakes of poor gravels and clays, and the consequent intermingling of same with the richer strata, has had an effect the reverse of profitable. This company has worked over one acre of tin ground since it started, from which only 400 tons of tin-ore were obtained, at an expense of from £18,000 to £20,000, which, owing to the above drawbacks caused an enormous outlay to bring in water, for wages, &c., without leaving them any balance to credit.

The Triangle Company, adjoining in the west, have in a like manner been unsuccessful, as their ground embraces the west part of the deep gutter, and owing to its being saturated with water, through leakage of the races passing through, the results were very mediocre indeed.

In the adjoining—across the river south—originally *Krushka Brothers'* mines, they are slowly but surely coping with the enormous accumulations of rich tin-bearing gravels, also overlaid by clays and basalt; the actual results of working these rich deposits are unequalled in Tasmania, and, in all probability, anywhere else in the world, as there are but a very few proprietors in the partnership.

The Briesis Company are still driving their main adit, from the lowest level they could obtain, through the hard granite by means of rock-borers (National) driven by compressed air as a much more rapid operation than if done by hand labour; it will yet take some time before they can, by means of this tunnel, drain their deep tin deposit, and work same to advantage and profit. Their tin-gravels are situated west of the Cascade River, and they form the upper portions of what I have termed "the Brothers' Home sub-basaltic and stanniferous gutter."

The Brothers' Home, No. 1, have, in employing the most powerful water-power, through a four inch nozzle, made a large excavation in their ground, preparatory to getting out ore; they were much hindered by the want of room where to deposit their debris, which is much increased from the thick capping of basalt overlying the tin gravels. That obstacle was, however, removed, in consequence of my report, upon which action was immediately taken by the Executive.

There cannot be any doubt but what the construction of reservoirs impounding the rainfall and floods, and to convey the same continuously throughout the whole year to the mining districts, by means of large channels, would very considerably enhance the value of all these mines right down to Gladstone and its vicinity, as well as others not yet found or opened; the output of tin-ore would be very considerably increased for years to come, and a large settlement would accrue if no further impediments are thrown in the way of so very desirable an object. The preliminary geological surveys, including a Parliamentary one, have been made, and it has been shown that not only is the project of the Ringarooma and Mussel Roe water scheme feasible, but it would become remunerative directly and indirectly to the Government. (See Reports No. 151, 1884, and Report of August 5th, 1885.)

The tin deposits around Mount Cameron have been wrought for some years in the face of extraordinary difficulties owing to the periodical want of water, as that part of the Colony is very moderately and irregularly furnished, during the winter months, with rain, thus rendering the conservation of water for mining purposes to a very great extent abortive, as out of the twelve months, fully eight months may be considered as without any rain, thereby causing miners to cease operations. The inhabitants have conceived schemes by means of which a copious and constant water-supply would be assured as from two permanent sources; the tapping, impounding, and conveyance thence of water would supply mines on both sides of the river. These sources are known as the Ringarooma and Mussel Roe River schemes, with the former of which that of the Boobyalla River is incorporated. At the request of the Hon. Minister of Lands I examined into and reported upon the projects on two occasions, discovering ample data to support, on certain conditions, the action of Government to undertake their construction, in order that the authorities would retain the working and control of the schemes in their own hands. A Select Committee of Parliament has sat and enquired into the matter, and the matter has been thoroughly ventilated, but certain conditions imposed by the Legislature caused, for a time only it is hoped, their withdrawal.

Excellent *Limestone* was found to occur near Beaconsfield, (Middle Arm,)—upper coal measures—Killymoon House, near Fingal, and close to Stonehenge House, both in the form of calciform and fossiliferous beds of the carbonaceous (mesozoic) rocks, and as a "lining" to the walls of an extinct volcanic "vent" or "crater," in diabase or greenstone rock; this limestone is of an exceedingly pure crystalline description or "calcite," *i.e.* carbonate of lime.

Iron exists in great quantities near Ilfracombe (Tamar River), and near the mouth of the Blythe River, near Emu Bay.

Good Building Stone, basalt, has been quarried near the mouth of the Piper River in very large blocks; this stone has been found to possess a more enduring quality than that usually imported from Victoria.

Sandstones have been found near Launceston, and also near the Parattah Railway Station in great abundance, exceedingly suitable for permanent building purposes.

Silver-Gold, i.e. bromides and sulphides, as well as native silver, have already been mentioned in my last report for 1884, as having been found near the mouth of the Scamander River, and there is some prospect of its being thoroughly opened up and tested.

The Silver-Lead Mines at Mount Claude have been abandoned after unwisely expending their capital in the construction of a long and large main adit and some other unnecessary works.

The Mount Zeehan Silver Lead mines (West Coast), were inspected during the year, and sufficient evidence was collected to prove that these deposits could be made a profitable affair, if cheaper and quicker communication could be got with the nearest shipping port at Trial Harbour; another deposit, nearer the coast, has been since discovered, but both are now in *statu quo*.

With the exception of *Nickel*, which was found in the serpentine rock situated between Henty's River and Trial Harbour, there have been no other commercially valuable discoveries made of either minerals or metals.

The Slate Quarries opened near Bangor, or about four miles from Turner's Marsh, and 13 miles from the River Tamar by the Company's Tramway, have now been in operation for some time, and the proprietary have spent a very large amount of their capital to bring out skilled workmen and their wives and children, all of which are comfortably housed and cared for, and to erect peculiar and expensive slate-dressing machinery. That machinery has been employed in the production of a large and increasing quantity of slate to supply the keen demand for the same as required by the trade of this valuable article. As the mines are being opened up, so does, in a similar ratio, the quantity of useful and valuable slate increase at as rapid a rate, and already the exports and local consumption are very considerable.

Practical Results.

During the very extensive peregrinations I have made throughout all parts of this Island, with the exception of those in the south-east, I have been enabled to determine, as a Mining Geologist and Engineer, the topographical and geological structure of the districts thus examined, in which our metalliferous and mineral deposits chiefly occur, thus placing me in a position to make suggestions to the head of my Department as in what manner their development could be aided in a practical manner in the way of cutting tracks, or by other means of opening communications with the nearest points whence supplies could be obtained. That appears to be the only and principal difficulty our miners have to encounter, and which, if remedied, would turn the attention of miners from the adjacent Colonies to our gold-fields, which in every way offer as good inducements for the adventurers as those of anywhere else. I have also been enabled from time to time to point out certain localities and districts which, from their general appearances on geological and mineralogical grounds, would in my opinion be deserving of closer examination, and in some instances those recommendations have borne the desired results. And, in conclusion, I may remark, all these scientific matters were attended to in addition to the duties of Inspector of Mines of Tasmania.

I have the honor to be,
Sir,
Your very obedient Servant,

G. THUREAU, *F.G.S., Inspector of Mines.*

F. BELSTEAD, *Esq., Secretary of Mines, Hobart.*

APPENDIX A.

LIST of Accidents in the Mines of the Colony of Tasmania during the Year ended 31st December, 1885.

Gold District.	*Mineral District.*	*Mine-owner.*	*Date of Accident.*	*Connective No.*	*Cause of Accident.*	*Killed.*	*Injured.*	REMARKS. *Name of Person injured.* — *Mine Manager.*
Beaconsfield	...	Lefroy G. M. Co., (Drainage Union) Registered.	2 February	1	Fall of timber	...	1	Thomas Trembath (22 ; s.) — Mining Manager. This miner was at work in the bottom of this Company's shaft. A piece of timber, it is surmised, fell accidentally down the shaft, striking T. on the head. It appears, however, that in consequence of some dirt falling afterwards, T. went up on the bucket to see where it came from, and when about 15 feet from the bottom something knocked him off the bucket, and he sustained nasty cuts on touching the bottom.
Ditto	...	Florence Nightingale G. M. Co., Registered.	5 February	2	Fall of earth	...	1	John Hancock. — Mining Manager. This lad was engaged trucking at the main level, and at one part of same two men were putting in a shoot from which to fill the trucks ; a piece of ground fell from the back of the level, missing the men, but striking H. on the thigh, causing some injury, but not serious.
...	Blue Tier	Emu T. M. Co., Registered.	28 February	3	Fall of tree	1	...	Kee Chum (mar., 2 children ; 32) — Mining Manager. Whilst at work in an alluvial claim a tree standing adjacent fell into the workings, killing K. C. on the spot.
...	Waratah	Mount Bischoff T.M. Co., Registered.	28 February	4	Crushed by machinery	...	1	Edwin Cunningham. — Mining Manager. This accident took place in one of the dressing sheds of the Company, where C.'s hand was severely crushed by the machinery.
...	Weldborough	Terror T. M. Co.	4 April	5	Fall of earth	1		Wm. Wilson (28 ; s.) — A. B. Smith, leaseholder. Whilst engaged in ground-sluicing a fall of earth took place, by which the deceased was deprived of his life, through having been covered up by the falling gravel. As that gravel deposit ranged but from 10 to 18 feet in height, the fall was quite unexpected, and therefore the jury returned a verdict of "Accidental Death."
...	Waratah	Stanhope T. M. Co., Limited	13 May	6	Fall of rock	...	1	Thomas Mitchell (24 ; s.) — General Manager. After securing, with suitable timber, the workings on the lode up to the face, M. heard a noise as if from falling earth or rock, on preparing to leave the "end" ; he turned, and saw a large flake breaking off the lode, and in order to escape, he jumped down to the next set of timber. Some of the rock must have forced him against the "prop" there, whereby a nasty contusion was caused, requiring the aid of the doctor at the hospital.
...	Ditto	Mount Bischoff T. M. Co., Registered	16 May	7	Crushed by dressing machinery	...	1	Geo. Hayes (16). — M. Manager. This boy was employed in the upper dressing sheds, and when near leaving off work time, he, without authority, commenced to clean up the machinery, and slipping, he caught hold of the plunger-pump, which was still in motion. Before he could release his hand, the pump, on its down stroke, crushed the hand severely, but did not injure or fracture the bones.
Lefroy	...	Young Bendigo G.M. Co.	8 June	8	Fall of rock	...	1	John Hollow. — Messrs. Stubs & Kays proprietors. Whilst "logging up" above the surface the No. 1 shaft, the injured miner was in the shaft, and a flake of rock detaching itself from the side, fell upon his shoulder and chest.
Beaconsfield	...	Tasmania G. M. Co., Registered	11 June	9	Fall of rock	...	1	John Selleck (61 ; m.) — M. Manager. Whilst stoping between the third and fourth level a stone, several pounds in weight, fell from a height of only 8 feet 6 inches upon his leg, causing an injury not at first apparent, but nevertheless incapacitating him from work for nearly a fortnight.
...	Branxholm	Golden Age T. M. Co., Registered	18 June	10	Fall of earth	...	1	Wm. Smyth (32 ; m.) — Mine Manager. In working alluvial tin-ground a fall of earth took place, covering S., who, from the sudden shock, fell with one leg across a big stone, when the additional weight on him caused a fracture of that limb.

...	Waratah	Mount Bischoff T.M. Co., Registered	31 Augu	11	Blow from a hammer	...	1	A. ...der Ferguson (29 ; m.) Mine Manager. Whilst drilling a hole in the main adit his mate inadvertently struck him with the hammer on the arm, fracturing the same.
Lefroy	...	Messrs. Fletcher and Pope's Claim	22 September	12	Fall of rock	...	1	W. H. Fletcher (33 ; m.) Mr. Stubs. This miner was somewhat severely bruised through the fall of rock in the workings of their mine.
...	Lower Junction (Blue Tier)	Anchor T. M. Co., Registered	25 September	13	Fall of rock	...	1	Thomas Hart (21 ; s.) Mine Manager. A piece of rock weighing about 5 cwt. was noticed to have become loose after a blast, and the manager sent a man up (about 12 feet above their main tramway) to bring it down with a crowbar. He did not succeed, and another man was about to be sent up, when the stone of itself came away, striking Hart on the leg, and causing a simple fracture.
...	Waratah	Mount Bischoff T.M. Co., Registered	22 October	14	Fall of rock	...	1	William Fuller (27). Mine Manager. During the removal of some timber for mining purposes down the "falls," a boulder became loose, rolled down on F., and struck him low down on the back.
Beaconsfield	...	Tasmania G. M. Co., Registered	14 November	15 & 16	Lowering pump-rods, when capstan came out of control	...	1	Geo. Scales (27 ; m.), John Wright (22 ; s.) Mine Manager. These men were changing the pump bucket at the adjoining Florence Nightingale Co.'s shaft, when the men at the surface working the capstan lost control over the same, causing the pump-rods, which were suspended by the main hawser, to get away from these men, and knocking them about, caused several injuries to them.
Ditto	...	Florence Nightingale G. M. Co., Registered	14 November	17, 18, 19	Losing control of the capstan	...	3	Geo. Scales, J. Moore, J. Wright. Mine Manager. About twenty men were employed at the capstan when changing a bucket, which having been done, the men were lowering it back into the workings, and in so doing, through their own carelessness, lost control of the capstan, which, gaining a rapidly increasing impetus from the weight suspended and no restraint whatever, caused it to revolve at a fearful rate, knocking these three men down ; one of whom, however, resumed work in a few days.
...	Bruni Island Coal Mines	...	14 November	20	Fall of rock	...	1	James Barnett (36 ; m.) Supt. of Police. A triangular or wedge-like piece of rock, 11 inches thick by 4 feet in length, fell suddenly upon the miner without any warning ; and as it was close to the timber, the occurrence was purely accidental. The man recovered in a couple of weeks, and resumed working.
...	Waratah	...	19 November	21	Explosion of a charge of blasting powder	...	1	Luke Furse (46 ; m.) General Manager. This appears to have been a most reckless case of carelessness, and which ought to have been punished, besides the injuries received by the —a foreman—implicated. A hole had been drilled to a depth of from 3 to 4 feet, which, after charging, missed fire in the forenoon. It was drilled out again after dinner, and a charge of dynamite was inserted in order to enlarge the space for a second charge of powder. About 20 minutes after the dynamite had exploded, this man whilst, it is said, the hole was still emitting smoke, put in a couple of handfuls of powder, pushing it down with a stick, when it suddenly exploded. The powder, grit, and other débris struck him in the face, injuring one of his eyes very severely, whereupon he fell from the bench on which he was standing, causing him to land on his face and upper portions of his body, whereby his face and wrist were severely cut and injured. *
...	Brothers' Home Branxholm	Briseis T. M. Co., N. L.	1 December	22	Fall of earth	...	1	E. Gundry (43 ; s.) Mine Manager. This accident arose from a piece of top soil breaking away from a "greasy back" without any warning, and striking G., causing a fracture of the collar-bone and injury to the thigh.
...	Waratah	Mount Bischoff T.M. Co., Registered	21 December	23	Whilst trucking	...	1	Albert Batton (28 ; s.) Mine Manager. This man was trucking slime or sludge, and his truck came off the line. Before he could get out of the way the next following truck caught him and jammed his feet, whereby one of the small bones of the leg was fractured just above the ancle.

* This is undoubtedly a case where, under Section 11, Sub-section II., and sub-division (e), prosecution should have followed were it not, on the one hand, that the man was sufficiently severely injured and punished, and on the other hand, that the Inspector of Mines was engaged in very important matters brooking no delay, in the North-eastern Mining Districts.

APPENDIX B.

PARTICULARS as to the Observance of the Provisions of the Regulation of Mines Act, 45 Vict. No. 8, 1881, and the Amendment Act of 1884, by some Mine-owners.

Section 12.

Special Rules were transmitted by the Inspector of Mines, after their receipt from the respective parties, for the approval of the Hon. Minister of Lands and Works, and granted, "for the conduct and guidance of the persons acting in the management of such mines, or employed in or about the same, so as to prevent serious accidents," &c.; and they were afterwards signed by the Inspector of Mines, whereupon, in accordance with the above cited Acts, they became part and portion of the same; viz.:—

The Ben Lomond Tin Mining Company, Registered.
The Mercury Gold Mining Company, No Liability.
The Caxton Gold Mining Company, Registered, and
The Wilson Gold Mining Company, Registered.

Sections 9 and 11, General Rule VIII.

The Anchor Tin Mining Company, No Liability, at Lower Junction, Blue Tier, were served under the following circumstances with, as a preliminary, a verbal notice, followed up by a proper official notice (Section 24) through the post, to *forthwith* desist from working in a certain part of their mine. The circumstances which induced the Inspector of Mines to take immediate action was owing to the imminent danger to the company's employees, as follows:—"The Perry's 'face' (an open cutting) is about from 45 to 55 feet of nearly vertical depth, and it extends longitudinally for nearly 200 feet; the "face" is likewise weakened considerably by a drive or tunnel, 18 feet in length, driven about midway between top and bottom. Near the upper edge of this cutting several very large and lofty trees were standing on very rocky ground, swaying to and fro with the least wind, over the cutting. The miners were evidently in fear of some mishap, and their exit in such a case was very considerably hampered by the intricacy of the only means for escape by having to climb over rocks, stumps, and other débris, in case of either the trees or the bank, or both together, falling, which was very likely to be the case. I, therefore, in virtue of the powers conferred on me by the Regulation of Mines Act as a properly appointed Inspector of Mines, directed that work should cease at once, and that for a width of 90 feet all trees should be cut down and removed, also that a substantial fence should be erected five feet from the edge of the cutting, and along the lower side of a track much in use by the miners and others from the Lower Junction Township. On a subsequent inspection I found my directions had been complied with, although at first the person temporarily in charge demurred, stating that such work should be done by his successor then just appointed.

The Alpine Gold Mining Company, Registered, at Mangana, were served through the post with a notice—after their boilers had been, in my absence, carefully tested and examined by the Foreman of Diamond Drills—to repair their smaller boiler, especially about the *water-line* and around the blow-off tap, under certain specified conditions, before resuming work, and not to raise their working steam-pressure to above 25 lbs. per square inch.

In conclusion, I desire to place it on record, that in every case where the Inspector found it requisite to give, as a first "warning," a verbal notice, such were obeyed with alacrity and without loss of time by those persons who were in charge of mines, machinery, &c., and a general desire was, on their part, observable to comply with the provisions of the Regulation of Mines Acts.

G. THUREAU, *F.G.S., Inspector of Mines.*

WILLIAM THOMAS STRUTT,
GOVERNMENT PRINTER, TASMANIA.

(No. 59.)

1885.

PARLIAMENT OF TASMANIA.

REPORT OF INSPECTOR OF MINES FOR 1884.

(Appendix to Report of Secretary of Mines.)

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

REPORT of the INSPECTOR OF MINES *for the Year* 1884.

Inspector of Mines Office, Launceston, December, 1884.

SIR,

I HAVE the honor to submit my Third Report as Inspector of Mines, from the 1st of January to the 31st December, 1884, inclusive.

"The Regulation of Mines Act, 1881," 45 Vict. No. 8, having been amended in November, 1884, by Parliament, the results of the administration of both Acts for the time being are now presented for consideration; these include lists of accidents which have occurred in the mines of Tasmania during the year, tables and returns explaining the former, a synopsis of the work performed by the Inspector, as well as diagrams of new and useful mining appliances suitable for the better carrying out of mining operations by means of improved water motors, for which there is so abundant high pressure water power available in Tasmania.

So far as the working of the Regulation of Mines Act is concerned, I have every reason to be satisfied, as there has been a decided improvement in the *character* of the non-fatal accidents, though their total number for the year has increased to 36, as against 35 during the previous year; the number of fatal accidents during the year amounts to the same number as last year,* but they include one case in which the deceased met with his injury at the close of last year, but he died during the present year and the case was never reported. As there is still room for a further reduction in the number of accidents of all kinds, the Inspector's duties will have to be exerted in that direction to bring about so desirable a result.

As reported before, as to the undoubted necessity which exists for the adoption of what is commonly termed the "*primâ facie*" Section, under which "*Any accident occurring in a mine shall be* primâ facie *evidence that such accident occurred through some negligence on the part of the owner*," such a provision has not yet been placed in the Regulation of Mines Act of 1881 and 1884.

The Inspector of Mines has visited, during the year, the following mining districts,—in some cases each several times; viz.—

District.	*Description of Mining.*
Mersey	Coal.
Mount Bischoff	Tin.
Mount Heemskirk	Tin.
Corinna	Gold.
Long Plains	Gold.
Mount Cleveland and Specimen Reef	Gold.
Penguin	Silver, Silver-Lead, and Copper.
Beaconsfield	Gold.
Salisbury (Blue Tier)	Gold and Nickel.
Lefroy	Gold.
Gladstone to Pioneer Company	Tin.
Moorina to Brothers' Home	Tin.
Branxholm	Tin.
Mount Victoria	Gold.

* One fatal accident in December, 1883; it was never reported until death intervened in August, 1884, and therefore it should be credited to 1883.

General Rules, sect. 11, clause xv.

The safety hooks and safety cages in use with our deeper mines have given satisfaction, and no accident has been reported as having occurred from their use.

General Rules, sect. 11, clause xxi.

During the year, in accordance with the provisions of the Act, 28 steam boilers were examined and subjected to the prescribed hydraulic test, all of which, except three, withstood more than double their ordinary working pressure; viz.—

	Boilers.	*Total.*
At Lefroy:		
At the end of the first six months	6	
Ditto second ditto	4	
	—	10
At Beaconsfield:		
At the end of the first six months	10	
Ditto second ditto	8	
	—	18
Total		28

These steam boilers thus tested were owned by the following proprietaries; viz.—

	Boilers.	*Total.*
At Lefroy:		
The Lefroy Pyrites Calcining and Reduction Company (multitubular)	1	
New Chum Gold Mining Company, pumping, winding, and battery (Cornish flue)	3	
West New Chum Gold Mining Company (ditto)	3	
Morning Star Gold Mining Company, winding and pumping (Cornish flue)	1	
	—	8
At Beaconsfield:		
The Florence Nightingale Gold Mining Company, winding and pumping	2	
Tasmania ditto (including Golden Gate), winding, pumping, and battery	4	
Lefroy ditto ("Drainage Union"), ditto	4	
	—	10
Total		18

In one instance the steam-taps were ordered to be repaired; in another the seat of the safety valve had to be ground before the requisite test-pressure could be obtained. The battery boiler of another company, with a usual working pressure of from 35 to 40 lbs. per square inch, could not maintain such pressure. The Inspector eventually found that a leak eight inches in length had formed in the angle iron on the front and crown of the boiler; the boiler was accordingly condemned until repaired. Eventually a statutory declaration, sworn to by the Mining Manager, was forwarded to my office, stating that the boiler had been tested to 60 lbs. per square inch pressure, which was accepted as satisfactory for the time being.

It may be remarked in this connection that a considerable saving of time and expense would accrue by following the custom of other countries. In Great Britain, for instance, the Boiler and Steam Power Insurance and Employers Liability Companies are now a *sine qua non*, and the business these companies undertake, such as, for instance, the Manchester Steam Users Association, the Yorkshire Boiler Insurance Company, and the Boiler Insurance and Steam Power and Employers Liability Company of Manchester, comprises the testing and inspection of, in the aggregate, twenty-four thousand (24,000) steam-boilers insured; and by having proper supervision by properly qualified inspectors, explosions, at one time so frequent, have become rare to such a degree that only one boiler explosion occurs in every 8500 boilers insured, whilst the proportion of uninsured is one in every 1800. The first-named Company, with 4000 boilers under its control, reports "that it has not had a serious explosion nor the loss of any life for over thirty years." The Yorkshire Company also reports not having had such a mishap for the last ten years; and the last-named proprietary at Manchester, "which has over 20,000 boilers under its care," reports in a similar strain. All these companies have apparently embarked in a very profitable undertaking, their dividends ranging from 5 to 30 per cent. per annum, leaving the utilitarian effects of their combined action altogether out of the question. These companies are established for the following objects; viz.—

1. The inspection of boilers and machinery.
2. The insurance of owners of boilers against any injury that might happen from an explosion to the boiler itself and surrounding machinery or property, up to a certain sum to be determined. With this would be combined periodical inspection and reports for the satisfaction of the owner.

3. The periodical inspection and indication of engines and all classes of machinery, with reports advising owners as to best course to be pursued in order to reduce expenses of working and the promotion of economy in every department.
4. The assurance of employés, that is to say, the issue of policies on the lives of engine men and factory hands, for whose safety the employer is liable, and to whom he must pay compensation in cases of injuries arising from explosion of his boiler.

The following extract will, it is hoped, convince employers of steam boilers and machinery that there is a necessity for some such association, one of which, I am informed, will shortly be formed in Victoria, with branches in all the Colonies.

"Not only do employers of labour feel a great weight lifted from their shoulders with regard to the safety of their boilers and engines" (which, here in Tasmania, have acquired a considerable length of "life," and therefore require severer tests and increasing attention), "the care of which is often placed in the hands of men who are not qualified to report as to their deterioration or otherwise, but if an accident should happen they are not only indemnified up to the amount of insurance, but they are also assisting in the protection of human life."

One quartz-mining company was notified to have dilapidated and unsafe ropes replaced by new ones, also to discontinue the employment of too young and inexperienced engine-drivers and bracemen. One quartz-mining company had special rules granted to it by the Hon. Minister of Lands and Works. Secs. 8 and 9, clause i. Sect. 11, clause xix. Sect. 12.

Five coal-mining companies were directed to properly fence in their shafts and workings. Three gravel (tin) mining companies were instructed, after personal inspection, to carry on their mining operations in hydraulically sluicing "faces," over one hundred feet in height, in a manner better calculated to ensure the lives of their employés; complaints about which had been lodged with the District Commissioner of Mines. Sect. 11, rule vi. Sect. 9.

A quartz-mining company's engine-house was constructed so as to intercept or obstruct the view of the brace by the engine-driver at the winding engine. This was altered at the instance of the Inspector of Mines. Sect. 9.

Another quartz-mining and drainage company was ordered to remove *vertical* ladders placed into their shaft *since* this Act came into force, and replace same by inclined ladders, and to have substantial platforms every thirty feet. Sect. 6. Sect. 11. General Rule xviii.

Information having reached the Inspector of Mines Office of a total collapse threatening two very valuable mining and crushing plants, owing to some mining operations being carried on at inconsiderable depth from the surface, and in close contiguity to, and partly under the dambank of a large filled reservoir of water, those workings were at once stopped, and the whole matter was, at the same time, reported to the Hon. Minister of Lands and Works. Sect. 9.

The mining and drainage company already referred to was likewise instructed to provide proper straps for the miners descending and ascending the buckets used in the working in the shaft. Sect. 11, General Rule xvi.

Under the provisions of "The Regulation of Mines Amendment Act, 1884," Section 2, the following mining companies have furnished this office with plans and sections from surveys made by authorised surveyors, according to the scale adopted—with some of the more extensive mines the Hon. Minister permitted a modification of the standard scale; viz.—

1. The Mount Bischoff Tin Mining Company, Registered, Waratah.
2. The West Bischoff Tin Mining Company, Registered, ditto.
3. The West New Chum Gold Mining Company, Registered, Lefroy.
4. The Lefroy Gold Mining Company (Drainage Union), Beaconsfield.
5. The Tasmania Gold Mining Company, ditto.
6. The Mount Claude Silver-Lead Mining Company, West Devon.
7. The Little Wonder Gold Mining Company, Beaconsfield.
8. The Stanhope Tin Mining Company, Waratah.

The total number of miners employed at the various mines, as kindly furnished by the Government Statistician, has been ascertained as amounting to, approximately only, 2923, or, in round numbers, 3000—a reduction of 1100 upon last year.

Accidents.

Since the beginning of 1884 the total number of miners killed and injured whilst following their various avocations is as follows :—

Fatal Accidents from January to December, 1884, *inclusive.*

Date of Accident.	Consecutive No.	Description of Mining.	Locality.	Married.	Single.	Date of Death.	Compensation.	Age.	Names.
1884.									
April 30th	1	Tin	Thomas's Plains	...	...	May 1st	...	...	Ah Fun.
May 22nd	2	Tin	Ditto	...	...	May 22nd	...	...	Ah Chang.
July 29th	3	Tin	Branxholm	...	...	July 29th	...	...	Gee Jim.
Dec., 1883	4	Tin	Thomas's Plains	...	...	Aug. 6th	...	...	Kee Wee.*
August 25th	5	Tin	Gladstone	...	1	Aug. 25th	...	46	Ah Ho.

Non-Fatal Accidents for the same period.

Date of Accident.	Consecutive No.	Description of Mining.	Locality.	Married.	Single.	Date of Recovery.	Compensation.	Age.	Names.
1884.									
Jan. 10th	1	Gold	Beaconsfield	1	...	Jan. 20th	...	...	Wm. Hills.
Feb. 5th	2	Coal	Tarleton	...	1	March 6th	...	...	John Wardley.
Feb. 13th	3	Gold	Beaconsfield	...	...	Feb. 21st	...	...	Wm. Bennett.
Ditto	4	Gold	Ditto	...	...	Ditto	...	...	Wm. Flanagen.
Feb. 20th	5	Tin	Gould's Country	...	...	...	...	...	John Read.
March 11th	6	Gold	Beaconsfield	...	1	...	...	18	Robert Foster.
April 1st	7	Gold	Ditto	...	...	...	...	...	Ed. Rosewarne.
April 22nd	8	Tin	Frome River	...	...	...	...	...	George Pratt.
April 26th	9	Tin	Gould's Country	...	...	...	...	...	David Medwin.
Ditto	10	Gold	Beaconsfield	...	...	...	...	...	Richard Bone.
May 5th	11	Tin	Gladstone	...	...	...	...	...	James Duffy.
May 7th	12	Gold	Beaconsfield	...	...	...	...	56	Stephen Foster.
May 21st	13	Gold	Lefroy	1	...	...	...	21	John Barker.
May 27th	14	Gold	Beaconsfield	...	1	April 1st	...	16	Elisha Martin.
June 12th	15	Tin	Ben Lomond	...	...	June 16th	...	...	Wm. Dodd.
June 23rd	16	Tin	Mt. Heemskirk	...	1	Ditto	...	...	Michael Meara.
July 18th	17	Tin	Mount Bischoff	...	...	...	...	...	Wm. Dickenson.
July 21st	18	Gold	Beaconsfield	1	...	...	...	22	Andrew Campbell.
July 24th	19	Tin	Moorina	...	1	...	...	...	Thos. Brooks.
July 29th	20	Tin	Branxholm	...	1	...	...	47	Hip Con.
Ditto	21	Gold	Mount Victoria	...	1	...	...	28	Tim. M'Donald.
August 4th	22	Tin	Branxholm	...	1	...	...	25	Wm. Talbot.
August 8th	23	Tin	Mount Bischoff	...	...	...	...	...	Hy. Williams.
August 9th	24	Gold	Mount Victoria	...	...	...	...	62	John Williams.
August 25th	25	Tin	Mt. Cameron S.	...	...	...	...	...	——— ——— †
August 26th	26	Gold	Beaconsfield	...	...	...	...	...	John Hancock.
August 27th	27	Tin	Main Creek	...	1	...	...	23	George Marcell.
Sept. 1st	28	Tin	Mount Bischoff	...	1	...	...	29	John Evans.
Sept. 10th	29	Gold	Beaconsfield	...	...	...	...	...	Frank Tregaskis.
October 5th	30	Gold	Ditto	...	...	...	...	...	W. Williamson.
October 10th	31	Tin	Moorina	...	...	...	...	40	Michael Egan.
October 14th	32	Gold	Mount Victoria	...	1	...	...	30	Daniel Stephens.
October 16th	33	Tin	Mount Bischoff	...	1	...	...	23	Peter Broadie.
October 30th	34	Gold	Beaconsfield	...	1	...	...	15½	Henry Rigby.
Nov. 9th	35	Gold	Ditto	1	...	...	...	27	Ed. Rowbottom.
Nov. 26th	36	Gold	Ditto	1	...	...	...	62	John Sullick.

MEMO.—Total fatal accidents during the year, 5; total non-fatal accidents ditto, 36; grand total of all mining accidents, 41.

* This miner was injured in December, 1883, but death overtook him only in 1884.

† The name of this miner has not been ascertained, though he was reported to be a Chinaman.

In analysing the above lists of mining accidents, it would appear that two of the number could not be placed within the category of proper accidents under or within the provisions of the Regulation of Mines Acts; and, by carrying the investigations still further, it likewise becomes apparent that the remaining number of casualties are capable of reduction, which is ascribable to the desire on the part of the mine-owners or mining manager to report any kind of accident in order to be within the law. It is quite certain that at least seven of these accidents are not *serious*, and that one of these was due to gross negligence. If these minor mishaps are eliminated from the above record, then the reduction which has taken place in the number of miners in Tasmania will leave the percentage per thousand of such miners in about the same state as the year before.

Particulars as to Fatal Accidents.

Ah Fun was employed in clearing ground for subsequent mining operations, and he charged a hole bored into a log with dynamite. Not understanding this kind of work he went back to the log

too soon, when the charge exploded before he could get out of the way; a piece of timber struck him on the head, which caused his death next day.

Ah Chang, along with some of his countrymen—who had been working at this mine for more than seven years, and who passed therefore as an experienced and careful miner—was engaged in picking at a "face" of gravel but 6 feet high, when, without any warning, about three tons came away burying Ah Chang completely; he was extricated in about half an hour, but had died from suffocation. The mining manager ascribes this accident to have been caused by very heavy rains having followed a severe frost "cracking" the faces, rendering same to be very treacherous.

Gee Jim was killed by a fall of earth at the Cascade River; but beyond the notice by the Superintendent of Police no other particulars could be obtained.

Kee Wee was injured in December, 1883, by a fall of earth, but his accident was never reported. He had lost the use of his lower limbs, and a Chinese doctor attended him till his death in August, 1884, when the Superintendent reported the case to this office.

Ah Ho was also killed by a fall of gravel in a bank which had been undermined by the party of which the deceased formed a member. This bank was from 12 to 14 feet high, resting on soft rock; they cut under this bank to a depth of from three to five feet, leaving small "pillars" as supports, and regular distances apart. Back from the face some six or eight feet an old prospecting shaft had been sunk, then conatining water which had percolated through the gravel, thus loosening the same. When the last of those pillars were knocked away the part adjacent to the old shaft fell over without any warning, and buried the mine in the *débris*. Having had some considerable experience in working similar ground at or near Gladstone, a very little foresight might have prevented this fatality; but Chinamen, as a rule, work without much consideration of what may be ahead of them in working mines of this description, hence so many fatal accidents amongst these people.

Particulars as to Non-Fatal Accidents.

These comprise the ordinary classes of mining accidents, ranging from the trivial and easily avoided to the more serious.

One miner, in not sufficiently securing some timber he was lowering to a deeper level was, on the rope slipping, precipitated 50 feet down a "pass." Another rode on a truck down an incline—a practice specially forbidden by the mining manager—and, by falling off, broke his leg. A trucker (16), in filling his truck from a shoot, was struck in the face by a piece of quartz passing, in falling, through the open door. Three men were sinking a shaft, and the one at the windlass allowed the bucket to slip into the shaft; he thereupon caught hold of the rope and fell with it to a depth of 50 feet. All three escaped very severe injuries. A plumb-bob fell on the head of a carpenter engaged in putting in timber partitions of a main shaft. Falls of quartz, rock, and earth caused also several injuries to miners employed. A face of gravel fell after the top soil had been sluiced off; a little more care would have prevented the serious injuries to a Chinaman employed thereat. Gross carelessness was exhibited by a trucker who emptied a truckful of quartz into a "hopper," at the bottom of which a man was engaged to tighten some screw-nuts; the trucker neither looked nor called out, and thus the quartz, falling upon the man, cut him severely about the body and knocked four of his teeth out also. The engineer of another company had a very narrow escape from death. He was caulking a steam joint, and, on turning on the steam pressure very slowly the S piece suddenly burst, depriving him of his senses for some time.

The Tables and Appendices to this Report for 1884 give in detail the nature of each separate accident, whether fatal or otherwise, and they are shown to be comprised under the following heads; viz.—

By fall of earth, trees, timber, &c.	20
By explosions	3
By machinery	12
By falling down shafts or other workings	6
TOTAL	41

These accidents occurred in the following Mining Districts, and they stand, according to their frequency, in the following order; viz.—

Thomas's Plains, Branxholm, Gladstone, Gould's Country, Frome River, Ben Lomond, Mount Heemskirk, Mount Bischoff, Moorina, and Mount Cameron	21
Beaconsfield, Lefroy, and Mount Victoria	19
Tarleton	1
TOTAL	41

In this manner there have been twenty-one mining accidents in the tin, nineteen in the gold, and one in the coal mining districts, or as near as possible the same number as last year.

Three-yearly retrospect of Accidents, from 1882 *to* 1884 *inclusive.*

Number of fatal accidents	17
Ditto of non-fatal accidents	94

Of the former there appear on the records of this office eight for the first year; after the passing of the Regulation of Mines Acts, four for the second, and five, as already explained, for this year. And of the latter class of accidents there were reported eighteen, thirty-five, and thirty-six in each of those three years respectively.

The number of miners in Tasmania having from various causes decreased to, say, 3000, the following comparisons are of interest:—In Victoria there has been one fatal accident for every 712 miners; in New South Wales, one for every 497; in New Zealand, one for every 625; whilst in the metalliferous mines of England the rate was one for every 1712 miners;—the Tasmanian proportion being one for every 600 miners.

The results of the Regulation of Mines Act, including also the Inspection of Mines and of Mining Machinery, have not always afforded satisfaction to a section of the community which, having become used to the old non-responsible customs, regard these modern enactments as innovations and therefore not required. If, however, the State possesses an indisputable right to protect workmen engaged in a very hazardous and dangerous calling, and obtains by means of legalised regulations (the direct outcome of extensive experience in mining countries) by which the persons most interested are made aware of their grave responsibilities, so desirable a result, then the opinions so often heard as to the utter impossibility of preventing, by the machinery of the law, any mining accident, may be considered as obsolete, and not borne out in the reports of the officers appointed.

The following extract from the Melbourne *Argus* of the 28th of May, 1885, in reference to the Chief Inspector of Mines' Report for 1884, will demonstrate the very beneficial effects achieved by means of the elaborate and stringent Victorian Regulation of Mines and Machinery Acts; so much so has this been the case as to induce the Government to comply with the requests preferred by both the Mine-owners and the Associated Association of Miners to increase the number of Inspectors of Mines already employed:—

"The report by the Acting Secretary for Mines, relating to the regulation and inspection of mines and mining machinery for 1884, contains satisfactory evidence that the safety and well-being of the men engaged in the hazardous operation of mining are being attended to with good results. Miners, like sailors, are often careless and unmindful of the warnings of experience. It is impossible to guard against their recklessness, but there is no doubt that the operations of legislative enactments has largely reduced their liability to mischances. *Fewer deaths occurred through mining accidents in* 1884 *than in any previous year since the passing of the Regulation of Mines Statute*, and in a great many cases the fatalities were distinctly attributable to the wilful disregard of the most ordinary precautions on the part of the men themselves."

Improvements in Mining Appliances.—The Pelton Pressure Water-wheel.

In most of our mining districts in Tasmania a copious supply of water exists, lasting the greater part of each year; and as water when obtainable from high levels forms the cheapest motor for all kinds of machinery, it has been employed in such districts as suitable and preferable to steam. There are about 25 overshot water-wheels employed (equal to from 6 to 800 horse-power), from a few to 60 feet in diameter each, and from two feet to four feet six inches "breast," and they are constructed either of iron or partly of wood. Assuming a *theoretical* horse-power to be as 1·00, the *effective* horse-power of "undershot" wheels would be equal to ·35; of "breast wheels" ·55; of overshot wheels ·68; and of turbines ·70; so that in the case of overshot wheels a (reducible) clear loss of 0·32 per cent. takes place, besides the fact of sufficient water not being available for the full twelve months by a majority of those companies, which loss aggregates to the serious loss of over 254 horse-power per annum. There are also other objections to the exclusive use of such water-wheels; when, for instance, a wheel is constructed for the purpose of working a given number of stamp-heads and other appliances necessary with a mining, crushing, and concentration plant, the failure of water in the dry season has a most injurious effect:—

1st. The supply of water becoming insufficient, causes the number of heads, &c. to be reduced in order to utilise the limited supply of water available.

2nd. As those water-wheels were originally constructed large enough for working a complete plant, it necessarily follows on a failure of sufficient water that the buckets are not filled, nor are they so weighty as to produce even the reduced motive power required, thus resulting in irregularity of revolutions and "lurchings" of the wheels, which most unfavourably affect crushing, amalgamation, and concentration, because the gearing being on the first motion those irregularities are at once transmitted to those appliances. Another drawback is experienced through breakages necessitating repairs, leading to the stoppage of the whole machinery.

3rd. Very rarely can the "head race" be connected with the wheel without the construction of high-level fluming; solid foundations for the massive framework carrying the wheel and gearing are also requisite, as well as the excavation for and walling-in of a wheel-pit with a tail-race, all of which adds to the expenditure.

In order to economise in the direction of construction and the working of such plants in exact proportion to the quantity of the water available at any time, and to restrict the use of that element to the narrowest useful limits, the *Pelton Pressure Water-wheels* have been received of late in America with general favour, to the total exclusion in favourable localities of all kinds of water-wheels and turbines. The latter, owing to their engendering the rapid heating of the bearings from friction due to their excessive rate of speed whilst revolving, have been found altogether unsuitable.

These pressure wheels not only exceed greatly, if certain conditions are observed, the ordinary percentage of motive power obtainable with the same volume of water by other motors, but they ensure likewise the complete utilisation of an irregular supply as conveyed to them in head-races *having but very little fall* from their intake at rivers or creeks; these races supply a reservoir constructed as high above, and as near as possible, to the plant to be worked. From the reservoir a strong galvanised iron pipe of sufficient capacity is laid in a shallow groove cut in the surface to the spot where the water is to be used. This pipe can also be made of black sheet iron, coated with asphaltum in and outside, in from 12 to 18 feet lengths, with "telescopic" joints or overlaps of three inches, and anchored where necessary to strong wooden stakes driven into the ground, by means of loops of half-inch iron wire. At the lowest end this pipe terminates in a nozzle screwed on a diminishing piece, the jet from which having such a diameter as has been computed to be of the necessary force and pressure to work a given plant of machinery. There is no high level fluming or wheelpit required, no heavy framework for the wheels or gearing,—only a tailrace to permit the free egress of the water used from the works.

These pressure water-wheels (see diagram) differ in many respects from the ordinary water-wheels, being much simpler and compact in construction, and very considerably less in diameter or "breast." The machinery is worked off a main pulley by means of a belt. The face or breast *a b* of these Pelton wheels measure, in accordance with their duty, from *four* to *twelve* inches only, and the buckets *c*—of a peculiar shape—are simply screwed into their position at the termination of the radial lines at the periphery from the central or main shafting, at distances of from 9 to 12 inches apart. The "rim" or breast can be constructed of solid hardwood or sheet iron. If of wood, those portions exposed to the action of the jet should be sheathed with iron to save the wood.

As shown by the diagram, the jet *d* from the nozzle, as supplied by means of the pipe from the high-level supply reservoir, is made to strike or impinge with great pressure upon the back of the buckets at the inner base *e* of the wheel, causing same to revolve, and setting in motion thereby all the heads or other appliances geared by means of the belt working off a main pulley *f* to the main shafting. Of course the actual power evolved depends upon the "head" and quantity of water available, and as this part of the question has been both theoretically and practically tested, the results thereof are shown in the following Tables; viz.—

Table giving Diameter, Revolutions, Fall of Water, Cubic Feet per Minute, and Horse Power of Pelton P. Wheels.

Cubic feet of water per minute.		8′	32′	40′	60′	80′	144′	300′	Remarks.
		Horse-power.							
Head of water, in feet.	20 feet...	·25	1·02	2·05	3·08	4·11	4·62	10·30	It is practicable to compute by means of this Table that, for instance, a jet delivering 60 cubic feet, or 375 gallons of water per minute, with a head of, say 120 feet, is equal to 18·53 horse-power.
	80 feet...	1·00	4·11	8·23	12·36	16·47	18·53	41·21	
	120 feet...	1·53	6·17	12·36	18·53	24·72	27·81	61·81	
	200 feet...	2·75	10·30	20·60	30·90	41·20	46·36	103·03	

Diameter of Pelton P. Wheels, in feet.

Diameter.....		1½ feet.	4 feet.	8 feet.	Remarks.
		Working Revolutions per minute.			
Head of water, in feet.	20 feet...	217	81	40	This Table shows that, with a greater height of head of water, the smaller wheels have more velocity, which decreases with large diameter of wheels, thus adapting same admirably to crushing machinery.
	80 feet...	434	163	81	
	120 feet...	532	200	100	
	200 feet...	686	257	128	

The following table gives price (f.o.b., San Francisco, Cal.) and capacity of each Pelton P. water-wheel under various heads of water; viz.—

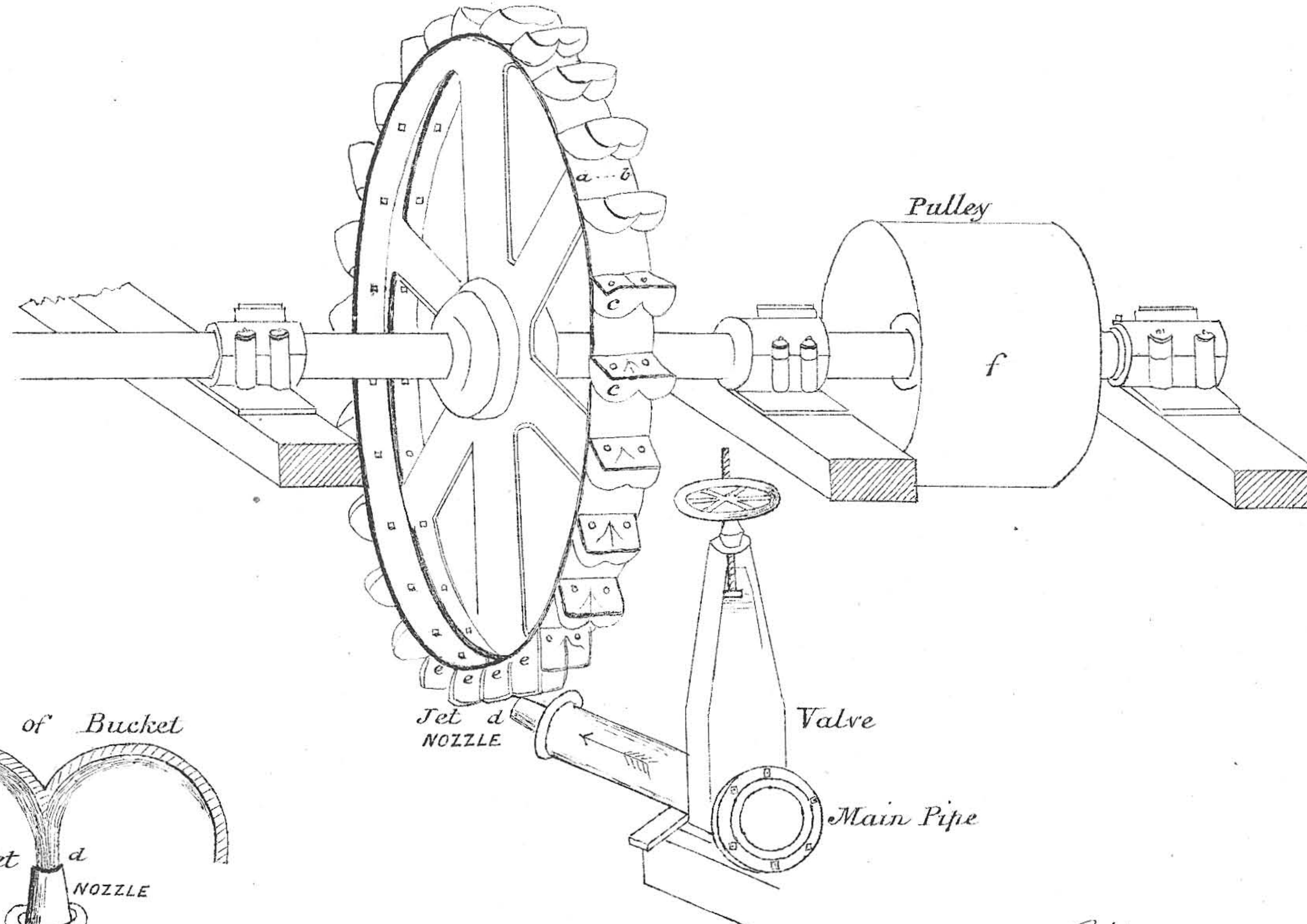
Diameter of Wheels, in feet.	25 ft. head. H. P.	75 ft. head. H. P.	200 ft. head. H. P.	Price.	Price includes	Price each of Buckets for Wood Wheels.
3 feet	0·4 to 1·5	2 to 8	8 to 31	$210	Shaft, pulley, boxes, gates, and nozzle.	$1·25
5 feet	1·0 to 4·0	6 to 22	23 to 90	$370		$2·00
6 feet	1·5 to 6·0	24 to 96	33 to 130	$420		$2·50 to 4·00

The above tables being the result of very careful tests, as already mentioned, may be relied on fully as to the great advantages conferred by the adoption of this simple, yet powerful, kind of motor. At that trial other and similar wheels were tested against each other, but the Pelton was the most successful of the whole. A Pelton P. wheel of but 6 feet in diameter, 12 inch face or breast, under a surveyed "head" of 386½ feet, with a supply of a little over 163 cubic feet, or 982¾ gallons, of water per minute, developed 119·471 *theoretical* horse-power, equal to 107·58 *actual*: the wheel revolved 254½ times per minute, and exhibited, out of a possible 100 per cent., 90·04 of efficiency, as against 55·00 of overshot wheels, nearly *two* of which would be required of *sixty feet in diameter*, with a 4 *ft.* 6 *in. breast*, in order to achieve similar results. In consequence of this unequalled result, the leading quartz mining company "Idaho," at Grass Valley, Cal., which, at the time of my visit in 1877, employed steam only, has thrown steam boilers and engines aside, and instead adopted the Pelton P. wheels exclusively, *i.e.*, three of such wheels for pumping, four of same for hoisting from their deep levels, one for crushing, one for air compressor, one in the machine shop, and two for the air-blowers, or twelve altogether; whereby that proprietary has been enabled to effect, beside other advantages, a very considerable saving in their general mining and reduction expenditure.

This new system of using small water-pressure wheels has caused already a modification in the way they are used for mining and crushing purposes. It has been found, amongst other things, that, in order to utilise the water existent in any district to the fullest extent, it is more economical and advantageous to have a number of small wheels working the various sets of machinery instead of, as is now the case, one large wheel doing the whole work. As each of these wheels can be controlled to the greatest nicety by the valves shutting off or turning on any amount of pressure required, it follows that, in the same ratio, various kinds of speed may, at the same time and with the same means, be obtained. For instance, a new crushing mill has been erected for the Alaska G. M. Co., Douglas Island, British North America. This has been designed to crush 360 tons of quartz per diem, the number of stamps amounting to 120, and each of these weighing 900 lbs. The plant comprises, beside three of Blake's Rock-breakers, 48 Frue's Concentrators, and other appliances, the requisite motive power for which, aggregating to nearly 300 horse-power, is obtained by means of a head of water of 386 feet, working two pressure water-wheels *six feet only in diameter each*, the supply pipe for which being bifurcated at the end in order to furnish the two nozzles required. In order to develope a similar amount of motive power, two overshot water-wheels would be necessary over 40 feet in diameter each, and a breast of from four to five feet at least.

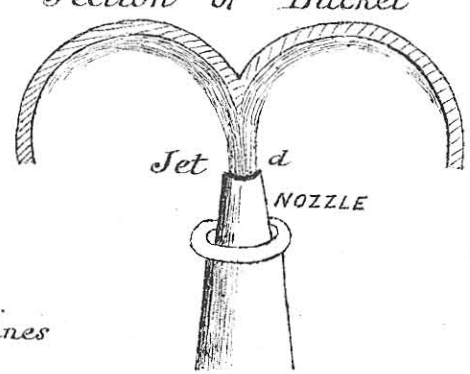
At Mount Victoria it has been decided by a company to substitute for the portable steam-engine in use an overshot water-wheel for crushing with 18 heads, and, as their supply of water is intermittent only, both steam and water will have to be used as occasion arises. The new wheel is to be 32 feet in diameter, breast 4 feet, and is stipulated to have 30 horse-power; the nominal "head" of water, from the intake of the river to the *basal* periphery of the wheel, being as follows:—90 feet (vertical) to top of wheel; 32 feet (ditto) height of wheel, added to which 20 feet which can be got by giving the head-race that much less fall,—or a total of 142 feet; and if the pressure is calculated as derivable from a largish high level supply reservoir, 150 feet. According to the above tables a

THE PELTON PRESSURE WATER WHEEL



5 cm

Section of Bucket



Office of Mines

fect G. Thureau T.G.S.

6-feet wheel would, with such a head of water, produce a mean average of 39 horse-power, and, besides other advantages, become the means of utilising that water for a considerably longer period each year than would be the case with the more wasteful overshot wheel.

As to the difference in price of these two motors, I am informed that the overshot wheel in question will cost £600; against which, as shown in the table, and allowing a very large margin for extras, the Pelton Pressure Wheel, with everything complete, would cost as follows:—

	£	s.	d.
One 6-ft. Pelton Pressure Water-wheel	87	10	0
Freight from California to Tasmania, say	35	0	0
Timber, iron, and piping, say	120	0	0
Sundries (labour, &c.), say	60	0	0
TOTAL	£302	10	0

There has been no necessity for prosecuting any person or persons engaged in mining under the provisions of the Regulation of Mines Act, 45 Vict. No. 8, 1881, or, under the Regulation of Mines Amendment Act, 1884.

As already stated, the duties performed by the Inspector of Mines during 1884 included the careful inspection of most mines in the various mining districts, as well as the furnishing of plans and sections of particular localities, in accordance with the instructions of the Head of the Mining Department, in his capacity as a Mining Geologist. An exhaustive report, with elaborate plan and sections, was thus supplied, on the feasibility or otherwise of bringing a copious supply of water from the heads of the Boobyalla, Ringarooma, and Mussel Roe Rivers to serve the requirements of mine-owners at Brothers' Home, Moorina, and Gladstone, inducing the Government to get a proper survey made of same.

In 1884, 969 letters, telegrams, and memos. were dealt with in this office, as against 320 in 1883; mine accidents, 200 as against 140; steam-boiler certificates, 15, as in the previous year; and general correspondence and reports, 151, as against 213 in 1883, showing an increase of 377 for this year,—viz. 1883, 958; 1884, 1335.

Conclusion.

The various inspections of mines, both on the surface and underground, and the examinations of steam-boilers and of mining machinery, have clearly demonstrated that the mining managers and engineers have been more careful in their supervision of their employees and the works or machinery entrusted to their care. A peculiar feature is observable, however, in connection with the excessive number of fatal accidents to the Chinese as principally employed in our alluvial tin mines; during the last three years these amount to ten out of seventeen, and judging from the manner in which this loss of life occurred, some restraint appears as necessary when and wherever Chinamen are being employed by Europeans as wagesmen or tributers. Their employers should more frequently examine the workings, or where they are all Chinaman, an experienced European should be appointed to do so.

The Mineral and Metalliferous Deposits.

Having now for more than four years examined the various Mining Districts of Tasmania, and having become thoroughly conversant with their extent, value, and other characteristics, a few remarks on these very important subjects may not be deemed out of place.

Coal Measures.—These exist in the south, east, and north-west of the island. The more bituminous classes of this valuable fuel of the Sandfly, Port Cygnet, Mount Nicholas, and Fingal Districts are of a very promising character, and doubtless, when the different seams of coal are opened systematically, the supply from same for home requirements will, in a few years, render this Colony independent of any imported coal. At Mount Nicholas, Fingal, and neighbourhood, where quite a number of seams occur under each other, varying from 14 feet to a couple of feet in thickness each, the advent of the new railway nearing completion does not appear, so far, to have stimulated lease or property holders to extend their workings in order to get at the more superior quality which alone would secure them customers for their commodity. At Sandfly and Port Cygnet the means for transportation are as yet inadequate, and the above applies to them as to the opening of mines, &c. as well.

Tin Ores.—The deposits of these may be divided into the vein or lode, and the alluvial, shallow or deep, *i.e.*, recent and prehistoric. As regards the former, existent at Ben Lomond, Mount

Bischoff, Blue Tier (Gould's Country,) Mount Heemskirk, and elsewhere, it is apparent that the mining, dressing, and other processes of same have not as yet been so successful as the percentage of metallic tin in the ores would warrant. That most valuable tin lodes occur at the places mentioned admits of not the slightest doubt, but, at the same time, it is also true that persons only slightly, or almost wholly accustomed to the working and dressing of *other than tin ores*, have had the sole control of affairs (West Coast), and that the planning or selection of ore-dressing machinery has been, by them, of a kind resulting in the erection of unsuitable plants; all these matters militated, disastrously almost, against the profitable outcome of this description of vein or dyke mining. After the excessive expenditure which has been unfortunately incurred, would it not be advisable for persons interested to regard their mines as requiring *specially skilled labor* by means of which these ores would receive proper treatment on recognised principles?

With regard to those peculiar and deeper tin deposits at Mount Bischoff, they still maintain the front rank as regards ores in sight and production of metallic tin, and there is every evidence of such continuing for years to come.

Next to it, that valuable cluster of alluvial (pliocene) gravel mines, styled "Brothers' Home" in the Ringarooma district deserves every attention; with a height of tin-bearing gravel exceeding 80 feet, by a width of from three to ten chains in places, and a proved* extension of these sub-basaltic deposits for more than eight miles towards Gladstone—all virgin ground—it would appear that the extent of the workings and the means employed for washing down these immense deposits are not at all on a par with the great scope of tin-bearing country that can be worked thereabouts. To see the puny attempts made, with one exception (B. H. No. 1), of *hydraulicking* this gravel with jets from 1½ to 2 inches in diameter only, and considering the small number of men employed at all of these mines, and still obtaining such very satisfactory results, the completion of the North-Eastern Water Scheme can alone bring about a more satisfactory state of affiairs, beneficial alike to the mine-owners and the Colony at large.

At the Blue Tier and vicinity (and recently also at Mount Heemskirk) alluvial tin is still obtained in considerable quantities from shallow workings; eventually this production must more or less cease altogether, as those deposits, so very rich formerly, approach exhaustion, and thereupon the tin-bearing veins, lodes, dykes, and impregnations will require to be taken in hand for a more equable and permanent yield.

Gold.—A similar classification obtains here as with the tin deposits Of the former, the "Tasmania" Reef at Beaconsfield still stands pre-eminent on account of its richness, permanency, and extent, especially at their lower level, placing same in a very high position amongst the profitable auriferous lodes in the world. The Florence Nightingale Company, adjacent, also continues to raise rich stone from their deeper levels. At Lefroy some of the mines have been abandoned, and, with the exception of the New Chum Line of reef, operations have been reduced seriously, so as to depreciate property and reduce the number of miners and inhabitants very considerably. Speaking generally, the cause of this desertion of so many mines which, not very long ago, gave profitable employment to a large number of miners and others, cannot be attributed to the sudden discontinuance of the auriferous matrices, except in a very few instances. And, it may be stated, this that is no exception to the general behaviour of gold-bearing quartz reefs elsewhere; only here, in Tasmania, there exists a feeling of doubt and uncertainty as to the *recurrence* of such lodes at deeper levels, the same as it did in Victoria before the rich Sandhurst reefs were rediscovered beneath a stratum (320 ft.) of non-quartziferous schists and no sign of gold. There existed there the same as here, a want of confidence on the part of the management, and, in consequence, all available profits having been incontinently divided amongst the shareholders, leaving no money in hand as a reserve for sinking the shafts deeper in order to exploit the deeper ground. With such an example as is afforded by the present opulent Bendigo (Sandhurst) quartz-mining district before us, where, besides other objections, the mining at deeper levels had been decried on *theoretically scientific* (?) grounds as totally oppose to principle, every effort that could legitimately be made should be undertaken with a view of testing the deep-lying strata for auriferous lodes which, in my opinion, will be found to occur, as already indicated, in the bottom of the New Native Youth Gold Mining Company's shaft, at a depth of 812 feet from the surface, where a well-defined quartziferous formation has been intersected, carrying a little gold, and in a level at 800 feet gold has also been seen. Considering that the last payable quartz was worked at and above the 320 feet level, this re-appearance or occurrence of gold-bearing quartz is certainly an auspicious feature.

At the New Chum Line of reef the West New Chum Company have been persevering with the extension of their deep workings; the present depth of their shaft is 424 feet; in the bottom levels the shoots of gold still continue in depth, and numerous spurs of veins of quartz dip in the direction of the reef at both walls, which is always considered a very promising feature. This line of reef has been very regular in its value from the surface to the present depth, and if any deep sinking should in future be authorised, the prospects here are very promising for eventual success.

---

* See Report, No. 99, 1884.

The Specimen Reef, at the head of Long Plains, near Mount Cleveland, West Coast, is a very regular formation of auriferous quartz; the occurrence of the gold, however, is most peculiar, as same is near the surface, embedded in a black ochreous substance filling the cellular cavities of the quartz, and found to be extremely rich; similar rich "shoots" of quartz have been found in the two adits driven from lower levels, where the gold, however, occurred enclosed in chiefly undecomposed arsenical pyrites. The company are opening the mines systematically previous to the erection of suitable crushing machinery.

The King River Company, near Lynch's Creek, have also discovered very rich quartz at and near the surface; they are now thoroughly testing the reef, which is improving from almost barrenness at greater depths, and the gold appears as more equably distributed through the lode than before.

The deep alluvial (pliocene) sub-basaltic deposits have been tested both at Lefroy and Back Creek by means of the diamond drilll; the geological features were found to be, in both cases, most encouraging for the existence of deep gold-bearing gravels in well defined "leads" or "gutters;" the lower beds of quartz-gravel and conglomerated wash as intercalated by other beds, composed of black clays interspersed with large trunks of trees (lignites), are in every respect, lithological or mineralogical, closely allied to those found in Ballarat, Creswick's Creek, Malmsbury, and in California. Unfortunately, for some reason or another, the proprietaries failed, after boring with the diamond drills, to practically prove the real value of these deposits by means of shafts or other prospecting operations, so that these *dormant goldfields** still remain *in statu quo*. The shallower workings in several districts continue to give employment to a number of miners, with average results. A new discovery was made on the Dorset River, between Alberton (Mount Victoria) and Upper Ringarooma, which gave at first good yields of heavy gold; but these pseudo diggers from the neighbouring farms appeared to lack that necessary perseverance to follow the runs of gold,—they lost it, and now the place is abandoned.

The West Coast still presents the most favourable inducements for adventurous gold—alluvial—miners; wherever they have (in so small numbers) succeeded in penetrating that very difficult and almost inaccessible gold country their earnings have, in almost every case, been very satisfactory and, in several instances, from year to year, extremely remunerative. As a matter of fact, the actual gold yields cannot be ascertained, but sufficient information has transpired of its being scarcely surpassed by any other similar goldfield in the other Colonies. All that is wanted is a larger population, main tracks from one deposit to the other, and facilities for provisions, in order to develop this extensive and rich goldfield, to which I drew attention in my first Report of 1881, and which stretches from Mount Cleveland to beyond Mount Donaldson in the north, to the north west of the King and probably of the Gordon Rivers in the south.

Silver and Silver-Lead Ores.—All the samples or specimens of these metals were found to contain both metals; in some instances copper was also present (fahlore.) Rich silver ore is reported to have been found at the Scamander River, East Coast; and at Mount Claude, West Devon, a belt of rich ore occurs; a long adit has been driven, but the ore was found small; now they are following the veins in open faces in order to test same thoroughly. Another rich deposit has been discovered near Mount Zeehan recently.

Iron.—Large quantities, it is well known, of such ores obtain at Ilfracombe, the Blythe River, and near Penguin; the former, however, contains a small per-centage of chromium, which was found to deteriorate the iron; this admixture has not been found in America an obstacle to its utilisation.

Manganese.—Ferro-manganese occurs at Mathinna, Mount Victoria, and other places; near Mount Zeehan, West Coast, an immence deposit has been discovered assaying over 43 per cent. of manganese; in California 35 per cent. yields good profits, and it is there much used for the manufacture of steel rails and chlorine gas, so that a market for it should not be very difficult to find.

Copper occurs chiefly as sulphurets, a little of carbonates, and small particles of native metal. At Saxon's Creek, near Beaconsfield, an extensive deposit of copper sulphurets has been found only nine miles from the nearest port. Nothing has been done as yet beyond driving an adit and opening several branch workings. Near the Wilmot River and Penguin small nests of pure prismatical native copper occur in the porphyrites and felsites.

Nickel.—This ore I first discovered in the main adit of the late Mount Victoria Gold Mining Company, Salisbury, near Beaconsfield; the assay gave nearly 10 per cent., which elsewhere yields a profit; the mines are now abandoned.

Antimony occurs as a strong band with a gold-bearing quartz reef near Lefroy; at the present price of this ore it would be remunerative to work this lode.

* See Report No. 45, page 4, and Report on the Lefroy Goldfield, page 9.

Slate of from medium to good quality has been wrought near Back Creek, on a large scale; a new deposit near Turner's Marsh is being opened by means of powerful mining and dressing machinery; skilled slate miners are imported from Wales, and the speculation is likely to turn out a success.

Lime and Marble.—The former occurs in many places, from the fossiliferous beds in the coal measures to the pure carbonates in the Silurian strata; the latter has been found near Beaconsfield, of very good quality and durability.

Infusorial Earth.—Thick beds of this rare mineral have been found at the Piper River. When the Launceston to Scottsdale railway is completed, the manufacturers of nitro-glycerine explosives will probably use it, as it is very pure and easily procurable.

From the above it will be perceived that in this Colony there is no lack of extensive mineral and metalliferous deposits; most of these have been only looked at, or the preliminary workings have but impinged on those deposits, the actual amount of work being very limited. The great desideratum undoubtedly is the introduction of *foreign capital*, together with *skilled labour*, in order to successfully develop these valuable resources. If that were done it would put a stop to the present spasmodic methods of carrying on mining operations, because with ample capital at the disposal of mining companies, any temporary cessation of yields or discontinuance of lodes, &c. would be tided over, and the whole operations would be carried on energetically, systematically, and without intermission. The Directors of mining companies would likewise find it of utility to make themselves *personally* acquainted, on frequent occasions, with the character of the lodes, &c. and the general requirements of the concerns in their care; at present the mining managers have either too little or too much control or power.

Now that most of the outside leases have been forfeited, and the remaining companies are really in possession of lodes, &c., very little, if any, attention should be, it is hoped, given to what may be termed "*Paper Mining*," which has, on several occasions, produced so disastrous results, to the great injury of our mining industry.

I have the honor to be,
Sir,
Your obedient Servant,

G. THUREAU, *F.G.S.*, *Inspector of Mines.*

The Secretary of Mines, Hobart.

APPENDIX A.

LIST of Accidents in the Mines of the Colony of Tasmania during the Year ended 31*st December*, 1884.

Gold District.	*Mineral District.*	*Mine Owner.*	*Date of Accident.*	*Connective No.*	*Cause of Accident.*	*Killed.*	*Injured.*	REMARKS. *Name of Person injured.* — *Mine Manager.*
Beaconsfield	...	Tasmania G. M. Co., Registered	10 January	1	Falling of a truck	...	1	William Hills, M. — Joseph Davies. In jumping on a passing truck, he failed to secure his seat in time, and thus one of his legs got severely jammed against a shoot from which the trucks were filled at the side of the tramway line, worked by horses in No. 2 tunnel. The upper portion of the thigh is badly bruised, but the doctor does not anticipate any serious consequences.
...	Tarleton Coal Mines	William Riley	5 February	2	Slipping off the brace into the shaft	...	1	John Wardly. — William Riley. This miner in landing a box filled with rock, which he had raised from a shaft by means of a windlass, from a depth of 12 feet, slipped and fell down the shaft head foremost. The doctor found his collar bone broken, and slight internal injuries. He was recovering by later accounts.
Beaconsfield	...	Florence Nightingale G. M. Co., Registered	13 February	3 and 4	Injured whilst fitting lifts	...	2	William Bennett and William Flanagan. — George Webb. These two miners were assisting the pitman, who had added two lengths to the drawing lifts. They were steadying those 15-inch draw lifts, and keeping same in position whilst the former was screwing on the collar launder. By some means, however, the lifts were allowed to slip, and in order to save themselves from falling they each got their hands cut somewhat severely.
...	Gould's Country	Anchor T. M. Co., Registered	20 February	5	Fall of rock	...	1	John Read. — John Symons. A stone which fell in some parts of the workings broke in two whilst rolling down, and unfortunately Read in trying to escape was caught by one-half unexpectedly. Besides having both of his legs broken, no other injuries were inflicted. After a little while he was taken to the Campbell Town Hospital.
Beaconsfield	...	Tasmania G. M. Co., Registered	11 March	6	Falling down pass	...	1	Robert Foster (18.) — Joseph Davies. Whilst lowering some timber from No. 2 to No. 3 levels through a pass, by means of a rope fastened by himself, it slipped, and the jerk precipitated Foster to the bottom, a depth of 50 feet. The examination by the doctor disclosed that he had sustained, besides a flesh wound on the head, a severe injury to one of his ancles.
Ditto	...	Florence Nightingale G. M. Co., Registered	1 April	7	Fall of timber down a shaft	...	1	Edward Rosewarren. — George Webb. The man at the windlass erected at No. 3 level for the purpose of sinking the main shaft deeper, did not, in lashing a piece of timber, use sufficient care, so the timber slipped out of the rope and fell upon Rosewarren at the bottom. His head was cut open, and his shoulder bruised.
...	Frome River	Go By T. M. Co.	22 April	8	Fall of a branch of a tree	...	1	George Pratt. — James Oliver. In removing a tree by grubbing out of the trench of the workings it fell, and a branch rebounded to the ground to a considerable distance, where it struck Pratt, who was considerably injured, but apparently not dangerously so.
...	Gould's Country	Anchor T. M. Co., Registered	26 April	9	Falling off a truck	...	1	David Medwin. — John Symons. This man rode on a truck down an incline to the mine, a practice which the Mine Manager had specially and strictly forbidden. Medwin fell off the truck, and broke his leg. Although this could scarcely be termed a "mining" accident, still as it occurred at or upon a mining tramway, it may be enumerated here.

Gold District.	*Mineral District.*	*Mine Owner.*	*Date of Accident.*	*Connective No.*	*Cause of Accident.*	*Killed.*	*Injured.*	REMARKS. *Name of Person injured.* / *Name of Manager.*
Beaconsfield	...	Florence Nightingale G. M. Co., Registered	26 April	10	Falling down in the stopes	...	1	This was not a very severe accident, but having been reported, it is placed now on record.
—	Thomas's Plains	Main Creek Co., (private)	30 April	11	Explosion of dynamite	1	...	Ah Fun. R. B. Ingles. In the course of clearing the ground for mining operations, Ah Fun was blasting a log with dynamite ; he did not allow sufficient time, and the charge exploded before he could get out of the way. A piece of flying timber struck him on the head, causing a very severe injury. He lingered unconsciously until his death the next morning.
—	Gladstone	Esk T. M. Co., Registered	5 May	12	Falling tree struck him	...	1	James Duffy. Fredk. M'Gregor. A tree was being grubbed so as to remove it out of the way of the workings. It fell, and injured Duffy considerably.
Beaconsfield	...	Tasmania G. M. Co., Registered	7 May	13	Knocked down by the arms of a capstan	...	1	Stephen Foster (56.) Joseph Davies. S. F. was with four others employed to lower the "windbore" of the pumps to the bottom of the shaft ; a jerk or slip took place, causing the hold these four men had of the arms of the capstan to be released, causing it to revolve rapidly, and thereby S. Foster was caught and knocked down. His head was cut in several places, but there were no bones broken.
Lefroy	...	New Chum G. M. Co., Registered	21 May	14	Pricking out an unexploded charge of blasting powder	...	1	John Barker (21, m. n. j.) Hy. Barker. John Barker, a contractor, went to the unexploded hole charged with blasting powder, after waiting about half an hour, and then he pricked out a charge by means of a copper pricker, when about 1½ inches of blasting powder exploded, injuring his hand.
—	Thomas's Plains	Onyx T. M. Co., Mr. Gill's (private)	22 May	15	Fall of earth	1	...	Ah Chang. G. W. Thomson. This miner, along with some other Chinamen, worked at this mine for over seven years, and was held to be quite an experienced miner. In picking down a face of gravel only 6 feet deep, about 3 tons of it came away without the slightest warning, and buried him completely. It took nearly half an hour before he could be extricated by his mates, when he was found to have been suffocated. The Mine Manager ascribes the accident to have been caused by the very heavy rains having been followed by a severe frost cracking the faces, and rendering the same very treacherous. As those workings are but 12 feet deep, and the ground is worked by benches 6 feet high only, the man being killed as described on the upper terrace, blame does not appear to have been attached to the Mine Manager or the miner himself.
Beaconsfield	...	Tasmania G. M. Co., Registered	27 May	16	Fall of a piece of quartz	...	1	Elisha Martin (16.) Joseph Davies. This boy was working at the No. 4 level, filling trucks from a "shoot;" whilst he had the door open a piece of quartz fell down the shoot, passed through the door, and cut his face open, necessitating the doctor's stitching the wound.
—	Ben Lomond	Tasmania T. M. Co., Registered	12 June	17	Falling down a shaft	...	1	William Dodd. John Dennis. Three men were sinking the main shaft from below the 50 feet level. W. Dodd was on the brace, and he allowed somehow the bucket to slip into the shaft ; he himself caught hold of the rope, and fell with it, keeping hold of it, to the bottom. The new windlass stood the shock admirably, and Dodd was also not much hurt, nor were either of the other two men in the shaft much hurt. Dodd wanted to go to work again, but he was not permitted, as, in all such cases, he felt not incapacitated from doing so. Next morning he was very sore about the hip and thighs.

—	Mt. Heemskirk, West Coast	Montagu T. M. Co., N. L.	23 June	18	Injured by a falling plumb-bob	...	1	Michael Meara (u.) Alex. Ingleton. This man was engaged in dividing the main shaft into three compartments, and in so doing a plumb-bob fell and cut his head open; but no ill effects were apprehended, as he brought up his tools and got his injuries attended to.
—	Mt. Bischoff	Mount Bischoff T.M. Co., Registered	18 July	19	Whilst emptying trucks he injured his hand	...	1	William Dickinson. Ferd. Kayser. In emptying a truck Dickinson got his fingers so very severely crushed as would incapacitate him, in the doctor's opinion, from working for about six weeks from date.
Beaconsfield	...	Little Wonder G. M. Co., Registered	21 July	20	Fall of rock	...	1	Andrew Campbell (22, m.) Per J. Slade. As one of a party of tributers, he and mates were preparing to put in some timber at the bottom of a "rise," when suddenly a mass of rock detached itself from the side and struck A. Campbell on the back and shoulders; he was badly bruised, but no bones were found to be broken.
—	Moorina (Main Creek)	Mutual T. M. Co., Registered	24 July	21	Fall of a stone	...	1	Thomas Brooks. James Auton. Whilst working in one of the faces, a stone fell upon Brooks' head, cutting it open, inducing him to seek medical advice in Launceston.
—	Branxholm (Ruby Flat)	Hope T. M. Co., (private)	29 July	22	Fall of clay	...	1	Hip Con (Chinese, 47, u.) S. Hawke. The alluvial (stanniferous deposits) at the Ruby Flat, and especially those at the Hope Co., are worked by water gravitating upon the benches, the whole depth being about 20 feet; 9 feet of the top are thus run off for a width of from 15 to 20 feet for the bench. The accident occurred on this top bench by a fall of clay which, owing to the surface soil being covered by roots, &c., gave no indication of weakness. The Mine Manager was absent at the time; and after careful examination of the ground he attributed the accident to carelessness. The injuries were chiefly internal, caused by pressure of gravel falling upon the man.
Mt. Victoria (Alberton)	...	Mercury G. M. Co., Registered	29 July	23	Fall of quartz whilst repairing a hopper	...	1	Timothy M'Donald (28, s.) Edward Hardy. This appears to have been a case of gross carelessness. It appears T. M'Donald was instructed to screw a bolt-nut inside of the hopper, into which the trucks were emptied in order to furnish the battery with crushing dirt. Whilst so engaged, the trucker on the top line of tramway came along, and, without looking down into the hopper or calling out, tipped a truck full of quartz upon the man below. M'Donald was severely cut about the head, and four of his teeth were knocked out.
—	Cascade River (Branxholm)	Clyde T. M. Co., (E. J. Tracy tributer)	4 August	24	Fall of earth	1	...	Gee Jim. Superintendent of Police. Gee Jim was killed by a fall of earth at this mine, and an inquest was to be held on the 31st July.
—	Branxholm	Payne & Pogson, T. M. Co., (Private)	4 August	25	Cut from an axe	...	1	William Talbot (25, u.) James Grant Whilst engaged in cutting a floor race for carrying away the accumulating tailings at the workings, his foot slipped, causing the axe he was using for cutting away a root to injure his other foot. He was employed as a labourer at the mine.
—	Thomas's Plains	Morning Star T.M.Co.	Dec. 1883. Died on 6th Aug. 1884.	26	Fall of earth	1	...	Kee Wee. Superintendent of Police. This Chinaman received severe injuries by a fall of earth at this mine in December last year, and the case was never reported by the Manager. He has been ill ever since; and a Chinese doctor has been in attendance on him, he having lost the use of his limbs. He died on the 6th August. The Mining Manager's name is Lee Cock, and the witnesses of the accident were Ah Fam, Ah Fue, Ah How, Ah Loung. The fact of the mine being altogether in the hands of Chinamen, who did not probably know of the law affecting accidents, together with the time elapsed since the accident took place, eventually resulting fatally, were not considered worthy of proceedings at this date.

Gold District.	*Mineral District.*	*Mine Owner.*	*Date of Accident.*	*Connective No.*	*Cause of Accident.*	*Killed.*	*Injured.*	REMARKS. *Name of Person injured.* — *Name of Manager.*
—	Mt. Bischoff	Mt. Bischoff T. M. Co., Registered	8 August	27	Fall of a bag full of tin ore	...	1	Henry Williams. — C. H. Hall While employed in the lower dressing sheds in bagging tin ore, near the elevator, it appears that one of the bags hoisted upon the latter, to nearly 40 feet in height, fell out of the machine upon H. Williams, causing one of his legs to be fractured. He was attended to by the Doctor at the local Hospital.
Mt. Victoria	...	Mercury G. M. Co., Registered	9 August	28	Falling against a truck, off the line of tramway	...	...	John Williams (62). — Edward Hardy. J. Williams was taking two trucks full of quartz down the line to the battery. Two wheels of one of the trucks came off the line, through the tail end of it coming open, causing a severe and sudden stoppage and concussion. The man fell against the truck, causing partial unconsciousness, from want of breath; but he eventually recovered, though he appears to have been internally injured to an extent not yet ascertained.
—	Gladstone	Mt. Cameron T. M. Co., Registered	25 August	29	Fall of earth	1	...	Ah Ho (46, u.) — Percy Dickinson. After this accident had been reported by the Agent, the Inspector inspected the scene, and found that these Chinamen had worked an alluvial deposit by cutting under the bank of gravel, which was about 12 to 14 feet high, to a depth of from 3 to 5 feet, leaving small "pillars" at equidistant intervals. The gravel being pretty compact, no danger was apprehended; but in cutting out the "pillars" on this occasion, it happened that at the back of the face, about 7 to 8 feet away, an old prospecting shaft had been sunk some time ago, containing some water, which, through percolation, had loosened the gravel; so, when those last supports were knocked away, that part of the face suddenly, and without warning, fell over and buried this miner, who had some years' experience in working that and similar ground in the Gladstone District. Under the circumstances, a little more foresight might have prevented this fatality; but Chinamen, as a rule, work without much consideration of what may be ahead of themselves in this or other mining ground.
—	Mt. Cameron, South	John Simpson	25 August	30	Fall of earth	...	1	———. — John Simpson. A Chinaman was working in a face of tin-bearing gravel when a slip took place, by means of which his legs were bruised.
Beaconsfield	...	Florence Nightingale G. M. Co., Registered	26 August	31	Fall of a bucket	...	1	John Hancock. — R. H. Price. At their No. 3 level a windlass is being employed for raising stuff from an under-hand stope; and, on the bucket being lowered, it became by some means detached from the hook and fell upon the miner beneath, cutting his head through the scalp.
—	Main Creek, Ringarooma	Mutual Tin M. Co.	27 August	32	Fall of a tree	...	1	George Marcell (23, s.) — James Auton. A tree standing near the workings suddenly fell into the workings, injuring this miner.
—	Waratah	Stanhope Tin M. Co., Limited	1 September	33	Whilst blasting	...	1	John Evans. — Richard Bailey. It appears that J. Evans and his mate were driving a tunnel, and had each charged a hole with powder. It was desirable that the former (Evans) should light his fuse first, which he did; but, on attempting to set fire to the other fuse, it was found to be difficult, owing to the fact that Evans, having cut his finger previously, the blood oozing from the wound prevented same from being done; so he left, as he thought, only one fuse burning. It was by him intended to run back and light it, which he did within ten minutes of the first shot going off. When he got to the "end," however, the blast went off, as it still must have been ignited in the first instance,—the sand and

								stones being thrown about him by the explosion. One small stone entered his eye, and was extracted by the Hospital Doctor. As the miner left the charged hole, to his thinking, unexploded, or, rather, that the fuse had not ignited, there is no provision in the Act to prevent him going back ten minutes after the first explosion, and therefore the whole occurrence may be classed as unavoidable. Had the fuse ignited and the shot missed, then would a breach of the law have taken place, which does not allow any such unexploded charge to be approached at less than thirty minutes after igniting the fuse.
Beaconsfield	...	Florence Nightingale G. M. Co., Registered	10 Sept.	34	Bursting of a steam pipe	...	1	Frank Tregaskis (Engineer). George Webb. After making an expansion steam joint of the pipe connecting No. 1 boiler with the pumping engine, the steam was very carefully and slowly turned on, as is usual, and then one of the joints began to blow considerably. They stopped to renew the joint insertion, when suddenly the S piece burst with a report equal to a cannon. The Engineer was working close by caulking a joint, and he had a narrow escape from being killed; but, beyond a great fright, occasioning partial unconsciousness for a few minutes, he was not otherwise hurt.
Beaconsfield	...	Florence Nightingale G. M. Co., Registered	5 October	35	Whilst descending in a cage	...	1	Will. Williamson. Geo. Webb, M.M. Whilst being lowered down the shaft, in order to ascertain the height of water in the shaft, it appears the cage got jammed, and on his reaching out for the lever which is connected with the safety clutches, his hands got caught and were severely squeezed and grazed on the back although no bones were broken.
...	Moorina	Chance T. M. Co., Registered	10 October	36	Fall of rock	...	1	Michael Egan (40, s.) John Branley. M. E. was working in the tail-race, and a miner working in the "face" inadvertently let a stone fall into the race, which caught Egan, and injured him both over the eye and nose, which were cut open.
Alberton	...	Mt. Victoria G.M.Co., Registered.	14 October	37	Fall of rock	...	1	Daniel Stephens, (30, s.) H. Hays. Whilst engaged underground in filling the stopes with mullock, a large piece rolled down and caught D. S.'s hand, severely injuring two of his fingers.
...	Waratah	Mt. Bischoff T.M.Co., Registered	16 October	38	Missing his footing	...	1	Peter Broadie, (23, s.) H. W. F. Kayser. This appears to be a somewhat unaccountable accident; he was working in the "white face," and from some cause or another his right foot twisted under him, breaking the leg at the ancle, whereupon he was conveyed to the local hospital.
Beaconsfield	...	Tasmania G. M. Co., Registered	30 October	39	Crushed by roller of pump sweep-roller	...	1	Henry Rigby (15½, s.) Joseph Davies. Whilst repairing the pump sweep-rod, on the surface, the wooden roller of same rolled over R.'s foot; the doctor could not then ascertain whether any bones were broken or not, but the crushing was severe.
Ditto	...	Ditto	9 November	40	Fall of quartz	...	1	Edwd. Rowbottom (27, m.) Joseph Davies. Whilst stoping above the No. 4 level, a piece of quartz in the roof became detached, and fell from a height of 4 feet on R.'s head, inflicting a cut which the doctor deemed not very serious at that time.
Ditto	...	Ditto	26 November	41	Injured whilst lowering pumps	...	1	John Sullock, (62, m.) Joseph Davies, M.M. Whilst engaged, with others, in lowering the pumps from the No. 4 to the No. 5 level, S. was using a slab to lever the pumps past the timber in the shaft; in doing so, he missed hold, and the lath struck him on the body. He continued working for two or three days, but had eventually to desist, when the examination by the Mine Doctor proved one of his ribs to have been fractured.

APPENDIX B.

PARTICULARS as to the Observance of the Regulation of Mines Act, 45 Vict. No. 8, 1881, by the Mining Proprietaries.

Sections 8 and 9, General Rule XIX.

1884. *January.—The Waverley G. M. Co.* were complained against for using a defective winding rope unsafe for mining purposes, and for their employing young and inexperienced persons both as engine-drivers and as bracemen. Immediate notice was given directing them to repair the rope and to work the engine and brace by reliable and capable drivers and bracemen. The company, soon after that notice had been given, ceased operations at their mine, as the yield of gold from the quartz proved unremunerative.

Sections 8 and 9.

February.—The North Brothers' Home T. M. Company, Limited.—In the latter part of last year, owing to the dangerous methods adopted in working a face over 100 feet vertical by means of hydraulic sluicing with nozzles, &c., this company was enjoined, on complaints reaching the Inspector, to adopt a different and more safe mode of working. They applied to be permitted to modify that method, and, under certain conditions, their application was granted.

The Specimen Reef G. M. Company, Registered, were granted permission, under Section 12, to adopt special rules for working their mines. On the recommendation of the Inspector, the Hon. Minister of Lands and Works signed these rules, and they became law under the provisions of the Act.

At *Mr. Riley's Tarleton Coal Mine*, near Latrobe, an accident took place, and the mine was thereupon inspected; in doing so it was noticed that numerous coal-pits were located everywhere about there, and several in close contiguity to main roads and tracks. As many of these pits had been sunk years ago, and from their number it was quite impossible to get them filled up, &c. under General Rule VI., as owners were absent or could not be found, *notices* were served on present owners to cause *printed notices* to be displayed on trees and posts warning people to be careful, and to avoid such excavations in that locality.

At New Town a young man was, after some time, found dead at the bottom of an abandoned coal-pit belonging to Mr. T. Meredith. The examination of the old shaft in question showed that it was securely and substantially fenced, but that, in bird-nesting, the deceased had crawled beneath the fence and losing his balance had been precipitated to the bottom. As there were quite a number of old coal-pits totally unprotected by fences, &c. on that and the adjoining properties, *notices* under General Rule VI. were served by post on the following mine-owners; viz.—Messrs. Timothy Meredith, James Baker, Ebenezer Sims, and Henry Stops, all of New Town.

The Stanhope T. M. Co., Limited, at Waratah, were found to infringe General Rule XVI., and the men employed in sinking their engine shaft close to the Mount Bischoff Company's boundary descended and ascended on the buckets in use. Notice was served by post on the manager to provide, for the use of those miners using the buckets as stated, proper straps or other fastenings, rendering accidents impossible.

The Florence Nightingale G. M. Company, Registered, at Beaconsfield, were served, under the following circumstances, with a notice directing them to alter a portion of their outlook from the engine-house to the brace. It was noticed that the windows at the roof of the engine-house were too low, and admitted only about a couple of feet of the cage to be seen by the driver; as this limited view would lead to dangerous occurrences in cases of overwinding or breaking of ropes, &c., the above action was very necessary.

The Lefroy G. M. Company, (Drainage Union,) at Beaconsfield. This proprietary, in sinking a very large main shaft, utilised one of the three compartments as a ladderway, but having ignored Section 6, and having constructed vertical ladders to a depth exceeding 180 feet without any platforms, "since" the passing of this Act, were clearly liable to pay a penalty if proceedings were taken. After a consideration of all the circumstances, one month's notice was given to construct the necessary platforms, without which the miners would in ascending or descending these vertical ladders without rests incur great danger.

The New Native Youth G. M. Company, Registered, at Lefroy, were informed against for leaving their workings in such a state, in close vicinity of a large reservoir filled with water, as to threaten a collapse of their main shaft, levels, &c., underground, and of their extensive crushing plant on the surface. The Inspector reported the case to the Hon. Minister of Land and Works.

The North Brothers' Home T. M. Company, Limited, at Ringarooma. This mine was inspected in September, in order to ascertain, amongst other matters connected with a large water scheme, whether the notice served on the Company in the early part of this year had been complied with or otherwise. Though not quite strictly in accordance, the workings at the main and eastern "face" were found not nearly in so dangerous a condition as when inspected previously, and it was found that certain precautionary measures were observed which greatly reduced the danger to the employees.

The Triangle T. M. Company, Registered, adjoining, were found to have abandoned the workings at the "face" which were found to be in a dangerous condition, and that they had opened at a higher level whereby the operations were being carried on much more safely.

G. THUREAU, *F.G.S., Inspector of Mines.*

WILLIAM THOMAS STRUTT,
GOVERNMENT PRINTER, TASMANIA.