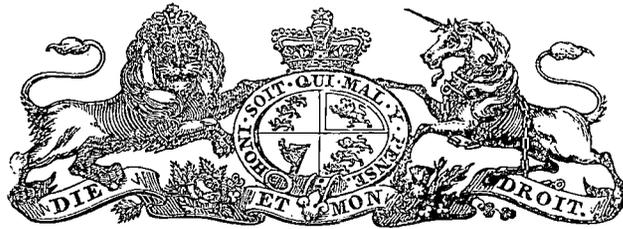


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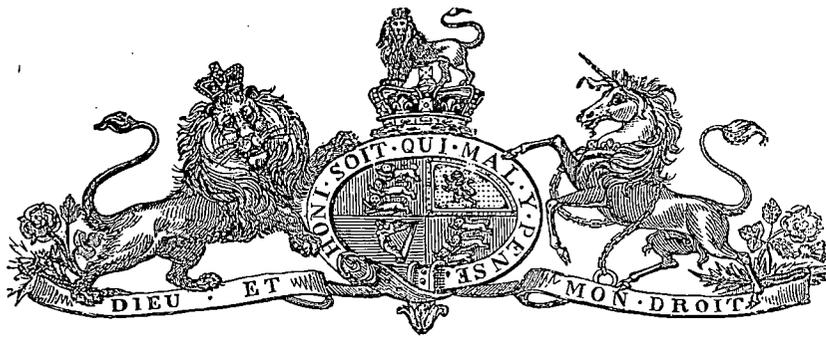
1887.

PARLIAMENT OF TASMANIA.

REPORT OF THE SECRETARY OF MINES
FOR 1886-7:

(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, 15th July, 1887.

SIR,

I HAVE the honor to submit my Report for the year ending 30th June, 1887, upon the Mines Branch of the Lands and Works Department, with some brief remarks upon the progress and present condition of the industry.

A perusal of the reports of the various Commissioners, together with the comparative tables which will be found embodied in this report, will be sufficient to satisfy any reasonable mind that the mining industry is in a progressive and satisfactory condition, and that during the year which has just closed,—although the yields of gold and tin have not very materially exceeded those of the previous year,—there has been a larger and more extensively distributed amount of *bonâ fide* and legitimate prospecting done this year than during any like period. This prospecting has, of course, been attended with the usual crop of disappointments, nevertheless, discoveries are from one end of the Colony to the other being almost daily reported; and when the wild and impenetrable character of much of our mineral country, notably that on the West Coast, is considered, what wonder is it that they are so tardy of development? Not the less surely, however, is the mining industry progressing. Fifteen years ago our exports of tin and gold were *nil.*: up to date they have risen to the value of five and a quarter millions sterling.

The most notable discovery during the year is that known as the "Iron Blow," Gold. at the Linda, West Coast. The deposit is described to be unique in character, and extraordinarily rich in the precious metal. Litigation, and the difficult nature of the country, have so far retarded its development. Other discoveries have been made in the vicinity, and also in the eastern portion of the Colony at Mathinna. The coming summer will, no doubt, prove their value.

Discoveries are reported at the Heazlewood River, West Coast; at Mount Zeehan; Silver. and at the Scamander River, on the East Coast.

Several important discoveries, in new localities, extending from the Whale's Head, Tin. on the extreme West Coast, to Freycinet's Peninsula on the East, have been reported, and are awaiting development. Speaking of the tin mining industry, it may not be uninteresting to state that from the year 1873, when our first export of four tons was made, the total export of metallic tin has now reached 50,000 tons.

The development of native coal has during the past year made a highly satisfactory advance; whereas up to the commencement of the year the output only averaged about 3000 tons annually, the total output for the past year has reached upwards of 13,000 tons. The importance of this industry to the Colony cannot be over-estimated. The quality of the coal is good, both for domestic and steam purposes, and, even if it cannot be wrought at such cost as will admit of its profitable export, it will, beyond doubt, effectually exclude imports, and be the means of developing other industries not yet thought of. Coal.

Attracted by the evident desire of British capitalists to invest in Australian mines, efforts are in progress to place some of our more promising Tasmanian mining claims, both gold and tin, upon the English money market. Given a legitimate *bonâ fide* venture, there can be but little doubt that the introduction of English capital for the development of our mining resources would result satisfactorily alike to the investors and the Colony. Without doubt there are many honest and genuine ventures which are English capital.

languishing for want of capital which this small community is unable within itself to raise for their profitable development: but, unfortunately, as with horse-dealing so in mining speculation, everything is counted fair. Great caution is therefore necessary on the part of both investor and colonist to ensure that no bogus schemes are placed upon the market.

Chinese. Uneasiness is beginning to be manifested amongst the mining population relative to the increasing number of Asiatics engaged in mining. There are at present some seven or eight hundred of these men upon the various tin-fields in the Eastern and North-Eastern Districts, and although, possibly from their social life and habits, they are not a desirable class of colonists, they chiefly occupy ground which Europeans will not work; they are, as we at present have them, peaceable, law-abiding men, and they conform with creditable strictness to the mining laws and regulations.

Technical education. Arrangements are in progress for the establishment, at present in a small way, in the various mining centres, of classes for the instruction of prospectors and working miners, in modes of identifying various ores, making practical tests and assays, use of blowpipe, and other matters which may be readily taught and learnt, and which, I feel sure, will be found of great use to the intelligent miner and prospector.

General remarks. I have only to repeat here what I said last year; namely—"that considering that mining in Tasmania is yet in its infancy, we have ample evidence that even in its present condition it is the most important factor in the well-being of the Colony; and whilst making due allowance for the inevitable disappointments inseparable from the speculative nature of the industry, we have every reason for believing that the business of winning mineral wealth from the ground is in a sound, healthy, and hopeful condition."

Officers and their work. The staff in Hobart remains unaltered, and is barely adequate to cope with the current work. In addition to the office of Registrar of Mines, the officer filling that position has lately been appointed a Registrar of Gold Fields also, and a complete register of all gold-mining business throughout the Colony, excepting such as is purely local, is now kept at the chief office,—an addition which, although involving a large increase of work, is found to be of great convenience to those having business to transact. At Launceston there has been a reduction of one junior clerk. If, however, the work increases at its present rate additional assistance must be afforded if efficiency is to be maintained; this, however, need not be a matter for regret. At present, both here and at Launceston the work is done cheerfully and loyally, and consequently I find no difficulty in overcoming an extra strain when it occurs.

Division of the Colony. For departmental convenience the Colony is divided into Districts as follows:—The Northern and Southern, comprising the country on the right and left banks of the River Tamar as far west as the River Forth, and on the east to the Scottsdale District, with such mineral country as there is in the southern portion of the Colony, and includes the gold-fields of Beaconsfield, Lefroy, and Lisle. The North-Eastern District comprises the whole of the north-eastern country, including several important tin-fields, with the gold-fields of Mount Victoria and Waterhouse. The Eastern District comprises the eastern portion of the Colony, and includes the tin-mining centres at Ben Lomond, Weldborough, and Gould's Country, with the extensive coal-bearing country around Fingal and Seymour, and the gold fields at Mangana and Black Boy. The Western District embraces the wide area of country extending from the River Forth northwards, southwards, and westwards to the sea; it includes the celebrated tin mines at Mount Bischoff, an extensive area of tin-bearing country at Heemskirk, the recently discovered gold-field at the Linda, and other more or less important mining centres.

Commissioners. A Commissioner has charge of each of the four divisions above described. Details of their work will be dealt with later on in this Report.

The Inspector of Mines. This officer has furnished a Report, which is annexed. It is to be regretted that mining accidents, both fatal and non-fatal, have been considerably in excess of those during the previous year; but when the hazardous nature of the employment in which miners are engaged is considered, I am satisfied that the liability to accident has been very materially reduced by the authority exercised and the advice given by the Inspector on his frequent visits to the various mining centres.

In addition to his duties as Inspector of Mines, this officer's services have been largely utilised during the year by mine-owners for the purpose of making geological examinations and furnishing reports in various parts of the Colony, added to which he has also performed similar service for the Government, chiefly at the Linda (West Coast) and at Railton. These reports, supplemented, as they in some cases are, by valuable

suggestions as to the more economical mode of developing the mines reported upon, are highly spoken of by mining men; and it is an unquestionable advantage, if not of paramount importance, to the industry that an officer qualified to do such work should be maintained.

The services of this officer, who also acted as Bailiff of Crown Lands, have been transferred to another office, and arrangements are in progress for the very necessary work of suppressing illegal mining and the unauthorised occupation of Crown lands, &c. being performed by the police stationed in the various mining districts. The Bailiff of Mines.

The drills, each in charge of a foreman, are under the immediate supervision of the Commissioner stationed in Launceston, whose report of work done is annexed. The drills have been constantly at work throughout the year, and under the still more liberal terms upon which under the new conditions they are now available to mining companies, there is no doubt but that these eminently valuable prospecting machines will not be suffered to be idle. The Foremen of Diamond Drills.

Registrars are stationed at all mining centres where the work to be done demands the presence of such an officer. At each of the principal mining districts the Registrar keeps a register containing a complete record of every transaction relating to an application for a mining lease within his district. He has also a chart fully entered up as nearly as possible to date, showing every leased claim. These are open to inspection without fee, and together with a supply of forms and all requisites for the transaction of business, afford all reasonable facilities to the mining community. Mining Registrars.

The work of providing complete and reliable charts of the several districts is provided for as far as possible. There is now no reasonable ground for complaint. Mining charts.

During the year the Regulations under the Mineral Lands and Gold Fields Regulation Acts have been codified, rearranged, and added to, with great care and due regard to the ascertained requirements of both branches of the industry. Mining Regulations.

The various provisions of these Acts are fairly complied with, and the friction which at one time existed, owing to legal managers of companies failing to understand their working, has now worn off. The winding-up provisions are now conducted under the direction of the Court of Bankruptcy at Launceston. The Mining Companies Acts.

It is a matter for regret that the first step taken by the Legislature to assist prospecting by a direct money vote has been so tardily taken advantage of by the several companies to whom grants were voted. Of the five companies who, in June, 1886, obtained each a grant of £1000 upon the £1 for £1 principle, but one has had sufficient energy to avail itself of the proffered aid, the exception being the West New Chum G. M. Company (Registered) at Lefroy. This company immediately upon obtaining the grant went vigorously to work; and having expended some £2000 in sinking their main shaft 145 feet below their 435 feet level, and in driving 257 feet on their 535 feet level, have obtained a further grant of £500, and are extending their drive in a westerly direction, where, their manager reports, "payable gold will most certainly be met with." The importance to the Colony at large of a thorough test of this extensive line of reef cannot be over-estimated. Should payable gold be found at a depth upon this line an impetus will be given to quartz mining generally such as has not yet been known in the colony. Deep-sinking vote.

The scheme known by this name, for the supply of water to the extensive area of country around Mount Cameron, is still awaiting the sanction of Parliament. The Mount Cameron Water Scheme.

Commissioners and their Reports.

Mr. Commissioner Glover, who has charge of this district, fills also the offices of Visiting Magistrate and Commissioner of the Courts of Requests at Beaconsfield, Lefroy, and George Town. He has also the immediate supervision and charge of the diamond drills. The officer reports as follows:— Northern and Southern District.

"Although the general prospects of the Northern Mining District for the past 12 months have been somewhat fluctuating, and although the promise held out by the revival of several suspended undertakings at the date of my last annual report have, owing to the spasmodic character of the enterprise which inspired the proprietors, and the inadequate capital embarked in the ventures, not resulted in successful fulfilment, yet in one portion of the district the prospects are highly encouraging, showing a marked degree of progress.

"At Beaconsfield, whilst the established quartz mines Tasmania and Florence Nightingale are affording an increase of yield, and the Lefroy Company, on the same Beaconsfield.

line, has succeeded in finding the lode whence it can be followed into that company's ground, there are also two very promising undertakings in deep alluvial mining—the Ophir and the Denmark—being energetically carried on with every reasonable prospect of success. The former of these claims, having succeeded in obtaining the co-operation of capitalists in Australia, are permitting no obstacle in the shape of expense to deter them from an effectual completion of their enterprise. The latter is working on the same deep lead, and, having erected a 10-head battery, are crushing the wash with highly satisfactory results, whilst continuing the sinking of the shaft to reach the bottom of the formation. The efforts at present in progress by agents commissioned to procure the co-operation of capitalists in England for the effectual working of the claims adjoining the Tasmania mine, will, without doubt, if successful in obtaining capital, be the means of developing in some of the said claims the reefs therein discovered, and supposed to be a continuation of the proverbially rich reef of that mine, which has never yet been struck with certainty in the contiguous claims, owing to the imperfect operations and inadequate means which have been brought to bear upon them. In the meantime, however, the proprietors of one of the subjects of this project—the Little Wonder—are hopefully, though with varying prospects, working on the reef in their ground. Several prospecting operations are also being vigorously prosecuted. The total yield of gold from Beaconsfield, ascertained with precision, and therefore irrespective of uncertain quantities obtained by diggers, &c., was for the past 12 months 30,410 ounces, valued at £113,696, which shows an increase over the previous 12 months of 9214 ounces. This, in addition to the new enterprises in prospecting, and the generally sanguine spirit and energy of those interested in mining at Beaconsfield, may be deemed a satisfactory state of progress in that gold-field.

Lefroy.

“As regards the gold-field of Lefroy, I regret to say that the same disappointment has been the result of the revival of several suspended claims which took place a year ago, owing to the want of enterprise of local capitalists and want of capital by those who are actuated by a sufficient spirit of enterprise. Should, however, the efforts which are at present being made in England to acquire capital prove successful, there can be no doubt, from the experience of the past as to several lines of reef at Lefroy, that an extensive and profitable quartz-mining field will be developed in that locality. For the past 12 months nothing worthy of record has occurred at Lefroy, except the continued energetic working of three of the mines, namely—the West Chum mine, which has recently succeeded in striking payable stone on one of its claims, and is still sinking its main shaft, a work which is assisted by the aid of the Parliamentary grant; the Unity, which is still vigorously prospecting its reef; and the City of Launceston mine, in which tributors have succeeded in finding payable stone, and are crushing with satisfactory prospects. There are also several unregistered prospecting companies at work in developing claims.

Panama Creek.

“At Panama Creek the reef, which on trial yielded over an ounce of gold to the ton, was being successfully developed by means of Australian capital, but the work has recently been suspended temporarily, owing to a dispute, and consequent proceedings in Equity.

Lisle.

“At the Lisle gold-field nothing has transpired beyond the usual alluvial work. The average number of men on the field for the past 12 months was 71, and the estimated quantity of gold obtained was 1720 ounces.

Bangor.

“At the Bangor Slate Quarry the total quantity of slates obtained for the past year was 1,139,887; a very large proportion however is still on hand, and the establishment has been considerably reduced in consequence of the small demand for the production. The average number of men employed for the year was 70; but only 47 were retained for the last quarter.

“The total yield of gold for the year from the district under my charge was 32,679 ounces, and the average number of miners employed, 470.

Diamond Drills.

“The diamond drills have been continuously employed during the year, the only delay being caused by the necessary removals. No. 1 was engaged at Longford, and subsequently at Harefield, St. Mary's, in boring for coal, but both efforts were unsuccessful. It was then immediately engaged to bore for coal at Mount Malcolm, whither it was removed, with considerable difficulty and delay, and is now at work. No. 2 drill was employed in an unsuccessful search for an alluvial tin lead at Mount Bischoff, by a company formed for the purpose, and subsequently immediately engaged for a similar purpose by the Mount Bischoff Tin Mining Company, in which work it is still engaged.

The North-Eastern District.

Mr. Commissioner O'Reilly, who is also Stipendiary Magistrate and Commissioner of the Court of Requests for the District, holds Courts at various parts of his wide district, and is very fully occupied. He reports in the following terms upon the Mining District under his charge:—

"The prospects of the Mount Victoria gold-field have not materially improved since my former Annual Report, and mining operations are chiefly confined to prospecting. The Mount Victoria Gold Mining Company's Claim, which at one time gave very fair promise, with satisfactory returns of yields from crushings, has lately reduced the number of hands employed from 34 to 4, which I believe was caused through the reef being found defective, and running out; but the prospects of the mine, which have fluctuated a good deal, are, I now understand improving, and the mining manager states that ten additional men will be put on to work immediately. Two claims have lately in this locality given satisfactory returns from trial crushings,—viz., the "Nil Desperandum," from which 33 tons of quartz were crushed, yielding 51 ounces of gold, two men being employed; and the "Wilson," from which 32 tons of quartz were crushed, yielding 30 ounces of gold, two men being employed. Confidence is expressed by those who have mining experience in the place, that several of the claims will yet be profitably worked.

Mount
Victoria.

"I am informed that mining operations will soon be commenced at Waterhouse by a Company, who propose extracting gold from pyrites, by Professor Newbery and M. Vautin's process, by chlorination; and as there is a large extent of pyrites on the claims of the Company, and as the samples therefrom tested have given very profitable returns, reasonable hopes are expressed of the success of the venture.

Waterhouse.

"Since February last three Prospectors' Protection Orders have been issued for this locality, embracing an area of thirty acres. One such order for ten acres in the vicinity of Mount Horror has also been issued, and I understand that some prospecting has been done, but I think that further action has been postponed until the summer months. Five men have been employed since April last in alluvial gold mining in this locality, and so far as I can learn they are doing fairly well—making "wages."

Mount Horror.

"Since my last annual Report mining operations have been actively carried on throughout the district, several of the claims yielding handsome returns, while a considerable amount of costly preparatory work has been done on other claims, which will lead to largely increased yields at no distant period.

Tin Mining.

"At the Upper Cascade River and Ringarooma there are 112 men employed at the several claims—23 Europeans, and 89 Chinese—who have raised on tribute during the last three months, 41 tons 18 cwt. of tin ore. Several of the claims at Mount Maurice are now worked, and promise fairly well.

Upper Cas-
cade and
Ringarooma.

"In the Branxholm locality there are 45 Europeans employed at the claims, 37 of whom are on wages, and the remainder work on tribute, also 72 Chinese working on tribute, the quantity of tin ore raised being 48 tons 6 cwt. during the past three months. Prospecting has also been carried on with much enterprise on the "Ringarooma Valley Tin Mining Company's" claim, and deep deposits of alluvial tin proved to exist of considerable extent and richness; but a large outlay of capital will be required to successfully develop them.

Branxholm.

"The prospects of the "Mount George" Tin Mining Company's claim are encouraging, and six men are employed in working on the lode found there some time since.

"Considerable activity prevails, and on three of the principal claims a large expenditure is being incurred in preparatory works, and in providing the necessary machinery to carry on mining operations by a more economical system than that hitherto adopted, and when all the preliminary works are completed it may be reasonably expected that the output of tin ore from this locality will be very largely increased.

Brothers'
Home.

"The "Triangle" Tin Mining Company's claim has not been worked during the past year, although the deposits of tin on the claim are considered payable, but in working the claim much expense has been incurred in the pumping of the water supply from the Ringarooma River, and difficulties exist through the water-race of the North Brothers' Home Tin Mining Company intersecting the claim.

"There are 141 European miners employed on wages in this locality, and 5 Chinese work on tribute,—the quantity of tin ore raised during the past three months being 46 tons 14 cwt.; of this 27 tons 16 cwt. was produced from the Messrs. Krushka Brothers' claim, the remaining claims being principally employed at preparatory or "dead-work."

"The claims in the locality of Moorina have, during the past year, many of them, been perseveringly worked, and in several instances with marked success. In some few instances claims that were formerly held by Mining Companies, and mined in a careless manner, and then abandoned and forfeited, being re-taken and worked systematically and with judgment, are now turning out very profitable to their lessees.

Moorina.

"At the Wyniford River the satisfactory progress of mining is very marked indeed, the output from the Argus claim for the last three months being 77 tons; 52 European miners being employed on wages, and 35 Chinese on tribute by the Argus Tin Mining Company. The prospects of the Argus Extended Tin Mining Company's claim have also materially improved, satisfactory progress having been made in carrying out the works, and during the last three months 25 tons 14 cwt. of tin ore has been raised on the

Wyniford
River.

claim by 32 Chinese tributors. There are several small claims in this locality being worked on tribute by parties of Chinese, all doing very well.

"On the Pioneer claim, at Bradshaw's creek, satisfactory and profitable yields continue to be obtained by the parties of tributors who have during the last two years worked it, and twelve tons of tin ore raised during the last three months, seven Europeans and five Chinese being at work at the mine.

**Mount
Cameron.**

"In the vicinity of Mount Cameron but little progress has been made, owing to the scarcity of water during the summer and autumn months, and largely owing to the stoppage of the water supply from the Esk Tin Mining Company, caused by the breakage of their pumping machinery; several of the most productive claims having consequently to suspend mining operations during the past six months. However, repairs to the machinery being now completed, mining operations will again be resumed, and a large number of men employed. The stoppage of the Esk water supply during the past six months has caused a decrease in the output of tin ore from this locality of fully 140 tons in that time.

Scottsdale.

"In the Scottsdale district a few claims have been taken up by co-operative parties of working miners, but, owing to the short supply of water, mining operations can only be carried on during the rainy periods of the year. Although these claims are not rich, their lessees can work them profitably so long as the water supply lasts.

"The total output of tin ore from the North-Eastern District for the year was 1883 tons 7 cwt.; gold won, 786 ounces; and average number of miners employed throughout the district, 450 Europeans and 520 Chinese.

**Mineral
Applications.**

"During the past twelve months 171 applications for mineral leases have been received, embracing an area of 4263 acres; for the previous year 178 applications were received, the area being 4860 acres.

"This steady demand for the mineral-bearing lands exhibits the unabated confidence of the mining community in the stanniferous resources of this district; and I have no doubt that the great bulk of this land has been taken up by the several applicants with an honest intention of carrying out in a *bonâ fide* manner mining operations on their claims.

Water Rights.

"During the past year forty applications have been received for Water Rights, providing for 115 heads of water; for the previous year 34 applications were received.

"The Mineral Regulations recently issued appear to give general satisfaction, and the practical and convenient form in which they are arranged and published is highly appreciated by those who necessarily have to refer to them.

"I may here remark that in several of the large claims containing deep deposits of tin ore, preliminary prospecting has been adequately and carefully carried out, and their latent resources satisfactorily tested before entering upon the necessary expenditure of capital in their development, thus giving confidence to those who invest in such undertakings; while on the considerable extent of mineral land that has been taken up in small sections by working miners during the past two years, mining operations are actively carried on when sufficient water can be obtained, and the arduous toils and enduring perseverance of these men have in most instances been fairly well recompensed by satisfactory yields of tin ore.

"In conclusion, I would venture to observe that the experience of the last twelve months tends materially to strengthen the views I expressed in my last annual Report, as to the satisfactory and progressive state of the mining industry in this district. Considering the very many and great difficulties that those engaged in mining operations have to contend with, and the serious drawbacks experienced in many localities through the absence of a sufficient water supply during the summer and autumn months, causing the complete suspension of mining operations during those periods otherwise most favourable for carrying on such work, the results of the past year may be taken as very satisfactory indeed; and as the state of legitimate mining is now healthy and progressive, I look with confidence to more enlarged operations, with increased yields, during the coming and succeeding years."

**The Eastern
District.**

The Commissioner, who is also Stipendiary Magistrate and Commissioner of the Court of Requests for the District, writes as follows:—

"Mining generally in this district is in a healthy state. Lode tin-mining is being prospected with good results, notably upon the Full Moon ground, and the Anchor and other claims, which are being thoroughly and legitimately prospected. Alluvial tin mining is also being prosecuted successfully. The total output of tin ore for the year has been 656 tons.

"Gold-mining operations are again active at Mathinna and Mangana; a battery is at work at the latter place, and crushing-plant is in course of erection at the former. A few alluvial miners are at profitable work in various parts of the district. The amount of gold won during the year has been 1118 ounces.

"Silver mining is being resumed on a small scale at the Scamander River, where a shaft has been put down 50 feet, and the ore obtained at that level gives fair promise of success. Silver.

"Coal.—This industry has made rapid strides during the past year. A considerable area of coal-bearing land in the vicinity of Fingal and St. Mary's is held under lease from the Crown. Of the mines at work, the Cornwall is the principal. Besides the construction of a considerable length of self-acting tramway, the Company have extended their workings some 2700 feet; and during the year their output of coal has reached the creditable total of 11,330 tons. The coal is of good quality; it is used upon the Railways,—upon the Main Line, I believe, exclusively,—and the demand for it for both steam and domestic purposes is daily increasing. Adjoining is the Mount Nicholas mine, which has temporarily suspended operations. On the opposite side of the valley at Mount Malcolm the diamond drill is prospecting the ground preparatory to opening up the mine. Other leaseholders are preparing to commence operations, and there is every promise of the permanent establishment of a most valuable industry. The average number of miners employed throughout the district during the year has been 284 Europeans and 263 Chinese." Coal.

The Commissioner concludes with the opinion that mining generally in this district is in a healthy state.

The Commissioner is stationed at Waratah, where he also fills the offices of Stipendiary Magistrate and Commissioner of the Court of Requests. The experiment of stationing the Commissioner for the Western District at Waratah has not been a success, and, without doubt, if the indications of renewed mining activity which have of late been exhibited develop, as there is every reason to believe they speedily will, a change is imperative: for all practical purposes the Commissioner for the Western District would be almost as accessible to the miners if stationed at Hobart or Launceston as at Waratah. In a wild impenetrable country such as our West Coast is, it is of the utmost importance that the miner should be afforded the protection of a Commissioner so stationed that he is able at any moment to proceed to investigate disputes and deal promptly with the various matters demanding his attention. Without a ready access to such an officer, the class of prospectors who, in the truest interests of the country it is most desirable to encourage and protect, will not venture into the country. They will not subject themselves to be harassed and annoyed by the harpies who are ever ready to follow on their heels and endeavour to deprive them of the fruits of their labour. During the past year great activity has been shown in this district consequent upon a reputed rich discovery at the Linda, and much litigation, involving great loss of time and money, has ensued. I venture to assert that a great deal of this would not have arisen had there been a Commissioner within such a distance as to be readily accessible. Although he has been stationed at Waratah for upwards of a year, the Commissioner has only found himself able to make two visits to the West Coast, and those at great labour to himself and large expense to the country. The Western and North-Western District.

A Mining Registrar was appointed at Strahan, but I regret that he was compelled by ill-health to resign, and no suitable successor has yet been found.

The Commissioner reports as follows:—"At the Linda are situated the alluvial claims of Zeplin, Fahey and party, and one or two others. At Zeplin's claim very little work has been done, but gold is freely distributed through the wash, and, with energy, should be made remunerative. Fahey and party have done heavy work with successful results, and there is every prospect of better returns in the deep ground now opened up. At Flannigan's Reward Claim a few men are working and doing well. Several other alluvial claims of great richness are being worked in various parts of the district. The Linda.

"The recent discovery known as the "Iron Blow" is apparently very rich. Operations, which, owing to litigation, were suspended, have now been resumed, and the claim is now being actively prospected. From my own observation and the information obtained from others, I am assured that this claim will take a premier position. Upon north Mount Lyell and No. 1 North prospecting is being carried on, and the prospects are encouraging.

"The King River Claim, after great difficulties as to transport of machinery, is now engaged in its first crushing. King River.

"Miller's section, near this river, gives great promise of success. Other claims in the vicinity are also being prospected with favourable results. Queen River.

"Prospecting has been extensively carried on throughout the year at the Gordon, the Frenchman's Cap, Mount Darwin, and other localities. During the year I have issued no less than 57 prospectors' protection orders for gold, and the reports received from prospectors in all parts is of a highly encouraging nature.

Corinna. At this field there have been several parties actively prospecting for some months past. As yet no discoveries of importance have been made. At the Specimen Reef Company's ground the prospects are such as to have induced the prospectors to arrange for the erection of a small battery.

Silver-lead. "At Mount Zeehan the silver-lead deposits are being further developed. An important discovery of silver-lead has also been made by Messrs. Smith, Bell, and others at the Heazlewood River. The deposit is highly spoken of.

Tin. "In tin mining it is needless to refer to the world-famed Bischoff mine. At the Heemskirk tin-field several leases have lately been taken up and are being prospected. Several co-operative parties are here working for tin under their miners' rights. The regulation admitting of this has been largely used in this district."

In conclusion the Commissioner adds:—"I feel warranted in saying that the Western District is bound to occupy a foremost place in mining in Tasmania, and I earnestly trust that every inducement that the Government and Legislature can give the District in the way of opening up the country with roads, tracks, and bridges, and otherwise assisting the mining industry, will be given. The gold won in this district during the past year was 2737 ounces; tin ore raised, 3070 tons, and the average number of miners employed, 663—Europeans."

Appended to this Report will be found some remarks by the Inspector of Mines upon the distribution of the metalliferous and mineral deposits, the progress made in their development, and the present condition and future outlook of the mining industry of the Colony. They will, doubtless, be read with care by those who are interested in the welfare of the Colony.

I have the honor to be,
Sir,

Your very obedient Servant,

F. BELSTEAD, *Secretary of Mines.*

The Hon. the Minister of Lands and Works.



REPORT by the Inspector of Mines upon the Distribution of the Metalliferous and Mineral Deposits; the Progress made in their development; the present Condition and the future Outlook of the Mining Industry of Tasmania.

THE following remarks are submitted for consideration in order to describe in a concisely scientific and practical manner the leading features observed with our Mining Industry.

The metalliferous and mineral deposits found in this Island exhibit not only great variety, but likewise great richness, of products of commercial value wherever sufficient capital and judicious management have assisted their development. If more rapid progress has been retarded, or less energy has been evinced, it must be undoubtedly ascribed to the want of the above-mentioned levers to advancement, and to the difficulties experienced by the prospectors whilst trying to penetrate regions not yet trodden by man, and obstructed by dense jungle, marshes, and mountain streams. The great want of tracks and roads in these wildernesses is, however, every year improved upon by the Government; but still a very great deal remains to be done in those directions.

Geological Features: Distribution of Metalliferous and Mineral Deposits in chiefly Mountainous Districts.

The distribution of our deposits is, in the first instance, confined to certain descriptions of rocks occurring within certain zones. These rocks contain the more permanent deposits in the form of lodes, veins, dykes, and extinct geysers; the less enduring are found in the valleys, gullies, drifts, Old Pliocene river systems, and the seaboard.

In the following the deposits have been classified as the metalliferous with regard to their productiveness, and similarly, as the mineral deposits, giving special reference to the rocks associated with their varied modes of occurrence.

Tin Ores.—The primary formation—granite—with its plutonic and metamorphic varieties, has been found generally associated with our lode, vein, and dyke ore deposits; also, as occurring in similar forms as traversing metamorphic schists. Lodes and veins thus occur at Mount Bischoff, Ben Lomond, Mount Heemskirk, Branxholm, St. Helen's (George's River), and elsewhere. Dykes, either hard or soft, carry rich tin ores at Mount Bischoff, Blue Tier, Upper Ringarooma (Nugget), Gladstone, &c.

The only extinct "geyser" that has so far been discovered with these tin ores I found to occur at the celebrated Mount Bischoff Tin Mines, where that company is almost exclusively engaged in winning their large output of ore from an extensive deposit of so remarkable a description of deposit. Their "Brown Face" exhibits a most stupendous aggregation of siliceous matter heavily charged with rich cassiterites associated with iron ores, the result of decomposed iron pyrites also containing tin ores.

Gold Deposits.—These separately occur in granites, more so in the Metamorphic and Silurian series, also in the carbonaceous beds. They are found in well defined, highly mineralised and permanent quartz lodes and veins; also in conjunction with dykes of pyritous porphyrites protruding the carbonaceous beds. In the granites, quartz veins carrying fine gold have been found on Mount Barrow. In the Silurian and Metamorphic formations our richest and most permanent quartz lodes are being worked with great and enduring success at Beaconsfield, where the Tasmania Reef, though but worked 360 feet from the surface, has caused the distribution of profits amongst the shareholders of only two companies, and not counting their weekly disbursements for wages, fuel, &c., amounting to over four hundred and twenty thousand pounds sterling.

Similar lodes have been worked with success at Lefroy, where our deepest shaft, 812 feet in depth, has been sunk. On the New Chum line of reef one company, having been successful in obtaining a share of the deep-sinking vote granted by Parliament for the purpose of aiding in the exploitation of mineral deposits from below the four hundred feet level, have sunk, and are about again to sink their shaft deeper, with present partial success, and more hereafter. Quartz lodes were at one time wrought near Gladstone, and it is hoped other trials will be made to further test same, as rich gold was found there. The Silurian schists near Waterhouse, Denison, Den, and Golconda have been proved to contain auriferous quartz lodes, and in some of these places work is actively proceeded with; whilst the indications at Mount Horror and Mount Arthur are promising, and at Long Plains, at Specimen Reef, much work is being done, holding out every promise of eventual success.

Like our tin ore deposits, gold, largely and richly distributed, has been discovered at the head of the Linda gold-field, in quite a new kind of formation. This deposit I was specially deputed by the Government to examine and report upon in September, 1886; and my opinion as to this mass of finely divided ferruginous and barytous gold deposit being due to volcanic action within an immense fissure, has been recognised as the only true method by which its origin may be explained. Assays, ranging from 3½ozs. to 187ozs. of gold per ton from a deposit 57 feet in width, at once place this fortunate find in the foremost ranks of gold discoveries during the present age. The whole of these Western Cordilleras appear to abound with auriferous and other metalliferous treasures, the existence of which will give an impetus to prospectors for developing other like deposits, because the knowledge we are from time to time obtaining affords good and substantial grounds for placing a high estimate upon the metalliferous and mineral resources of the West Coast of Tasmania.

Silver Ores.—These occur in several localities, chiefly in quartz veins traversing porphyry, and also in metamorphic and other schists. At or near the mouth of the Scamander River, East Coast, a massive dyke of quartz porphyry occurs, intersected by large veins of quartz, in which the bromides and sulphides of silver occur in association with gold. The assays made at various times show a percentage of "bullion" which would render the working of these mines very remunerative; and as of late the ores have become richer in sulphides and with less quartz or silica, it is a branch of our mining industry of great promise.

Silver, in combination with lead ores, has been wrought at Mount Claude, near Sheffield. It is a moderately rich ore, but deserves more attention and good management to bring it to a successful issue. The same may be said of ores discovered near Mount Zeehan, West Coast, which also are waiting further manipulation. At Penguin for some years past rich sulphides of silver have been found near high water-mark on the seashore, which are now again receiving attention. At and near Mount Bischoff galenites and silver ores proper have been found, but no mining has been done upon same of late.

Copper Ores.—Native copper occurs in an extensive zone of good width in metamorphic schists, east of the famous Iron Blow, Linda gold-field, West Coast; it is there found quite pure in crystalline aggregations, requiring but little labour to cleanse it from impurities. I found it also in specimens from the Rocky River in oblong prisms, and similar to what has been found at Watcombe, Penguin. Copper pyrites in remunerative quantities also occur at Saxon's Creek, west of Beaconsfield, and at other localities.

Iron has been found in its native state in the Beaconsfield serpentines, and close by it occurs in very massive deposits, like those near the Blyth, Penguin, and Emu Rivers on the North West Coast. If a suitable supply of good smelting coal could be discovered in the vicinity of these deposits, they could be worked with advantage and profit.

Coal.—This most valuable of minerals has been found nearly all over the Colony, comprising all manner of varieties of coal, including good gas and steam, as well as excellent domestic coal, and there appears no doubt but that present and past borings by means of the diamond drills have, and will, disclose an almost unlimited supply of this combustible. In the south of the Island, the Sandfly coal measures have furnished about the best gas and steam coal yet obtained in the colony; some good and similar coal has been found near Port Cygnet, though difficulties appear in the way of export. In the neighbourhood of Hobart good anthracites are found, useful for domestic purposes. In the midland counties also good domestic coals abound, though they, like those from near the Mersey and Don Rivers, contain a considerable quantity of iron pyrites, restricting their use to certain requirements only. The Coal Measures in the Fingal and St. Mary's districts, now that the railway has been constructed from Corners Main Line Railway Station, are in course of active development. When it is considered that these measures have attained, as shown on the flanks of the mountains, and by means of a bore-hole sunk recently at their base in the Harefield Estate, St. Mary's, a vertical thickness of over 2000 feet, and that in such a thickness of Coal Measures many seams of coal occur, measuring from 14 feet to a few inches thick, some idea of this very extensive and most valuable mineral deposit may be formed. Of course, the quality of the coal in itself is a *sine qua non* as governing its proper commercial value, both for home consumption and future export; it is gratifying, therefore, as regards the first question, to be able to state that its use is rapidly increasing for railway and domestic purposes, and that it has already caused a sensible reduction in the price of the better foreign coal, and upon the total quantity hitherto imported. These advantages to the Colony at large are most likely to increase as the various Tasmanian seams of coal are opened out away from their naturally deteriorated outcrops.

Slate.—That this useful and valuable mineral exists in large quantities in Tasmania has long been proved. In the Silurian series of rocks so prominently shown near the head of Back Creek, County of Dorset, good slates were, some years ago, worked on a very large scale, but owing to the prevalence of quartz veins the original quarries were abandoned some time ago, though, from all appearances, equally as good a material exists close by. And it is to be hoped that when the Scottsdale Railway is finished, and which passes these quarries at a reasonable distance, other efforts will again be made to revive this part of the district in a manner exclusively peculiar to mining.

At the Bangor Slate Quarries, which are located near Turner's Marsh, County of Cornwall, very large excavations have been made in slate from a main shaft, which have produced over a million of slates of all sizes already, and it is calculated that at the present levels several millions of slates are in sight waiting to be quarried. Extensive and very costly machinery has been imported from Home, with skilful miners and mechanics to work same, which has enabled the proprietary not only to supply all local demands, but likewise cause a very large and increasing export to the other Colonies, inasmuch as there is always a growing demand for such excellent building materials.

Sandstones.—These are worked chiefly in the south of the Island, and less so in the midland counties, and they are, generally speaking, of a very enduring description, possess a good colour, and are easily dressed.

Limestones have been found more or less all over Tasmania. Some of them are of a very pure character, and therefore fit for all kinds of building purposes.

The above list comprises those metals and minerals possessing commercial value, and for which there is always more or less demand at prices varying with their supply.

So far as our yet limited explorations—considering the vast areas quite unexploited—for valuable metalliferous and mineral deposits have progressed, it is at present quite true that my labours, single handed, have only enabled me to ascertain in the localities inspected the indications for the existence of yet untouched mineral wealth. It is also a patent fact that the western, northern, and eastern portions of the Colony have been proved so far the more productive of our subterranean wealth. In the south, the south-eastern, and south-western districts, not having yet been examined, good coal, as already stated, exists. Also gold has been found in conjunction with some pyritous porphyry dykes, interspersed with veins of auriferous quartz, but so far no regular lode or permanent gold formation has been discovered.

Generally speaking, therefore, more than the northern half of Tasmania exhibits through the agency of uplifted mountains, hills, and ranges, those particular kinds of rocks always associated with and favourable to mineral deposits. Those rocks comprise quite a variety, and they contain such deposits of a similar diversity. It may here be said that our mineral resources assimilate more closely to those of Queensland than of Victoria; also more with California and Nevada, U.S.A., which latter, however, lack tin ores.

Starting on the West Coast with the yet unproved copper ore deposits at Point Hibbs, south of Macquarie Harbour, the newly discovered auriferous regions are found to exist on the western slopes, chiefly of the what may be very aptly termed the Western Cordilleras, comprising Mounts Sorell, Owen, Lyell, and Sedgwick. Being new discoveries, only preliminary tests and assays have been thus far made, but sufficient is now known to indicate that they form some of the richest gold deposits ever discovered here or elsewhere. Quartz-lodes and veins carrying coarse and fine gold have been found, but all these have been eclipsed by that unique gold deposit at the Linda, well known as "Crotty's Iron Blow." The practical outcome of that find has yet to be waited for, until the roads, now constructing, admit of the transport of the necessary machinery and plant from Long Bay, Macquarie Harbour. The King River Company are working a quartz lode, and they have, after years of trouble, succeeded in the erection of crushing machinery, and they are now crushing, the results being anxiously waited for. These districts bear geological evidence of their containing extensive gold, auriferous quartz, and other allied deposits, the opening of which will give that impetus to our miners so much required for the thorough opening of the West Coast, which promises to become one of the mainstays of the Colony at large.

Following the West Coast northwards, the Heemskirk Tin Mining district is reached, which abounds with lodes, veins, and dykes carrying good ores, also some alluvial deposits. The experience gained here is similar to what was obtained elsewhere in Tasmania. A few well formed tin-ore lodes were found and partly opened, and they would have been a source of considerable profit had it not been for bad management, too limited capital, and speculation in scrip. To this may be added the inordinate desire to expend a large amount of capital in new and untried ore-dressing machinery, whilst the opening of the mines from which to supply that machinery was quite neglected. The ores are still there waiting more careful treatment, and more reasonable management, as the percentages of metallic tin is considered to be very good. At or near Mt. Zeehan some valuable silver-lead lodes and veins have been discovered near the surface, also deposits of manganese. The former have been tested in Melbourne with good results, and capital is only needed for their development. As the ores are very pure, no difficulty need be apprehended in smelting and obtaining bullion well charged with silver.

The Long Plains Goldfield comes next, and it contains very promising gold quartz lodes, veins, and pliocene (alluvial) deposits. The principal lode is the Specimen Reef, near Mount Cleveland, which had produced very rich gold in specimens, which occur in decomposed iron pyrites chiefly, locally termed "clinkers"; prospecting tunnels and winzes have disclosed the fact that great irregularity appears in their mode of occurrence, or if, according to a system, the order of it yet remains to be discovered. Messrs. Weetman and Co. are also working on some rich quartz veins in the vicinity of a dyke of porphyry or diorite near the 18-mile Government Hut. Long Plains is the divide between the Savage and Whyte Rivers, and forms a series of high plains and low hills, with small gullies between. All these have from time to time yielded coarse gold; but miners were prevented from testing the deep ground, which is evidently also gold-bearing, on the score of expense.

The Mount Bischoff tin-ore deposits are now so well known as to their almost phenomenal rich output of tin ore with great regularity, as to require but a few words from me in connection therewith.

The Stanhope Company are working a series of tin-ore lodes passing through dykes of "eurite" into metamorphic schists; other lodes occur in North Valley and also on the West Bischoff and Mount Bischoff Company's leaseholds, all of which give fair returns, although I am not aware of any profits being declared.

The principal deposit is that of the Mount Bischoff Company, which occurs as a rounded mountain, all more or less heavily charged with tin ores. The greatest diameter is over 1200 feet at the surface, and the greatest height was over 105 feet. It is composed of a mass of fine crystals of quartz closely compacted together, in which the ore occurs irregularly. Its reddish brown colour is due to a large admixture of limonites (iron ore) as the result of decomposed iron pyrites at lower levels. The whole deposit assumes the form of a huge inverted funnel, much contracted below, or, as a matter of fact, the shape of an extinct "geyser," which, during the active duration of periodical discharges of siliceous vapours, volcanic ashes, and large boulders of eurite and topaz rocks, formed this immense deposit, the tin ascending in the form of metalliferous vapours, and being deposited around the slowly closing-up vent. At a depth of over 100 feet below their present working level an adit has been driven right through the hill, and several veins carrying

rich tin ores have been intersected ; but so far, the principal vent or channel through which all the higher and so very valuable tin deposits must have at one time passed has not yet been found. Although this Company's operations are carried on upon a very large scale, and consequently millions of tons of stanniferous ores have been mined, dressed, and concentrated, there are yet years of work before the Company on this deposit alone before they must have recourse to their valuable dykes and lode deposits.

The Penguin Silver and Copper deposits have not yet been explored sufficiently at deeper levels to deserve mention, though at a depth, and in more favourable country, an improvement may safely be anticipated.

The Coal seam at or near Latrobe has already been mentioned. It is probable that other seams may be intersected by the diamond drill east of that town.

The Mount Claude Lead and Silver deposits have been tested by a registered company. Much money was expended in opening the same by an as unnecessary as expensive adit, whilst the ores exposed on both sides of Mount Claude Creek were almost left intact. Another party are now about to start operations, and it is to be hoped that the late mismanagement will not be repeated, but that operations will be confined to the ore veins, and no other works be undertaken at present.

The quartz lodes of Beaconsfield are again referred to, as, besides the Tasmania lode, other lodes and veins have been found from time to time gold-bearing, which, with the aid of more capital, may yet turn out remunerative. With regard to the principal lode of that district, and, at the present time, of the Colony also, it is a really wonderful formation, not only for its increasing richness with greater depths, its more mineralised character there, but, for its general regularity of strike and underlay, the Tasmania lode deserves every notice among the permanent gold-quartz lode formations here and in other gold-producing countries. Hitherto it has been urged against this lode that it was confined to but two companies, but that belief has been proved, of late, incorrect, because what, in the south-eastern extremity, was held to be a "cap," dipping away rapidly, was actually found to be the end of a "block," severed from another "block" in the lode formation by a brecciated vein-matter only. A late crushing of over 40 tons was raised from the Florence Nightingale Company's mine, through the adjoining Lefroy Company's shaft, from the 400 feet level, or 40 feet below where both the Tasmania and Florence Nightingale are obtaining their late good yields, which gave the very satisfactory return at the rate of 2ozs. 6dwts. of retorted gold per ton. Although it is quite possible that that magnificent lode and Silurian country rocks may be capped by tertiaries and carbonaceous beds in its south-eastern extension, so strong a lode formation will not thereby, by any means, lose its valuable character.

Lefroy has been of late in an inactive state, and consequently most of the mines have ceased operations, because the necessary capital was not forthcoming. The success of the West New Chum Company in the deep ground being assured, the Unity Company, on the same line of lode, obtaining more satisfactory prospects, and some tributors on the Native Youth Company's system of lodes, intersecting a very rich kind of laminated quartz, has revived the hopes of holders, and there is no doubt of Lefroy again yielding good gold returns.

The deep sub-basaltic Pliocene gold leads, both at Lefroy and Back Creek, have not been worked for some time ; in fact, not one shaft has yet penetrated the basalts and underlying wash in such places, where there is every prospect of success. This is much to be regretted, because there is every appearance of rich diluvial gravels existing in both localities.

Passing over the quartz reefs at the Den, Denison, Golconda, and Waterhouse, as being in a transitory state, the Mount Cameron Gold and Tin deposits are next deserving our attention. With regard to the gold, which chiefly occurs in lodes, the partial failure of the Royal Tasman Company has caused grave doubts to be shown in the stability of the whole region, on the supposition of their lode declining in value. Much might be said upon this subject, but in my opinion it was, firstly, wrong to crush quartz 8 feet wide when less than two feet of it was mineralised and gold-bearing, and, secondly, the character of the quartz at the lower level does not at all correspond with that got higher up, and, lastly, the well-known existence of an extensive "slide" or "fault" renders it possible of the old reef having been thrown, and a new one, not nearly so good, to have been mistaken for the other.

The large and extensive tin-ore deposits comprise some very rich dykes of micatrap, but the chief interest centres around the gravel deposits charged with tin-ore, either of the marine fluviatile, pliocene, and pleistocene age. This matter has engaged the public attention for some years, inasmuch as it was mooted that the Government should purchase all water-rights existing, and construct a main channel for supplying water from several mentioned watersheds, and dispose of such water to the mining community. Having assured myself of the undoubted existence of a very extensive area of tin-bearing gravels, I recommended the authorities to favourably entertain the matter, which is, however, still under negotiation, and it is hoped that these schemes will be sanctioned by the Legislature in order to aid the miners in the locality, who, without a copious and continuous supply of water at a high-level pressure, cannot work for eight months out of the twelve, thus leading to the depreciation of property and rendering settlement upon the lands impossible.

From the township of Gladstone, or near it, these tertiary tin gravels traverse along the banks of the Ringarooma River, and up some of its tributaries, by way of the Pioneer and the Argus Tin Mining Companies mines to Moorina ; thence by way of Brothers' Home, Branxholm, to its main contributor of Ruby Flat.

The Pioneer Tin Mining Company appears to work on a tributary of the older pliocene channel, which is filled with stanniferous gravels supplied by the eastern tributaries—viz., Sarah Ann and Mutual; the Cascade River, a tributary joining the Arba Tin Company's mines, and the Ruby Flat pliocene and pleistocene tin gravel deposits. All along that tract of mineral country the presence of the ore has been discovered; the Pioneer working now with profit, so does the Argus, adjacent, only the latter is working recent fluvial wash. The Sarah Ann also proved the tin gravel passing beneath the basalt east of the main channel.

The Brothers' Home Mines contain about the richest tin deposits in Tasmania, almost equalling those at Mount Bischoff. The Messrs. Krushka Brothers are reported to have profited by the sum of £9000 each in 1886, and they, as the original discoverers, have yet some years' profitable work before them. The North Brothers' Home Company, on the north side of the river, have, after spending a large amount of capital in fruitless labour to work their mines hydraulically, adopted the Ballarat blocking-out system, for which purpose a new shaft and deep main level is being constructed, and new machinery worked by turbines will be erected, so that in a short time results will be obtained. The North Brothers' Home No. 1 Company have also started upon the same principle, and they are likewise expecting favourable results, as their wash is very rich in places. The Briseis Company are still driving their costly main adit through dense granite, thus showing great confidence in their mines yielding profits as soon as the upper end of this rich "lead" has been struck. The Ringarooma Valley Company, situate between Brothers' Home and the Arba T. M. Associations' mines, possess a very valuable piece of ground, which contains, for a length of one mile and more, the connection between those two mines mentioned above. The Arba Company still pursues mining, though of late yields have receded somewhat, owing probably to the growing interference of poor top-wash; still they have some years of remunerative and profitable work before them. Ruby Flat is chiefly in the hands of Chinese tributors.

Passing over some promising alluvial gold deposits, now abandoned without sufficient cause, near Upper Ringarooma, the Mount Victoria goldfield is approached, and a very great change has taken place both in the number and the scope of the present mining operations than what used to be. This, in my opinion, may clearly be ascribed, in the first instance, to the discoverers having taken up their leases in good faith, as showing good, if not rich, outcrops of quartz lodes, promising well for the future. These parties or companies worked for a time regularly, but, meanwhile, a very large number of leases were taken up and companies formed to work them, thus depleting the call-paying community of their ready cash; whilst others, again, took up any piece of ground, in order to trade upon the reputation of such and such a company, probably ten or twenty blocks away, having seen gold in the stone raised, and tried to sell their interests to outsiders. Except as in the first instances, the work has been carried on in a very slovenly sort of way, and those parties who were purchasers of the latter soon gave up their holdings or refrained from observing the labour covenants of their leases, thus causing rapid depopulation of what should be a prominent goldfield.

Passing on towards Mathinna and Mangana goldfields, which were almost abandoned to the "fos-sickers" in alluvial ground, it is very satisfactory indeed to be able to report quite a revival in mining affairs at both places and in the neighbourhood. Old quartz lodes, viz., El Dorado, City of Hobart, and, at Mangana, the Old Union, have given yields of a very encouraging, if not profitable, value. On the whole, these and other mines open out well, and soon my prediction that, from Mangana to Mount Victoria, a continuous gold-quartz field would come into operation will be realised. So far as these new discoveries recently made at or near Mathinna, or the resuscitation of such mines worked years ago and abandoned for no reason that can now be advanced, inasmuch as the El Dorado, with a battery recently erected, the old Derby (now Jubilee), and the Yellow, White, and Black Boys claims are all old discoveries, in which now, after a lapse of a considerable time, gold is again obtained in profitable quantities. The re-establishment of this goldfield has been, however, rendered more complete than ever it was before by the discovery of new reefs either in Mathinna itself or at a distance of three or four miles from same. Amongst the latter are those of Messrs. Loane and Rogers respectively. The former discovered the Enterprise in the township, and the latter the Twilight, both of which yielded rich quartz in the trial crushings.

At Mangana the "Old Union" has, likewise, been again taken up, and a large parcel crushed recently, taken indiscriminately from all parts of the mine, left a fair profit upon the first lot thus treated.

Amongst other matters affecting coal mining at Mount Nicholas it may be stated that the Cornwall Coal Mining Company have reached an output of 750 tons per week; that their coal can be delivered in Melbourne at about 15s. per ton; and that they have raised, since commencing to get out coal, upwards of 11,000 tons of good useful steam and domestic coal.

At George's River, St. Helen's, besides alluvial tin, some good-looking tin-bearing lodes are waiting development.

The Blue Tier mining district, despite the easily explained failure of the Anchor tin mines, promises to play a most important part in our output of tin ores, as derived from *permanent* lode, vein, and dyke formations. The alluvial and older gravel deposits having become nearly exhausted, other very rich deposits have been found, which promise not only to replace the former, but to eclipse same by their more abundant and reliable yields of ore. The Lottah and Full Moon Companies will soon vie with each other as to which shall take the foremost position. The Haley's, "Soft Formation," Blue River, Blue Tier, Creamy Creek, and Wellington mines, if only aided with some additional capital, would likewise very considerably add to the export of tin ores.

At the base of the basaltic capping, the summit of which reaches the altitude of 5020 feet above sea-level at Mount Ben Lomond, quite an isolated, but very valuable tin ore district has been worked for about six or seven years. The basalt referred to rests immediately on granites, porphyries, and metamorphic schists. The former obtain exclusively at the head of Gipps' Creek and Buffalo Rivulet to the west, whilst the latter are closely associated with quartz lodes carrying rich tin ores, at the head, and near the Storey's Creek in the east. A large amount of work has been done at great expense on those high plateaus, some 3500 feet above sea-level. The Ben Lomond Company, especially, have constructed a main adit nearly 800 feet in length, sunk a main engine shaft, and various other shafts, winzes, levels, and crosscuts have disclosed some five or six lodes, all more or less tin-bearing, but, owing to their primitive style of concentrating appliances, I found that a very large percentage of the best description of ore had and was escaping, rendering thereby all the efforts of the company to obtain from really good lodes a remunerative return nugatory.

Recent discoveries, also in the porphyritic rock, both at or near Gipps' Creek, and at the "Republic," are of a very rich description, and, in my opinion, both will give very satisfactory returns when properly opened and manipulated by means of more effective ore cleansing machinery. The latter proprietary has, I note with satisfaction, purchased two of Frue's Vanner Concentrators, which I took occasion to specially recommend to the notice of mining companies in my Report as Inspector of Mines for the year 1882, where full particulars are given, with illustrations.

At or near the head of Storey's Creek, the Storey's Creek T. M. Company have carried on extensive operations on a series of lodes and alluvial, *i.e.*, probably, pliocene gravel deposits. These lodes occur exclusively in metamorphic schists, and, instead of the quartziferous vein matter being limited, as in the Ben Lomond proper lodes, these at Storey's Creek are so far exclusively quartz charged with tin ores, wolfram, copper pyrites, &c. The ores also differ: at Ben Lomond there are generally fine black and wood tin ores; at Storey's Creek they are very massive, largely crystalline, and contain beautiful amber and white tin ores, both in the lodes and in the alluvial. These lodes observe a very peculiar structure, inasmuch as they incline towards a nearly vertical body of ore at various angles in the shape of a fan, and as there have been some five or six tin-bearing lodes discovered in an easterly direction, within a space not more than half a mile in width, the value of these lode formations is admittedly strengthened by the fact that, at their junctions at various depths, large ore bodies may reasonably be found to occur. But, at the same time, the present tin contents of the lodes average above the remunerative, and, with larger scope of underground operations and powerful water motors (Pelton's Pressure Wheels) to drive extensive crushing and concentration machinery, enduring profits may be expected to follow such an increased outlay of capital.

In the comprehensive sketch made of our principal centres contributing to our mining industry, some omissions may have occurred, but nevertheless, so far as my judgment goes, that industry is not only in a very sound and reliable condition, but the general outlook for the immediate future leaves nothing to desire. At several points important discoveries have been made, or are expected, from indications met with, to take place. At others, again, it is only a question of a supply of suitable machinery and skilful treatment to cause an increase of our mining population, thus adding to the number of consumers.

The mineral and metalliferous resources of Tasmania are more extensive, rich, and valuable than most people are aware of; and scientific examination and professional advice would not only greatly advance their development, but often prevent the collapse of mining ventures, in which good mines are depreciated by the expenditure of capital in useless operations and unsuitable appliances.

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

APPENDIX A.

DIAMOND DRILLS.

Statement of Work done.

Year.	Locality.	Direction of Bore.	No. of Bores.	Total Distance bored.	Average Cost per foot, exclusive of Labour and Fuel.
				feet.	
	No. 1 DRILL.				
1882-3	Back Creek—For Gold	Vertical	7	1330	s. d. 10 9
1883...	Lefroy—For Gold.....	Ditto	4	1011	5 3
1884...	Tarleton—For Coal	Ditto	1	401	5 6
1886...	Longford—For Coal.....	Ditto	2	1585	4 0½
1886-7	Harefield Estate—For Coal.....	Ditto	1	725	6 5
		TOTAL	15	5052	
	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	1	612	5 6
1885...	Malahide Estate, Fingal—For Gold	Ditto	5	1397	5 6
1886...	Carr Villa, near Launceston—For Coal.....	Ditto	1	571	5 4
1886-7	Waratah—Mt. Bischoff Alluvial T. M. Co.— For Tin	Ditto	7	1548	6 1½
	Waratah—Mt. Bischoff T. M. Co.—For Tin (in progress)	Ditto	4	446	10 10¼
			20	5188	

Aggregate Number of Bores 35
 Total distance bored 10,240 feet

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

Launceston, 8th July, 1887.

DIAMOND DRILL No. 1.

REPORT of Strata passed through in boring for Coal at BELMONT, near LONGFORD.
No. 2.

BORE HOLE.	STRATA.	FT. IN.
	Surface Shaft	16 6
	Brown Clay	23 6
	Wash	3 0
	Black Clay.....	53 0
	Stones and Drift	34 0
	Black Clay and Wood.	44 0
	White Clay and Wood	70 0
	White Sandy Clay and Drift	257 4
	Sandy Clay and Drift with decayed Wood.....	150 2
	Mottled Clay.....	56 4
	Red Clay.....	7 0
	Sandy Clays with Wood. Went through four feet of wood at 800 feet.	61 2
	Light Blue Clay and Wood	102 0
	Mottled Clay and Wood	16 3
	TOTAL	894 3

REPORT of Strata passed through in boring for Coal at St. MARY'S, HAREFIELD ESTATE.

No. 1.

BORE HOLE	STRATA.	FT. IN.
	Surface Shaft—Clay and Drift.....	9 0
	Surface Shaft—Sandstone	7 0
	Shale	16 6
	Sandstone	0 6
	Coal and band of Shale	4 4
	Coal.....	1 3
	Shale	2 1
	Sandstone with thin Coal seams	29 6

DIAMOND DRILL No. 1—*continued.*

No. 1.

BORE HOLE.	STRATA.	FT. IN.
	Sandstone and Shale	24 11
	Coal	1 8
	Bands of Clay, Sandstone, and Coal	1 10
	Sandstone	18 0
	Black Shale	7 6
	Sandstone	3 2
	Coal	2 9
	Black and Blue Shale and Fire Clay	22 6
	Sandstone and Shale	25 4
	Sandstone	16 6
	Shale and Fire Clay	15 0
	Sandstone, Shale, and Coal	71 2
	Conglomerate and hard Blue Rock	19 6
	Blue Shale	63 0
	Conglomerate	2 0
	Grey Rock	6 6
	Green Sandstone	12 0
	Fossiliferous Limestone	28 6
	Limestone and Conglomerate	31 3
	Fossiliferous Limestone	86 3
	Hard Grey Rock	10 6
	Sandstone and Shale	28 2
	Sandstone	28 10
	Conglomerate Shale and Sandstone	34 9
	Coal	1 0
	Shale and Sandstone	21 0
	Freestone	15 0
	Sandstone and Conglomerate	26 9
	Sandstone, with Soft Slate or Soapstone	11 6
	Slate	17 10
	TOTAL	724 10

DIAMOND DRILL No. 2.

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

MOUNT BISCHOFF ALLUVIAL TIN MINING COMPANY.

No. 4.

BORE HOLE.	STRATA.	FT. IN.
	Surface Shaft	21 0
	Hard Basaltic Boulders	33 4
	Brown and Blue Clay	14 6
	Black Clay	107 1
	White Clay.....	35 7
	Black Clay and decayed Leaves	18 11
	Blue Clay, Stones, and Gravel.....	17 1
	White sandy Clay, Stones, and decayed Wood	12 10
	Fine Gravel.....	6 8
	Slate.....	1 6
	TOTAL.....	268 6

No. 5.

	Surface Shaft	34 0
	Rotten Basalt and hard Boulders	11 6
	Blue sandy Clay and Stones	19 6
	Black Clay and Stones	9 0
	Black Clay and decayed Vegetation.....	106 5
	White Clay	27 11
	Black Clay and decayed Vegetation.....	25 6
	Blue Clay and Stones	15 6
	Black Clay and Vegetation	10 5
	Blue Clay and Stones.....	22 3
	Blue Slate	0 8
	TOTAL.....	282 8

No. 6. DIAMOND DRILL No. 2—*contin.ed.*

BORE HOLE.	STRATA,	FT.	IN.
	Surface Shaft through hard Basaltic Boulders.....	46	6
	Hard Basaltic Boulders.....	2	8
	Yellow Clay	5	0
	Black Clay	42	9
	White Clay and Vegetation	29	6
	Black Clay and Vegetation	23	7
	Blue Clay and Stones	25	1
	Schist	4	3
	Blue Clay and Stones	5	4
	Blue Clay and Gravel heavily charged with Pyrites and Galena...	11	3
	Blue Clay and Gravel with Schist Boulders	22	1
	Slate.....	2	0
	TOTAL	220	0

No. 7.

	Surface Shaft	17	0
	Black Clay	62	1
	White Sandy Clay	26	6
	Black Clay and Vegetation	24	7
	Blue Clay and Stones	27	3
	Black Clay and Vegetation	2	0
	Blue Clay and Stones	10	7
	Blue Slate	11	0
	TOTAL	181	0

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

No. 1. MOUNT BISCHOFF TIN MINING COMPANY.

	Surface Shaft	6	6
	Blue Slate	17	10
	Soft Blue Slate	24	3
	Blue Slate and small Quartz Veins	8	9
	Soft White Slate and Quartz.....	14	3
	Soft White Slate and Serpentine Stones	1	7
	Serpentine	3	3
	Blue Slate and Serpentine.....	4	7
	Hard Blue Slate.....	5	9
	Barren Porphyry	13	3
	Porphyry.....	4	0
	TOTAL	104	0

DIAMOND DRILL No. 2—continued,

No. 2.

BORE HOLE.		FT. IN.
	Surface Shaft	6 6
	Soft Blue Slate	12 6
	Soft Conglomerate	8 10
	Conglomerate.....	21 1
	Hard Blue Schist Boulders	21 1
	Hard Schist Rock	19 0
	White Porphyry.....	5 0
	Tourmaline and Pyrites.....	7 10
	White Porphyry.....	7 9
	TOTAL	109 7

No. 3.

	Surface Shaft	6 6
	Blue Slate	3 0
	Hard Blue Schist	12 8
	Blue Schist and Pyrites Seams.....	14 1
	Hard Schist Rock	33 3
	Pyrites and Fluor Spar	1 0
	Hard Schist Rock and Pyrites	46 5
	Fluor Spar and Pyrites	1 5
	Hard Schist Rock	7 0
	TOTAL.....	125 4

No. 4.

	Surface Shaft	6 6
	Hard Schist Rock	6 1
	Hard Schist Rock and Veins of Carbonate of Iron	3 3
	Hard Schist Rock	11 3
	Hard Schist Rock intermixed with Carbonate of Iron	1 0
	Very hard Schist Rock intermixed with Pyrites & Carbonate of Iron	1 1
	Hard Schist Rock	64 8
	Very hard Schist Rock	4 10
	Pyrites	1 0
	Very hard Schist Rock	7 10
	TOTAL.....	107 6

No. 1.

COMPARATIVE Statement of Gold exported from Tasmania during the Years 1880, 1881, 1882, 1883, 1884, 1885, 1886, and for first Half-year of 1887: compiled from Customs Returns only.

YEAR.	QUANTITY.		VALUE.
	ozs.	dwts.	£
1880.....	52,595	0	201,297
1881.....	56,693	0	216,901
1882.....	49,122	6	187,337
1883.....	46,577	10	176,442
1884.....	42,339	19	160,404
1885.....	41,240	19	155,309
1886.....	27,757	0	104,402
Half-year ending 30th June, 1887 ...	18,798½	0	70,725

No. 2.

RETURN showing the Quantity of Gold obtained from Quartz during the Years 1880, 1881, 1882, 1883, 1884, 1885, 1886, and for the first Half-year of 1887.

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
1886.....	25,004 "	87,516
For half-year ending 30th June, 1887	17,105 "	60,250

No. 3.

COMPARATIVE Statement of Tin exported from Tasmania during the Years 1880, 1881, 1882, 1883, 1884, 1885, 1886, and for the first Half-year of 1887: compiled from Customs Returns only.

YEAR.	TONS.	VALUE.
1880.....	3954	£341,736
1881.....	4124	375,775
1882.....	3670	361,046
1883.....	4122	376,446
1884.....	3707	301,423
1885.....	4242	357,587
1886.....	3776	363,364
For first half-year of 1887.....	1592	159,622

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, 1886, issued during the Year ending 30th June, 1887, cancelled during the Year ending 30th June, 1887, and remaining in force on the 30th June, 1887.

Nature of Lease.	In force on 1st July, 1886.			Issued during Year ending 30th June, 1887.			Cancelled during Year ending 30th June, 1887.			In force on 30th June, 1887.						
	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 5s. an acre	627	24,077	0	0	175	4439	0	0	146	5624	0	0	656	22,892	0	0
For coal and slate, at 2s. 6d. an acre rent.....	38	5487	0	0	27	5178	0	0	3	500	0	0	62	10,665	0	0
Under "The Gold Fields Regulation Act," at a rental of 20s. an acre	110	1077	0	0	89	864	0	0	50	467	0	0	149	1474	0	0
Water-rights and mining easements	93	759	[heads		23	88	[heads		9	74	[heads		107	773	[heads	

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. 255, area, 7367 acres.
 " " " " for coal, No. 8, area, 1390 acres.
 " " " " for water-rights, No. 69, comprising 188 sluice-heads.
 Under "The Gold Fields Regulation Act," No. 203, area, 1895 acres.

No. 5.

RETURN showing the Number of Prospectors' Protection Orders under the Gold Fields Regulations issued during the Year ending 30th June, 1887, and the Districts for which the same were issued.

No. issued.	Districts.
68.....	Northern and Southern.
13.....	North-Eastern.
10.....	Eastern.
58.....	Western and North-Western.
<u>149</u>	

REPORT of the INSPECTOR OF MINES for the Year 1886.

SIR,

I HAVE the honor to submit my Fifth Report as Inspector of Mines, from the 1st January to the 31st December, 1886, 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 that have taken place in mines during the year, returns and tables explaining the same, and the number of inspections made from time to time of mining districts, to convey an idea of how the Inspector has been employed.

It is, however, much to be regretted that, from causes not under control, as against last year the number of fatal and non-fatal accidents is considerably exceeded; but at the same time it is necessary to state that amongst the latter class many were reported which were trivial in their character.

Cases of reckless disobedience to rules by mine managers occurred with Nos. 27, 28, 29, and 30, and Nos. 21 and 22 showed a wilful carelessness of danger that could not be excused.

The Inspector of Mines has visited the various mining districts at irregular periods during the year, and, in some cases, repeatedly; he has also made special examinations of metalliferous and mineral deposits under the authority of the Mines Department, in order to aid parties in obtaining foreign capital for the more extensive development and more comprehensive management than they are likely to obtain from local capitalists, or, in all probability, from the other Colonies. The following are the districts so visited; viz.—

<i>District.</i>	<i>Description of Mining.</i>
Lefroy *	Gold.
Scamander †	Silver and Gold.
George's River	Tin.
Beaconsfield *	Gold.
Waratah	Tin.
Ringarooma *	Tin.
Linda †	Gold.
Fingal *	Coal.
Campania	? (Carbonaceous.)
Railton	Carbonaceous.
Bangor *	Slate.
Brothers' Home *	Tin.
Blue Tier	Tin.
Mount Claude	Silver-Lead.

Rule XXI.—In accordance with the provisions of the Act of 1881, thirty-four steam boilers were examined as to the condition of their steam-gauges, safety-valves, and other requirements, and subjected to the prescribed hydraulic test, showing a decrease of three boilers upon the number tested last year; the outcome of these examinations and tests being mostly satisfactory, or they were, at the instance of the Inspector, first repaired before allowing their use.

	<i>Boilers.</i>	<i>Total.</i>
At Lefroy :		
For the first six months	4	
Ditto second ditto	1	
	—	5
At Bangor Slate Quarries	1	1
At Mount Bischoff :		
First six months	5	
Ditto second ditto	3	
	—	8
At Beaconsfield :		
First six months	10	
Ditto second ditto	10	
	—	20
<i>Total</i>		34
		=

Districts marked with * were repeatedly visited, and the mines examined; those marked † were also visited and a geological examination was made; the whole work was charted and reported. These examinations extended in some cases from a couple of weeks to over a month.

These boilers were tested for the following proprietaries ; viz.—

	<i>Boilers.</i>	<i>Total.</i>
<i>At Lefroy :</i>		
The United Chum Gold Mining Company	1	
The West New Chum Gold Mining Company	2	
The Unity Gold Mining Company	1	
The New Chum Gold Mining Company	1	
	—	5
The Bangor Slate Quarrying Company	1	1
Waratah { The Mount Bischoff Tin Mining Company	4	
{ The Stanhope Tin Mining Company	1	
	—	5
<i>At Beaconsfield :</i>		
The Dally's United Gold Mining Company	1	
The Tasmania Gold Mining Company (battery)	3	
Ditto (pumping and winding)	2	
The Florence Nightingale Gold Mining Company	3	
The Lefroy Gold Mining Drainage Company	2	
The Denmark Gold Mining Association	1	
	—	12
		—
<i>Total</i>		<u>23</u>

or one boiler less than last year.

Remarks.—At one boiler I could not get more than 10lbs. of steam per square inch, when it began to leak in all directions ; could not pass this boiler until necessary repairs were effected, and ordered them to get a new spring balance or spring safety-valve, as the one in use was unreliable. With the remainder of these boilers I had no occasion to find fault, especially as the engineers carried out my directions with alacrity.

One tin mining company was repeatedly informed against for carrying on mining at an unsafe rate, and two inspections were made. On both occasions it was found that the company in question employed experienced miners from Ballarat, Victoria, and these men having full liberty to supply themselves—without any interference by the captain of the shifts as elsewhere, and which has frequently led to accidents—with good sound timber or other necessaries for their arduous work, treated the asseverations made by younger and much less experienced miners with ridicule. I found nothing in that mine to warrant the slightest apprehension of any extensive damage or accident.

In accordance with Section 2 of "The Regulation of Mines Amendment Act, 1884," the companies mentioned below have, after some delay, sent in their underground plans and sections. It is, however, very reprehensible that so much unnecessary time should be lost, and such a waste of correspondence caused before some of these companies comply with the law.

One opulent company sent in their plan and sections as late as March this year, instead of January, and when same was examined it became clear that the authorised surveyor had knowingly sent in same incomplete till the end of the term. With the increasing depths of our mines, and the necessity of getting this work done creditably to the Department, it will soon become necessary to employ special mining surveyors for this purpose. Of the practical utility and value of these underground plans and sections the Inspector of Mines has had several proofs, as same are available for reference on payment of a nominal fee only.

1. The West New Chum G.M. Company, Registered, Lefroy.
2. The Stanhope T.M. Company, Limited, Waratah.
3. Dally's United G.M. Company, Registered, Beaconsfield.
4. The Tasmania G.M. Company, Registered, Beaconsfield.
5. The Florence Nightingale G.M. Company, Registered, Beaconsfield.
6. The Lefroy G.M. and D. Company, Registered, Beaconsfield.
7. The Little Wonder G.M. Company, Registered, Beaconsfield.
8. The Moonlight G.M. Company, Registered, Beaconsfield.

Accidents.

During the year 1886 the following list shows the number of fatal and non-fatal accidents to miners employed in their various branches; viz.—

Fatal Accidents from January to December, inclusive.

Date of Accident.	Connective Number.	Description of Mining.	Locality.	Married.	Single.	Date of Death.	Age.	Names.
January 14th	1	Gold	Lisle	...	1	January 14th	64	Thomas Turner.
February 16th	2	Tin	Wyniford River	1	...	February 16th	47	Lee Ah Too (or Chew.)
March 12th	3	Tin	Waratah	1	...	March 12th	...	Francis Clemens
August 23rd	4	Gold	Beaconsfield	1	...	September 5th	23	Albert Williams
September 27th	5	Anthracite	New Town	...	1	September 27th	65	William Amos
November 25th	6	Slate	Bangor	...	...	November 25th	...	Edward Thomas

Non-Fatal Accidents during the same period.

Date of Accident.	Connective Numbers.	Description of Mining.	Locality.	Married.	Single.	Age.	Names.
February 16th	1	Tin	Wyniford River	...	...	...	Not reported (a Chinaman)
February 20th	2	Slate	Bangor	...	...	...	Samuel Yelland.
February 23rd	3	Tin	Waratah	...	...	...	Joseph Stanley.
February 27th	4	Tin	Waratah	...	...	...	Henry Kleine.
March 8th	5	Tin	Waratah	...	1	..	Frederick Sparks.
March 22nd	6	Coal	Longford	...	...	...	John Lee.
April 2nd	7	Gold	Beaconsfield	1	...	31	Thomas Kestle.
April 16th	8	Tin	Waratah	...	...	...	Samuel Johns.
April 22nd	9	Tin	Branxholm	...	...	...	John Johnson.
May 25th	10	Tin	Waratah	...	...	62	Carl Heine.
July 7th	11	Gold	Beaconsfield	1	...	52	John Hancock.
July 16th	12	Gold	Beaconsfield	...	...	...	John Stephens.
July 20th	13	Gold	Beaconsfield	1	...	32	Henry Brough.
August 23rd	14	Gold	Beaconsfield	1	...	39	Peter Wood.
September 1st	15	Gold	Beaconsfield	1	...	58	Charles Siggers.
September 9th	16	Gold	Beaconsfield	1	...	35	John Campbell.
September 17th	17	Slate	Bangor	...	...	...	Robert Morriss.
September 17th	18	Slate	Bangor	...	...	...	Richard W. Parry.
September 17th	19	Gold	Beaconsfield	...	1	22	James Lowrey.
September 22nd	20	Tin	Waratah	1	...	29	G. Reid.
September 30th	21	Slate	Bangor	...	...	...	Robert William.
October 7th	22	Coal	Mount Nicholas	...	1	24	William Hocking.
October 7th	23	Coal	Mount Nicholas	1	...	40	Daniel Brough.
October 7th	24	Coal	Mount Nicholas	...	1	24	Charles Clancy.
October 7th	25	Coal	Mount Nicholas	...	1	15	Alfred Graham.
October 20th	26	Tin	Moorina	...	...	...	William Dunn.
October 21st	27	Slate	Bangor	...	...	...	William Humphries.
November 3rd	28	Gold	Beaconsfield	...	1	20	Edward Brown.
November 5th	29	Tin	Waratah	1	...	45	Henry Risely.
November 25th	30	Gold	Beaconsfield	1	...	36	Edwin Polk.

MEMO.—Total fatal accidents during the year, 6 ; total non-fatal accidents, 30 ; grand total of all mining accidents, 36.

As already stated, some of these accidents were not of that seriousness, nor did they strictly appertain to mining, to bring them within the category of this report ; at the same time, it is a strange circumstance, and which requires further enquiry, that only one Chinaman in each class suffered from mining accidents,—for, on the whole, I think they are even more reckless than Europeans.

Particulars as to Fatal Accidents.

An old miner was found dead beneath a mass of gravel, which he had been warned to secure with timber before further undermining. Whilst putting the second tamping, the charge of b. powder unexpectedly exploded, driving the bar through one man's hand, in consequence of which he succumbed to tetanus.—One bracedman fell down a coal-pit, and another fell down a main shaft from which slate was being obtained.

Particulars as to Non-fatal Accidents.

There were two cases of fall of trees in the course of removal from the scene of mining operations.—Eleven cases occurred from the fall of rock and timber.—Two cases were caused by falling down shafts and workings on account of insufficient railings and from trestles.—One was caused by his being drawn into working machinery, and another by incautiously placing his foot on a cylinder whereupon the descending crosshead on the top of the piston caused serious injury.—Three were caused by the unexpected and improvident use of explosives.—Five cases were caused by falling off a trestle whilst replacing a truck which had become derailed on a tramway.—The remaining four cases were the result of riding on full trucks of coal which were going down a self-acting inclined tramway, and over which the brakeman had lost all control.—There were two cases of a bucket and some timber falling down winzes upon men working at the bottom.

The Tables and Appendices to this Report for 1886 detail the nature of all and every accident, whether resulting in fatal or non-fatal consequences ; they will be found under the following specified heads ; viz. :—

By fall of earth, timber, trees, &c.	15
By explosions	4
By machinery	3
By falling down shafts and workings.....	8
By sundry unclassifiable accidents	6

TOTAL..... 36

In the order of their frequency in the Mining Districts, they stand as follows ; viz. :—

Beaconsfield	11
Waratah	8
Bangor	6
Branxholm, Moorina, and Wyniford River	4
New Town	1
Lisle	1
Government Diamond Drill	1
Mount Nicholas	4
TOTAL	36

In my last report I alluded to the almost immediate expansion of one of our most valuable branches of the mining industry,—viz., Coal,—and I have now to report that one Company alone, at Mount Nicholas, has reached an output of from 500 to 700 tons per week, for which purpose it employs about forty miners, not counting other employees. As the Coal is being won by means of adits following the seams, there appears to be no cause for apprehension at present as to the necessary ventilation, or the probability of engendering “fire-damp” or other noxious gases ; should, however, other mines start on their seams in that locality, it will be necessary to provide for local and continuous inspection of these rapidly developing mines.

There is one other important matter that, in my opinion, requires immediate attention,—viz., the Registration of all mining managers, engineers, and engine-drivers. The Inspector has frequently had his attention drawn to above by persons from the other colonies, enquiring where they could *re-register the Certificates* they are compelled to possess in Victoria, New South Wales, and elsewhere. At present there is no provision made by law for so very desirable and necessary a practice ; but it is now urged that the department should take cognizance of this matter, and, if nothing more, initiate at once the registrations on *Certificate of Servitude* for the present, and, at the end of the next two years (not less), make it compulsory for mining managers, engineers, and engine-drivers assuming or being appointed to such positions, and not possessing such Tasmanian Certificates (or Colonial and English), to pass an examination before a Board to be appointed for the purpose. This would prove an excellent incentive for our young men to acquire practical technical education, and assist greatly in the formation of itinerant lectures, to be given at the various mining centres, which laudable project has, for some time past, engaged the attention of the Secretary for Mines ; eventually such a proceeding would result in the establishment of a School or Schools of Mines near the mining districts, which I believe could, after the preliminary expenditure had been provided for, be made self-supporting, and attract attention from the other colonies, if the course of instruction is practical and based on scientific principles.

Improvements in Mining Appliances.—The saving of Floured Quicksilver.

It may be of considerable interest to refer to the above subject in this Report, because, if a saving of the now escaping “floured” quicksilver used in our batteries can be effected, additional value in the process will be obtained, as for every pound of quicksilver there is a corresponding loss of very fine gold amounting to from one pennyweight to four or five per pound of mercury used, and more in proportion to the kind of quartz treated and crushed.

The process described below not only successfully collects the gold and amalgam hitherto running to waste, but deals principally with the “tailings,” which have had some treatment before. The process is now known as Dr. Rae’s, of Dayton, State of Nevada, U.S.A., and it appears to depend upon the action of electricity diffused throughout the mass of tailings treated in pans in which the usual “stirrers” are working circularly from a vertical spindle. Such pans, which were at one time much more in vogue in Australian gold-fields than now, and which were dispensed with, entailing undoubted loss to our gold yields, were in the course of the process nearly filled with tailings to be operated upon ; the two poles of a battery were then connected with the material, and it was, after working a short time, left standing. The material was then, as a test, dished or panned off in the ordinary way, when nearly an ounce or more of mercury, containing some amalgam, was the result. Very little “floured” quicksilver could be seen in the pan at its edges. Then a similar quantity was tried in another pan, but *without* electricity. The whole edge of this pan, after similar time for working, was found to be white with mercury in its floured state, but it would not consolidate in a mass as when treated with electricity.

Machinery has now been constructed for this particular kind of treatment, by means of which, it should be borne in mind, so very satisfactory results, as mentioned further on, are being achieved. To overcome a certain amount of resistance to the electrical current which is developed in the water, certain chemical substances are added. The strong current of electricity which is passed through the material results in aggregating or almost fusing the fine particles of floured quicksilver, which are now usually lost or carried away in the water, because it has always been found impossible to unite them by ordinary means into a body large enough to be collected.

A test extending over seven days, it was found that the quicksilver collected by this process was returned in a bright, lively, and healthy state for future amalgamation, and altogether free from iron or scum.

NOTE.—Considering the limited number of miners employed at the Bangor Slate Quarries as against a larger number in other mines, there seems to be either a greater laxity in supervision at the former, or the quarrying of slate is a more dangerous occupation : this matter will be specially enquired into.

The tailings were, for this test, carefully mixed and weighed out in two parcels, for the Dr. Rae's electrical method and for the old way; strict attention was paid to assaying the pulp as delivered from the pans to the settlers, and when the latter were discharged. The bullion return from 52 tons of tailings for the electric, and from 17 tons for the old methods, showed a loss of mercury for the first order of 17 lbs., and for the second order a loss of 34 pounds, which at once demonstrates the superiority of the new process:—

	<i>Old Method.</i>	<i>Rae's Method.</i>
Number of tons	17	52
Ounces of bullion	611·50	1219·80
Value	\$41·09	\$181·83
Increase of bullion production, per cent.	—	47·11
Fineness	52·10	115·10
Increase of fineness of bullion	—	63·10
Fineness of gold returned	3·10	4·10
Gain on returns of gold, per cent	—	33·33
Saving of quicksilver, per cent	—	83·33

From this table it would appear that the mining superintendents declaring same an emphatic and perfect success, is proved by fact.

As will be seen from a perusal of Appendix A. of this Report, R. D. Robertson, Mining Manager of the Bangor Slate Quarries, was informed against for having lawfully failed to comply with Rule 9, Regulation of Mines Act, 1884, and Section 1 of Regulation of Mines Amendment Act, 1881, and having been found guilty of the first charge, the second was withdrawn. He was fined in all, costs and witnesses allowances included, in the sum of £8 19s. 6d.

Besides my already onerous duties as Inspector of Mines, I have acted by request of various mining companies as a Mining Geologist, and in both branches the correspondence keeps on increasing, whilst the fees for such geological inspections, and for the production of charts and reports, amounted to a considerable sum, which was paid into the Consolidated Revenue of the Colony.

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, 1886.

Gold District.	Mineral District.	Mine Owner.	Date of Accident.	Con- nective No.	Cause of Accident.	Killed.	Injured.	REMARKS.
Lisle	...	Private	14 January	1	Fall of earth	1	...	Thomas Turner (64 *.) P. C. Wm. Stewart. It appears that this old miner was engaged in the alluvial diggings in "fossicking" for gold; on the day previous to his death he was warned by Geo. W. Kemp, a miner, of the danger he was running in not properly timbering his workings. He had undermined a bank of gravel 12 feet in height to a depth of 3 feet under, for a length of 15 feet, and had used but one prop. The accident must have taken place in the face falling over and burying T. under the debris; in the absence of a Coroner the under-mentioned miners,—viz., Wm. Gunnel, Wm. Farman, Joseph Trowance, and Wm. Dalzell,—gave it as their opinion, after examination, "that the accident happened through Turner's (the deceased) own neglect in not properly propping up his work, and they were also of opinion that Turner was killed soon after going to his work in the morning, and that no blame is attachable to any one."
Ditto	Wyniford River	Argus T. M. Co.	16 February	2 3	Fall of earth	...	...	Lee Ah Too or Chew (47; m.) John Wilson. This man belonged to a party of tributors, and was grubbing a tree which stood in the way of their mining operations, when, going for a drink in the opposite direction in which it was supposed the tree would fall, was, by misadventure, struck by a flying limb on the head and instantly killed. Another Chinaman was also very much hurt at the same time.
...	Turner's Marsh	Bangor Slate Quarrying and Mining Association, Limited.	20 February	4	Want of proper railing and centering in shaft	...	1	Samuel Yelland. Supt. of Police. This accident occurred at the 200-feet level, and it appears that on this company's large cages six men are allowed to ascend and descend from and to their work. Although there was no evidence available of a rush for place having taken place, still it is a significant fact that the manager has punished miners several times for disobeying his orders not to rush on to the cage. It appears that Yelland stepped on the cage after a miner named Hancock, and, in turning round facing the plat, he slipped on the rails and fell through the guard-irons of the cage, as there were no centres there, into the adjoining winding-shaft, falling 62 feet, fracturing his collar-bone of the right shoulder, besides receiving other injuries in the back. This case was not reported to the Inspector of Mines, but by the Police and through the Press he received the information. The shaft was inspected on the 9th of March following, as it was left in the same state as when the accident took place. At the 200-feet level the "centres" dividing the shaft were not carried down to the sole of the plat by four feet—thus leaving at each side of the "runners" or "guides" a clear and unprotected space measuring 4 feet in height by 18 inches in width on the tram-rails at the bottom, a space most likely to result in accidents. Seeing that the mining manager had not complied with, even after this accident, the provisions of the Regulation of Mines Act, the Inspector of Mines laid an information against him,—viz., for not giving the required notice within 24 hours of the accident (Sect. 1, Regulation of Mines Amendment Act, 1884), and that on the 9th March, 1886, he did unlawfully fail to comply with No. 9 Rule, Sect. 11, 45 Vict. No. 8, 1881, by not having

* NOTE.—Numbers after names give the age; m. means they are married; s. means they are single.

...	Waratah	Mount Bischoff Tin Mining Company, Registered.	23 February	5	Unloading a lorry or truck.	...	1	Joseph Stanley. C. H. Hall, S. M. M. This man was unloading a truck filled with refuse stones from the mines, when the tramrails broke, and S. was precipitated down the side of the "tip," causing a very severe shaking, incapacitating him from work for some time.
...	Ditto	Ditto	27 February	6	Drawn into a revolving pulley	...	1	Henry Kleine. C. H. Hall, S.M.M. This youth was employed in the Company's dressing sheds, and, on his wiping a belt working a "jigger," allowed his hand to approach too close to the pulley, causing his hand and arm to be drawn in, resulting in a simple fracture above the elbow.
...	Waratah	Ditto	8 March	7	Cutting his foot	...	1	Frederick Sparks (s.) H. W. F. Kayser, M. M. This accident was reported; but, as it is a very simple affair, it proves the anxiety of Mining Managers to report all and even trivial accidents.
...	Ditto	Ditto	12 March	8	Falling of a tree	1	...	Frances Clemens (m.) H. W. F. Kayser. The particulars of this accident are unusually scant; but it appears that a tree fell on Clemens' leg, smashing it right up, almost to thigh. He survived the amputation of the leg, undertaken at his friends' desire, but eight hours, as it was a hopeless case from the first. Verdict by the Coroner's Jury, "Accidental Death."
...	Longford	The No. 1 Government Diamond Drill	22 March	9	Crushed by the cross-head of pump	...	1	John Lee. Jas. Harrison, Foreman. On starting the large force-pump of the diamond drill, Lee inadvertently placed his foot between the cross-head and the cylinder, when, on the downstroke of the piston, his toes were severely crushed.
Beaconsfield	...	The Tasmanian Gold Mining Company, Registered	2 April	10	Fall of rock and timber	...	1	Thomas Kestle (31; m.) Joseph Davies. This miner was engaged in or near the intermediate level of the No. 5. It appears that that level had been undermined, causing the ground to give away, dragging rocks and several sets of timber upon the man, who was completely entombed. However, the captain of the shift and several other miners set immediately to work and extricated him from his dangerous position. He had a very narrow escape, having only received some severe bruises and cuts upon his arms and hands.
...	Waratah	West Bischoff Tin Mining Company, Registered	16 April	11	Collapse of staging	...	1	Samuel Johns. Wm. White. Johns and another miner were engaged throwing crushing-dirt upon a platform supported by two beams of square timber 4½ in. by 2½ in. square measurement. Before the usual quantity of dirt it had borne before, about 500 cwt., had filled the staging, the quarterings broke, and some timber severely cut Johns' hands.
...	Branxholm	Arba Tin Mining Association (private)	22 April	12	Fall of earth	...	1	John Johnson. M. Stackhouse. This miner was severely hurt in the leg from a fall of gravel or earth in the face of the workings.
...	Waratah	Mount Bischoff Tin Mining Company, Registered	25 May	13	Falling off a high tramway	...	1	Carl Heine (62; s.) H. W. F. Kayser. This engine-driver was taking a trolley of firewood to the air compressor engine, when it became fast on the rails. He used one of the corner pins instead of a proper lever, and it slipped in trying to lift the truck, himself falling off the tramway, landing on some rough stones. He had two ribs broken, and his lungs were, by all appearances, also injured.
Beaconsfield	...	Tasmania Gold Mining Company, Registered	7 July	14	Fall of rock	...	1	John Hancock (52; m.) Joseph Davies, M. M. In "gadding" down some quartz it fell upon his foot severely injuring the same.

Gold District.	Mineral District.	Mine Owner.	Date of Accident.	Connective No.	Cause of Accident.	Killed.	Injured.	REMARKS.
Beaconsfield	...	T. G. M. Co., Registered	16 July	15	Truck throwing down a ladder	...	1	John Stephens. Joseph Davies. This was the captain of the shift, who, on taking some picks out of a truck, the ladder moved and threw down a ladder which, in falling, took off the top of a finger.
Ditto	...	Ditto	20 July	16	Full of rock	...	1	Henry Rough (32; m.) Joseph Davies. Whilst working in the stopes, No. 5 level, a piece of the hanging wall fell upon his head and hand, cutting same severely.
Ditto	...	Ditto	23 August	17 18	Explosion of blasting powder whilst putting in a charge	1	1	Albert Williams (23; m.); Peter Wood (39; m.) Joseph Davies, M. M. It appears that these two miners were working at the No. 5 level, and that they had drilled a hole to a depth of 2ft. 7in. After charging same with the usual quantity of b. powder they put in the "tamping," using the regulation copper-headed tamping-bar, and, after inserting the second lot of tamping the charge all at once exploded, driving the bar for half its length through the palm of Williams's hand, whilst Wood escaped with considerable disfigurement from the powder, but escaped very serious injury. Williams had, besides, his little finger blown off, and his face was severely cut as well as blackened. It remains a mystery to say how the powder did ignite, and the mining manager surmises that some loose powder may have been left around the top of the hole, and that burned whilst tamping. MEMO.—Albert Williams succumbed to tetanus in the Launceston Hospital on Sunday, the 5th September.
Ditto	...	Florence Nightingale Gold Mining Company, Registered	1 September	19	Fall of a bucket down a winze	...	1	Charles Siggers (58; m.) George Webb. This miner was one of a party of contractors working at the bottom of a winze worked by means of a windlass erected on top. On lowering a bucket it caught on a nail which projected from the skids or guides, causing it to unhook and to fall upon S.'s shoulder below, fracturing the shoulder blade. With a little attention and care this accident might very easily have been prevented.
Ditto	...	Tasmania G.M. Company, Registered	9 September	20	Fall of earth	...	1	John Campbell (35; m.) Joseph Davies. This man was sending mullock or spoil down a pass, and finding same to have become choked, he tried to clear it below the No. 2 level, when it suddenly started to run, completely burying him beneath a mass of stuff falling on him from above. He was quickly extricated, however, and no very serious consequences are anticipated to follow his dangerous venture.
	Bangor	Bangor Slate Quarrying Co., Limited	17 Sept.	21 22	Explosion of blasting powder	...	2	Robert Morris, Richard W. Parry. Jas. Fairleigh, Underground Foreman. Having drilled a hole in slate they charged it with b. powder in the ordinary way and "tamped" the charge, whereupon they lit the fuse, forgetting, however, that they had a canister containing about 5lbs. of b. powder lying near the hole: a spark from the fuse fell into it, causing a great explosion. Both men's faces, neck, and arms were severely burned.
Ditto	...	Tasmania G. M. Company, Registered	17 Sept.	23	Fall of rock.	...	1	James Lohrey (22; s.) Joseph Davies. Two men were putting up a rise near the surface, and L. was cutting out a "hitch" in the hanging wall to put in timber, when a mass of rock of this wall, which is clay-slate, slipped out, fell upon him, and forced him against the foot-wall some four feet away, the miner escaping with very severe contusions and bruises.
	Waratah.	Mount Bischoff Tin Mining Company, Registered.	22 Sept.	24	Working hot steel	...	1	John Reid (29; m.) H. W. F. Kayser. Whilst following his occupation as a blacksmith, a piece of hot steel flew from the anvil into his eye, injuring it very severely.
	New Town (coal)	Messrs. Sherwood & Taylor lessees	27 Sept.	25	Falling down a coal-pit	1	...	William Amos (65; s.) Messrs. Sherwood & Taylor. From the evidence adduced at the inquest, before Mr. Coroner B. Shaw, it appeared that Amos was employed as banks or brace-man, and that

...	Bangor	Bangor Slate Quarrying Co., Limited	30 September	26	Fall of slate	...	1	Robt. William.	J. D. Robertson.
...	Mt. Nicholas, (Coal)	Cornwall Coal Mining Co., N.L.	7 October	27	Jumping off trucks working on an incline	...	1	Wm. Hocking, 24, (s.)	
				28		...	1	Dan. Brough, 40, (m.), 7 children.	
				29		...	1	Chas. Clancy, 24, (s.)	
				30		...	1	Alfred Graham, 15.	John E. Shaw, Colliery Manager.
...	Moorina	Leopold Tin Mining Company	20 October	31	Fall of earth	...	1	William Dunn.	Robert Davey.
...	Bangor	Bangor Slate Quarrying Co., Limited	21 October	32	Fall of slate	...	1	Wm. Humphries.	J. D. Robertson.
Beaconsfield	...	Florence Nightingale G.M. Co., Regd.	3 November	33	Crushed in a cage	...	1	Edward Brown, 20, s.	Geo. Webb.
...	Waratah	Mount Bischoff Tin Mining Company, Registered	5 November	34	Squeezed between two logs	...	1	Henry Risely (45 m.)	H. W. F. Kayser.
...	Bangor	Bangor Slate Quarrying Company, Limited.	25 November	35	Falling with a truck down the shaft	1	...	Edward Thomas.	R. D. Robertson.

he had to land the "box" with coal on a runner or trolley at the top of the pit's mouth. To keep this trolley in its place a "chock" was used for spragging the wheels at the proper place. As no one saw the sad occurrence, it was only elicited from witnesses underground and at the surface, that A. must have walked backwards towards the shaft after emptying the box of its contents, and dragging it after him. As the chock was found on top of the runner and had consequently not been used, the trolley, on account of the stiff incline towards the shaft, must have overtaken him and pushed him into the shaft, whence he fell 50 feet, and the box fell on top of him. He died in a very few minutes. The Coroner very obligingly furnished the whole written evidence taken before him, and the jury returned a verdict—"That Amos was accidentally, casually, and by misfortune killed on the 27th September, 1886."

In splitting a block of slate it broke and caused severe cuts upon three of his toes.

John E. Shaw, Colliery Manager.

The Colliery Manager accompanied the injured miners to the hospital, and signed in my office the following statement:—At half-past four p.m. on the 7th instant, was lowering the boxes (trucks?) for the first time, loaded with about six tons of coal, and at the first gradient, after leaving the top of the incline (a self-acting tramway) the Manager applied for a test the new "brake," which acted well, it being a very powerful brake. Starting on again until the next gradient was reached, which was at the rate of 1 in 9½, the boxes stopped there; men were then sent down to move them further down the line; they succeeded in doing so, but the men—against strict orders to the contrary—rode down on the boxes, gradually assuming greater speed, as owing to the still steeper gradient (1 in 7½) and of the brakeman, instead of applying the brake, eased it off, thus giving still more impetus to the heavy train, causing the men, in order to save themselves, to jump off, landing amongst rocks, &c.; one man and a boy remained on until they reached the bottom; the first-named received bruises in the chest, and the boy escaped with cuts on the forehead and a wound on the arm. The other two were injured as follows:—Wm. Hocking, leg and arm broken; Daniel Brough, concussion of the brain and broken nose. All recovered after a couple of months' treatment in the hospital.

Small bone of leg broken by fall of earth.

Whilst ascending in a cage he very incautiously allowed his shoulder to be too far outside, and he thus came into contact with the flat timber at one of the levels, causing a severe contusion.

Getting down some mining timber this miner was overtaken by rolling logs and considerably bruised.

This man was bracedman at the main shaft, and from the evidence of Edwin Hayes, engine driver, it appears that he had spoken to the unfortunate man but a few minutes before, and other points which were confirmed, subsequently, by my own investigation. As no one

