

(No. 60.)



1884.

PARLIAMENT OF TASMANIA.

REPORT OF INSPECTOR OF MINES FOR 1883.

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



REPORT of the INSPECTOR OF MINES for the Year 1883.

Inspector of Mines Office, Launceston, December, 1883.

SIR,

I HAVE the honor to submit my second Report as Inspector of Mines, from the 1st of January to the 31st December, 1883, inclusive.

The results of the administration of "The Regulation of Mines Act, 1881," together with the list of accidents which have occurred in the Mines of Tasmania during the period mentioned, and other Tables and Returns, &c., also illustrations of new mining appliances, connected both with the carrying out of the Act and of the mining operations in the Colony, are hereby presented for consideration.

The result of the numerous and frequent inspections of the various mining districts in connection with the administration of the Act has led up to the organisation of a system by means of which, it is believed, the provisions of the Act have been better observed than in the first year, at the same time the miners and mine-owners have become more careful in carrying on their mining operations.

Several prosecutions were instituted, and the mine managers who were convicted in the several cases brought before the Police Court were fined, and ordered to pay expenses and costs; the latter, however, were as nothing if compared with the loss of time and the personal expenses entailed, thus conveying a lesson not likely in future to be disregarded.

It is, however, quite clear that in several respects our Act should be amended, and if so, that the following Clause or Section be added, viz.:—"Any accident occurring in a mine shall be *prima facie* evidence that such accident occurred through some negligence on the part of the owner." With regard to that Section, the beneficial effects arising from its adoption have already been dealt with in my Report for the last year, but as that Section constitutes a most important feature in all Regulation of Mines Acts in Australia, New Zealand, and England, the repetition of its salient points is again submitted for consideration:—

- (1.) The onus of disproval or otherwise of neglect is thrown upon the owners, and subsequently on their servants or managers employed by them.
- (2.) That either of them, or both, on being charged by the Inspector of Mines with any such negligence, will, under the proposed Section, have to take the initiative in proving that any accident or accidents were not owing to any negligence on their part.

In this Colony, where the mining districts are so widely distributed and at great distances from each other, the Inspector of Mines experiences very great difficulties in obtaining information at times of accidents, and mostly so when too late for his personal examination of the mine or mines in which they may have occurred. In Victoria and other colonies, where each Inspector has his own district to supervise, which can be easily traversed in most cases by railway or other means, that Section has been found to be imperatively necessary for the proper administration of that Act, therefore its adoption in our Act appears to be of the greatest possible necessity, where many mines are almost inaccessible or too remote for the Inspector's duties even after having been duly notified of any such accidents.

With regard to safety appliances, those mining companies who are compelled under this rule to use same have supplied themselves with Seymour's patented safety cages and Middleton's safety hooks, and no complaint has reached the Inspector as to any failure in their action. One or two cases of overwinding (not reported) have, it is said, taken place at Beaconsfield, which show the necessity for introducing in shafts where there is a large amount of traffic either of miners or

Sect. M.
Rule (xv.)

minerals the best approved means for preventing such mishaps in future. Mr. Harrison, foreman of the No. 2 Diamond Drill, has constructed a model for showing how the overwinding of any cage in connection with a novel safety hook need not result in the falling down of such cage, or cages, in the shaft. This he has effected by the construction of a second and higher than the ordinary brace or landing floor. The brace in question is geared with double falling doors, acting automatically by means of counter-weights. These doors are hinged at the bottom, and can be opened the full width of the shaft, but close on an elevated centre at an angle of about 25 degrees above the hinges. This will allow the cages to pass through, but on overwinding or a breakage of the ropes the cage will be arrested on these doors. In a case of overwinding, for instance, the cage would be drawn up under the sheaves, when the rope would either break or the safety hook would come into action and the cage would then fall down the shaft. With Mr. Harrison's invention, however, this is impossible, as such a cage would only drop about four inches and rest on the falling doors. These, or similar appliances, are in use elsewhere; but Mr. Harrison's idea appears preferable on account of its simplicity, strength, and promptness in action when unforeseen and accidental circumstances compel their being brought into play.

As the Act specially provides under Section 11, Rule (xv.), for such exigencies, all mining companies will henceforth be required to construct this or similar appliances in order to avoid preventable accidents.

During the year 1883, in accordance with Section 11, Rule (xxi.) of the Act, not less than 57 steam boilers were subjected to a hydraulic test, and they, without exception, withstood the average 50 per cent. extra over working pressure brought to bear upon the same; viz.—

		<i>Boilers. Total.</i>	
Test of boilers.	Lefroy :		
	At end of first six months.....	19	
	Ditto second ditto	12	
		—	31
	Beaconsfield :		
	At end of first six months	8	
	Ditto second ditto	18	
		—	26
	<i>Grand Total</i>		57
			==

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

		<i>Boilers.</i>
At Lefroy :		
	The Lefroy Pyrites Calcining and Reduction Company (multitubular)	1
	New Chum Gold Mining Company (Cornish flue) and battery	3
	East New Chum Gold Mining Company (portable).....	1
	West New Chum Gold Mining Company (Cornish flue and battery)	3
	United New Chum Gold Mining Company (ditto).....	2
	Rob Roy Gold Mining Company (portable).....	1
	Morning Star Gold Mining Company (multitubular).....	1
	New Native Youth Gold Mining and Crushing Company (Cornish flue) .	6
	Government Diamond Drill, No. 1 (multitubular)	1
		—
		19
At Beaconsfield :		
	The Florence Nightingale Gold Mining Company (two Cornish flue and one portable multitubular)	3
	Tasmania Gold Mining Company (Cornish flue).....	5
	Messrs. Masters and Company Pyrites Works (portable)	1
	Messrs. Ellis and Company (battery, portable)	1
	Little Wonder Gold Mining Company (battery).....	1
		—
		11
	<i>Total</i>	30
		==

Or, showing an increase of fifty per cent. on the number of boilers tested last year.

Two mining companies were directed, under Section 9, to regulate and repair their steam pressure gauges, and two other Companies were in the same manner to repair their steam taps used by them. In one case, where complaints had been made of the unsafe condition of a portable boiler and engine, the Manager was prohibited forthwith from lowering men from the surface or raise same from underground. And in one instance, where the engine-drivers were working a winding engine without proper indicators in connection with the signalling apparatus used (Rule x.) at the winding gear, the Mine Manager was instructed to fit up same without any delay; and I can now report that these instructions have been complied with by the parties chiefly interested.

Owing to the occurrence of accidents (in one case fatally so), and in consequence of complaints reaching this office from several mining districts, of open shafts and cuttings having been left in an unprotected and dangerous condition, notices were served through the post on the owners of the land to abate the same, and either put up fences around such dangerous excavations, or, where they were too numerous within a limited area* to be so secured unless at too great an expense or to be filled in, the Inspector of Mines directed the owners to have printed notices displayed in conspicuous places, or exhibited in close vicinity to bush tracks or other thoroughfares, warning people to beware of such dangerous excavations in the neighbourhood.

With regard to the special rules framed by mining companies who have found it both useful and necessary to adopt same for governing the methods of working and the behaviour of their employees, the amendment of our present Regulation of Mines Act should, if possible, amongst other necessary provisoes, include the introduction of "a uniform system of working signals to be used by engine-drivers employed at our mines, or by persons in charge of other machinery used in hauling or lowering men or material at their mines, as such would in this Colony remove a source of danger, and that without any additional expense or trouble."

This matter has been fully explained in my last Report, and it is no doubt urgently required for reasons then shown and still existing.

The Regulation of Mines and Machinery Act, 1883, passed by the Victorian Parliament, provides, amongst other excellent matters calculated to conserve the lives of miners and of others, the following Rules, which deserve attention and embodiment in our to be amended Act; viz.—

- "(13.) Every working shaft in which a cage is used and every division of such shaft in which persons are raised and lowered and every shaft in which appliances worked by steam machinery are used shall be provided with guides and some proper means of communicating distinct and definite signals from the bottom of the shaft and from every entrance for the time being in work between the top and the bottom of the shaft to the top and thence to the engine-room and from the engine-room and top to the bottom of the shaft and to every entrance for the time being in work between the top and the bottom of the shaft and no verbal signals or communications shall be made up or down a shaft exceeding fifty yards in depth in which cages are used except through speaking tubes or telephones in the pump compartment of such shaft, and every person employed in a mine shall make himself acquainted with the system of signals used in such mine : Signalling.
- A line or some other appliance shall be provided in each shaft to admit of danger signals being communicated to the engine-driver from any portion of such shaft : Danger-signal line.
- "(14.) A clear view shall be kept for the engine-driver between his station and the shaft at the surface-brace : Clear view between station of engine-driver and shaft at surface brace.
- "(15.) All methods of signalling in mines to indicate that men or material are to be raised or lowered in shafts shall be clear and distinct and shall be subject to the approval of the local Inspector of Mines, and shall also be subject to such alterations and amendments as may from time to time be indicated by the Minister on the report of the local Inspector of Mines and any neglect to carry out such indicated alterations or amendments shall be an offence against this Act, and the system observed shall be notified in some conspicuous part. All modes of signalling indicating that men are to be lowered or raised to be clear and distinct."

With regard to Section 5 of "The Regulation of Mines Act," the under-mentioned mining companies have complied with same, and they, after some delay, furnished plans and sections of their underground workings, whereby a considerable amount of very valuable information has been obtained. In future it is anticipated that instead of using for each deeper level and working as many shades of colour, Indian ink will be found sufficient for the purpose and as less expensive; also that the levels, &c. may be distinctly numbered and their depth given as well :—

Plans and Sections.

1. Native Youth G.M. Company, Lefroy	1
2. West New Chum G.M. Company, ditto	1
3. New Chum G.M. Company, ditto	1
4. Morning Star G.M. Company, ditto	1
5. Tasmania G.M. Company, Beaconsfield	2
6. Olive Branch G.M. Company, ditto	1
7. Little Wonder G.M. Company, ditto	2
8. Florence Nightingale G.M. Company, ditto	2
9. Mount Bischoff T.M. Company, Waratah	2
10. Mount Claude Silver-Lead Mining Company, West Devon	1
11. Royal Tasman G.M. Company, Gladstone	1
12. Mount Bischoff Silver-Lead Mining Co., Hampshire Hills	1
13. East New Chum G.M. Company, Lefroy	1
14. United Chum G.M. Company, ditto	1
15. Mount Heemskirk T.M. Company, Mount Agnew	1†

*Tarleton, Mersey River Coal Mining District.

† NOTE.—"The Inspector of Mines Office has been very courteously presented by the Hon. Minister of Mines of Victoria with 19 lithographed plans and sections of the Hustlers', Garden Gully, and Now Chum Reef workings at Sandhurst, made by the Underground Surveyor of that Department for Mines. An inspection of these exhibits affords convincing proof of the great value of all similar plans to the Government and to the mining community at large."

During the current year (1883) there have been no severe accidents reported as having been caused by the use of nitro-glycerine compounds or blasting powder; but, nevertheless, the remarks made in last year's report still are applicable, as at any moment such rules as there recommended for adoption may become necessary, as not too much care can possibly be given to this matter. This also includes the storage at the mines of explosives. In Appendix D. the rules in force under "The Victorian Mines and Machinery Act, 1883," are quoted in full for mature consideration, as, with the increasing depths and the lateral extension of our mines, the rules referred to will become a guide for our miners to follow.

The total number of miners employed in Tasmania during 1883 has been kindly furnished by the Secretary for Mines at 4100*, being an increase of 100 upon 1882.

Accidents.

Since the beginning of 1883 the total number of miners killed and injured whilst following their various avocations is as follows:—

Fatal Accidents from January to December, 1883, inclusive.

Date of Accident.	Consecutive No.	Description of Mining.	Locality.	Married.	Single.	Date of Death.	Compensation.	Age.	Names.
1883.									
January 20th	1	Tin	Moorina	...	1	Jan. 20th	...	54	Ah Wing.
March 16th	2	Tin	ditto	...	1	March 17th	...	...	Loong Moon.
Sept. 2nd	3	Tin	ditto	...	1	Sept. 2nd	...	...	Ah Hon.
Nov. 9th	4*	Tin	ditto	...	1	Nov. 9th	...	...	Ah Katt.

Non-Fatal Accidents.

Date of Accident.	Consecutive No.	Description of Mining.	Locality.	Married.	Single.	Date of Recovery.	Compensation.	Age.	Names.
1883.									
January 5th	1	Tin	Mount Bischoff	...	...	...	...	...	Jas. Martin.
January 31st	2	Tin	Ringarooma	...	1	...	...	22	Jas. Walker.
Feb. 17th	3	Gold	Lefroy	...	...	...	...	...	Contractor.
Feb. 22nd	4	Tin	Mount Bischoff	...	...	...	...	...	Dan. Priest.
March 8th	5	Tin	S. Mt. Cameron	...	...	...	...	...	Lung Lehung.
March 23rd	6	Tin	Gould's Country	...	...	...	...	...	Donald Blackwood.
March 27th	7	Gold	Beaconsfield	...	...	...	...	...	David Henderson.
April 3rd	8	Gold	Ditto	...	...	...	...	...	Mat. O'Halloran.
May 12th	9	Tin	Bros. Home	...	...	...	...	...	John Hunter.
May 19th	10	Tin	Mount Bischoff	...	...	...	...	...	Jno. Hy. Fairfield.
June 11th	11	Tin	Ben Lomond	...	...	...	...	...	William Dodd.
June 12th	12	Tin	Ringarooma	...	...	...	...	...	John Cronin.
June 21st	13	Gold	Beaconsfield	...	...	...	...	45	W. Dobie.
Ditto	14	Gold	Ditto	...	...	...	...	50	Thos. Davies.
June 26th	15	Coal	Bruni Island	...	...	...	...	44	William Zschachner.
Ditto	16	Gold	Lefroy	...	...	...	...	...	Benjamin Simpson.
July 13th	17	Gold	Ditto	...	...	...	...	...	G. Herbert.
July 14th	18	Gold	Beaconsfield	...	...	...	...	64	Richd. Davey.
July 19th	19	Gold	Ditto	...	...	...	...	50	John Hine.
July 20th	20	Tin	Branxholm	...	...	...	...	31	A. Barry.
July 31st	21	Gold	Beaconsfield	...	...	...	...	...	James Newstead.
August 27th	22	Tin	Moorina	...	...	...	...	30	Chas. Mortimer.
Sept. 6th	23	Gold	Beaconsfield	...	...	...	...	...	C. Meekin.
Sept. 18th	24	Gold	Ditto	...	...	...	...	...	Andrew Campbell.
Sept. 20th	25	Gold	Ditto	...	...	...	...	...	Thomas Trevena.
Ditto	26	Gold	Ditto	...	...	...	...	...	Wm. Thomson.
October 5th	27	Gold	Lefroy	...	...	...	...	...	William Hunkin.
October 10th	28	Gold	Beaconsfield	...	...	...	...	...	George House.
October 12th	29	Tin	Mount Bischoff	...	...	...	...	...	Alfred Lucas.
October 19th	30	Tin	Ditto	...	...	22nd Oct.	...	...	Michael Macnamara.
October 23rd	31	Tin	Gladstone	...	...	29th Oct.	...	37	John Waite.
Nov. 2nd	32	Tin	Mount Bischoff	...	...	...	...	...	Thos. Keating. [nger.)
Nov. 13th	33	Tin	Ringarooma	...	...	...	...	...	W. Brennan (Mine Man-
Dec. 3rd	34	Tin	Gladstone	...	...	...	...	20	John White.
Dec. 8th	35†	Gold	Mount Victoria	...	...	...	...	49	Oliver Rowe.

* Total fatal accidents amount to four for the year 1883, or 1.25 per thousand of miners employed, showing a considerable reduction, amounting to a fraction less than 1.75, upon the first year since "The Regulation of Mines Act" came into force.

† Total number of non-fatal accidents amount to thirty-five for 1883, or an increase of not less than seventeen over that of last year, 1882. The total number of all accidents during 1883 aggregate to thirty-nine, as against twenty-six in the preceding year, or an increase of thirteen for the second year since the Act has come into force.

There is, however, a reduction of not less than a little over fifty per cent. in the number of fatal accidents that have occurred during the year, which is doubtless a most satisfactory circumstance, perhaps the more so from the fact that the European miners appear to have exercised so great care as not to suffer any loss of life in that respect.

In analysing for comparison the above Tables and the Appendices to this Report, detailing the nature of each accident whether fatal or otherwise, it will be found that the whole of the accidents are comprised under three different heads, viz.—

By fall of earth and fluming.....	31
By machinery	2
By falling down of shafts, winzes, rises, or cuttings	6
TOTAL	39

Particulars as to Fatal Accidents.

1. Ah Wing, in moving, by means of a lever, a stump standing on the bank of an alluvial face, slipped to the bottom of that cutting, and the already previously loosened stump followed and fell upon him, causing his death a few hours after. Verdict by the jury: "Accidental death."

2. Loong Moon was cautioned not to undermine a face of tin-bearing gravel; he persisted in doing so, however, and the bank of tin-bearing gravel gave way and fell upon him, causing his death the following day.

3. Ah Hon was found dead near and under an old "fluming," which had fallen upon him. It is surmised that he had undermined one of the supports of the fluming in order to obtain some tin-bearing wash.

4. Ah Katt, one of a party of five tributors, was killed, and the Coroner furnished, by telegraph, the Inspector of Mines with the following copy of the verdict of the jury:—"The Chinaman Ah Katt came to his death by a fall of a body of earth whilst working at the Mount Cameron Hydraulic claim. Deceased was working with a pick under the "face"—about 8 or 10 feet high—when the bank of earth fell over him, killing him; quite dead when the body was recovered."

It will be perceived that three at least out of these four fatal accidents could have been prevented if the supervision had been more strict over the miners thus deprived of life.

Particulars as to Non-fatal Accidents.

With regard to these, the respective localities in which they severally occurred stand in the following order, commencing with the more frequent; viz.—

Moorina, Gladstone, Ringarooma, Brothers' Home, Mount	
Cameron, Branzholm, and Gould's Country.....	14
Beaconsfield	12
Mount Bischoff.....	6
Lefroy.....	4
Mount Victoria	1
Ben Lomond	1
Bruni Island	1

There have thus been 21 accidents in the tin, 17 in the gold, and one in the coal mining districts. Only a moderate portion of the non-fatal accidents were of an acute character, and in all cases the sufferers recovered within a reasonable period; the remainder consisted of more or less trivial hurts, not necessitating long absences from their avocations. At the same time it may be inferred that it speaks well for the now so thoroughly organised system by means of which, as near as possible, all accidents are reported to the Inspector of Mines, thus indirectly also serving as a check upon mine managers and miners to refrain from reckless and dangerous mining operations and practices most probably resulting in disaster.

In some extreme cases it is considered that it would have a good effect in future, and it is intended to do so, by taking proceedings (as is done elsewhere) against miners who have suffered from accidents after having been expressly cautioned by the mine manager or other person in charge of operations not to do a certain kind of work as being dangerous, and still persisting in doing so during the temporary absence of the person or persons responsible for the safe conduct of mining operations. For instance—

(No. 14). A miner was cautioned by the mine manager and a miner employed there also, not to go near the "working face," as the pressure of water per square inch in the pipes was amply sufficient for loosening and bringing down the gravel; nevertheless he persisted, and a fall of earth took place, by which his leg was broken.

(Nos. 28 and 29). Two miners, on being relieved by the last shifts, were by the latter informed

that a shot or blast had been fired, but that some "balky" or shaken ground yet remained to be taken down before another hole was commenced. These two men, however, considered it safe to work under such shaken ground, and commenced at once to drill a new hole, when, from the concussions made by the hammer upon the drill, the loosened ground or rock fell upon and injured them.

(No. 39). Another miner, whilst "stoping" some quartz at only 8 feet from below the surface, disobeyed the instructions of the mining manager to carefully timber a clay vein, some 20 inches thick, which separated the quartz reef from the hanging wall. This ground not having been timbered as directed by the mine manager gave way, throwing the miner first against the footwall, and then precipitating him down the shaft for a distance of 12 feet, severely bruising him at the same time.

According to the provisions of "The Regulation of Mines Act, 1881," notices were duly served upon mine proprietaries as follows:—

Under Section 9, seven notices; under Section 11, one notice; under Section 3, one notice; under Section 11, Rule XV., one notice,—in order to discontinue *forthwith* certain practices involving danger to employees and prohibited under the Act.

Improvements in Mining Appliances.

During the year 1883 the *Frue's Concentrator*, which was fully described and illustrated by plan and sections in last year's Report, has been imported from California, and two of these machines have given every satisfaction to the Cornwall T.M. Company at Mount Heemskirk; subsequently a trial of one was made by the firm now making same in Melbourne, at Langlands & Company's Foundry, and gave every satisfaction; Mr. H. Rosalis, M.E. & F.G.S., assayed the tin ore saved at over 70 per cent. Mining proprietaries, who cannot adopt the costly and complicated machinery for concentration, will find it to their advantage to use this Frue Concentrator in connection with classifiers.

Of late, the loss of slime tin in considerable quantities, especially with ground and hydraulic sluicing, also crushing of vein stuffs, has frequently been mentioned in the Press; the Sluicing Concentrators, or "Under Currents," of which diagrams to scale with full description appeared in my last year's Report, and same would doubtless be the means of collecting a considerable percentage of that slime tin.

Ordinary copper plates do not save, it is proved, so large a percentage of fine "floury" gold from the quartz crushed as the same plates do when electroplated with silver previous to coating the former with mercury, as is usually done. The latter plates so treated were, on my recommendation, used at the Premier G.M. Company's battery, Mount Victoria, and proved a means for collecting a considerable larger percentage of very fine gold, which otherwise would have been lost if ordinary copper plates had been used instead.

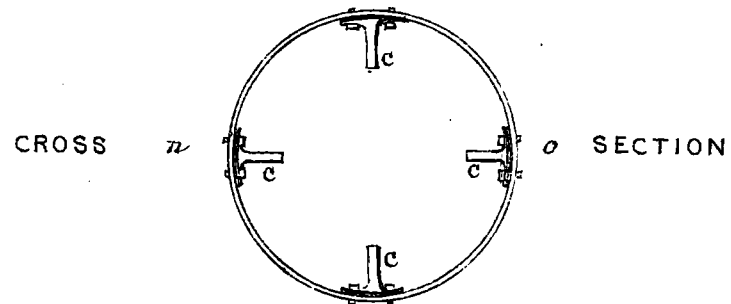
During an inspection of the North-eastern Tin Gravel Mining Districts, it was noticed that the mine managers, in connection with hydraulic sluicing, laboured under two principal disadvantages which interfered to a considerable extent with the output of ore. There was, firstly, a difficulty in using the available water, having a moderate head or pressure only, with the best attainable effect in breaking down the gravel faces; and secondly, to dispose of the residues with advantage and speed. With the exception of, perhaps, one "nozzle" in those districts, the others, instead of delivering *solid* jets of water, so very requisite at the face of gravel, the present jets, after leaving the mouths of their respective nozzles, *spread* and were thereby deprived of the power and utility which are so essentially necessary for those peculiar and rapid mining operations. The diagrams, now added to this Report, demonstrate how in America, California, these nozzles are improved upon so as to produce solid jets by means of a very simple and inexpensive addition, which can be also added to the present nozzles at very little cost.

Diagram A. exhibits a so-called "giant nozzle," (having a nine inch delivery of water), in longitudinal section. *m* is the supply pipe, over 13 inches in diameter, riveted to and anchored and rigid base of the lower part of the nozzle itself. Above that the nozzle consists of two principal parts *a* and *aa*; both of these parts are moveable, but in different directions, viz., *a* can be moved horizontally only around the central and vertical pin-bolt *p*, and as this would be difficult with so heavy a casting, which is besides, filled with water under great pressure, such being easily effected by means of the six brass rollers *dd* rotating beneath the oblique and packed joint upon the planed base *s*, whilst top at *b* rests upon the rollers aforesaid. By these means the part *a* can be directed, without any difficulty, to any part of the compass. In working the jet it is however necessary to also raise or depress the nozzle; the part *aa* together with the balance weight *i* can be operated in the manner required by means of handle *h* or the table *i* itself *vertically* only, the table *i*, loaded

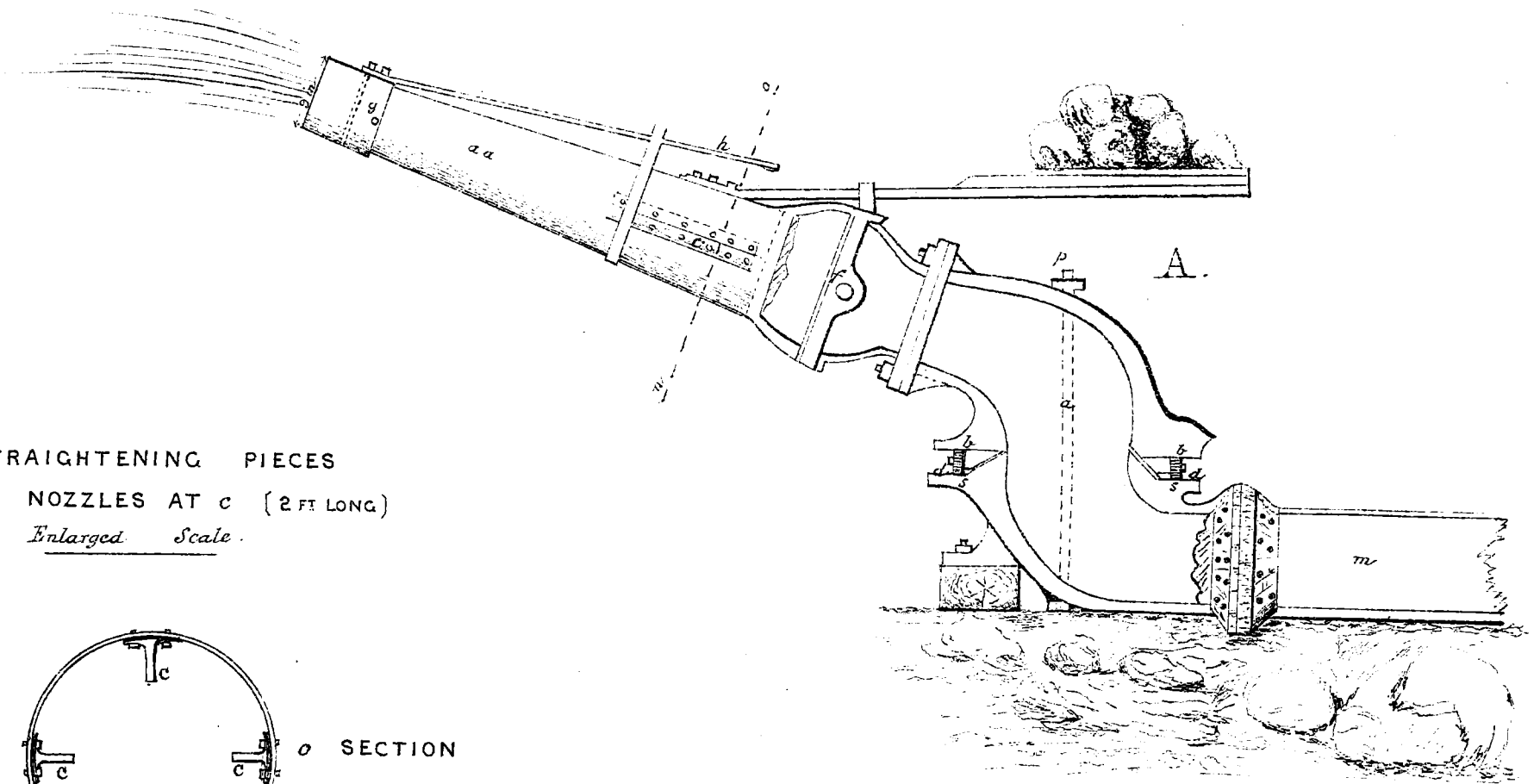
DIAGRAM A. GIANT NOZZLE [9 IN. DIA]

SCALE $\frac{1}{2}$ IN = 1 FOOT

STRAIGHTENING PIECES
FOR NOZZLES AT C (2 FT LONG)
Enlarged Scale.

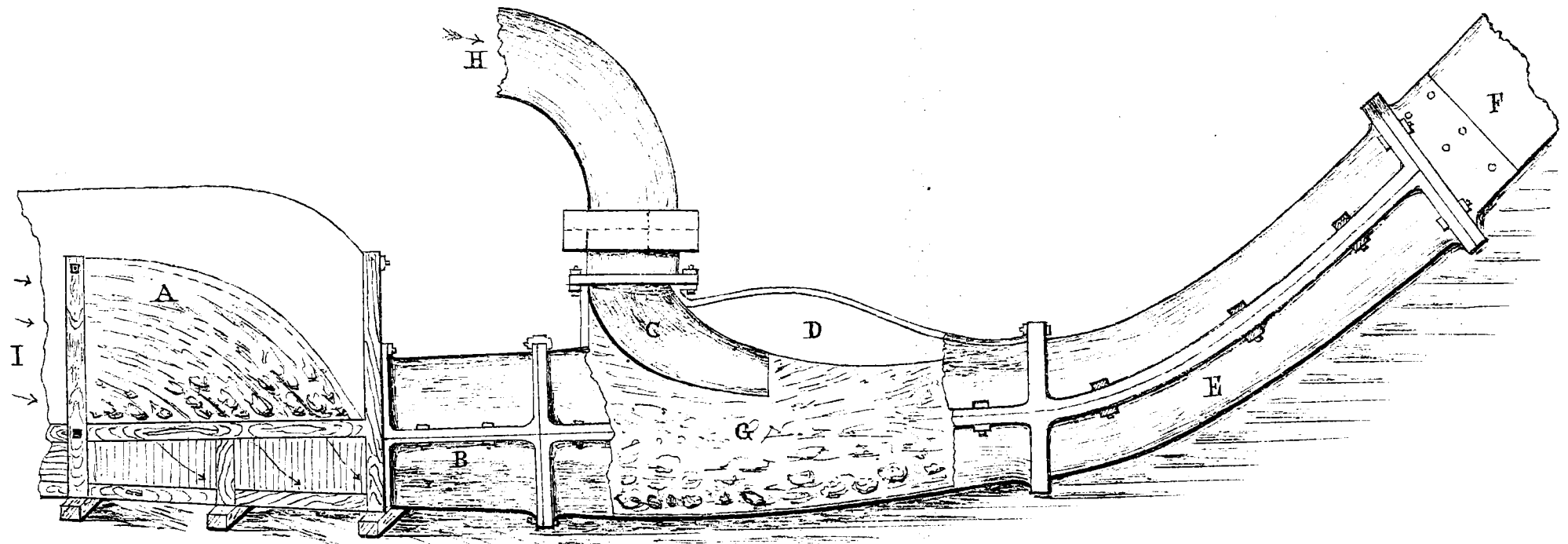


Office of Mines 1884



Wm. G. Thureau T.

HYDRAULIC GRAVEL "ELEVATOR"



with stones, as a counterbalance, included. There are two unconnected pin-bolts *f* at each side of ball and cup like base of nozzle *aa*, which are made to slide—with water-tight joint—over or under the upper portion of *a*, thus forming a *knuckle joint*. Should it be necessary to give a limited lateral direction without moving the whole apparatus at *p*, the jacket *g* can be moved by means of lever *h* sideways for a couple of inches, which is found to be very useful in *widening* the vertical cuts in the face of tin gravel which are necessary when working a high and wide face of such a deposit.

Another, and very important feature in this connection is shown by cross section on the line *n o* of longitudinal section A; this comprises four "*straightening pieces*" *c c c c*, two feet long each, riveted (countersunk) at equidistant spaces to the inside of nozzles. These straightening pieces are made of π iron, and they have been invented for the purpose of maintaining the "*solid*" jets (referred to above) for a very considerable distance after their discharge from the mouth of the nozzles. They appear to be simply on the principle of grooved rifles; by means of which a rotary motion to the missiles (or water) is given, which causes a straighter and more direct course for the same; in this case the water so discharged through a nozzle fitted with four straightening pieces has more effect and obtains longer distances than it would by the ordinary nozzles, and consequently there is not nearly so much loss of power.

The Hydraulic and Automatic Gravel Elevator.

With some exceptions, the Inspector of Mines observed that at many of our principal stanniferous gravel mines the very limited fall of ground, or the small difference in level of rivers or streams, had necessitated the construction of deep and very expensive *tailraces* of great length in order to dispose of the *débris* at as rapid a rate as such was being produced at those mines; some of these tailraces had been cut through hard solid rock, others again through loose soil, entailing in the first case a heavy expenditure at first cost, and in the second case necessitating the use of strong timber, and a continuous charge for repairs as well.

The diagrams of an apparatus now submitted for inspection represents the Californian method for dealing with that difficulty with the best possible results in the direction of enabling them to work mineral and metalliferous deposits which cannot, for above reasons, be either worked at all, or only at too great an expense. The apparatus is simple in construction and can, if judiciously placed, remain in the same position whilst doing its duty for a long time. It does not require any steam power, belts, pulleys, wheels, valves, &c., and it can, when required, be easily and cheaply repaired. The motive power being solely water under pressure, any one who understands "*hydraulicking*" can manipulate the concern without any difficulty.

These elevators sluice by means of water the gravel or tailings "*up hill*;" any size of grain or gravel that will pass through a flume can be moved, and they effect the drainage of all surplus water exuding from the gravel, and will dispose of as much gravel in proportion to the quantity of water used.

As will be seen by the diagram, the elevator consists of an iron-cased receptacle A fixed to a frame of timber; this receptacle opens into a pipe B slightly expanding towards G, and afterwards contracting again until joined to a bent pipe E leading towards outlet or discharge pipe F, which can be made to empty into any ordinary flume or launder at first, and after the deposit of *débris* permits it into an ordinary channel to be kept clear, and leading away from the scene of operations.

The horizontal Section B has an open end, back of, or behind I; this open end concave in shape, into which the water and gravel is sluiced or washed from the ordinary nozzles operating on the faces through a channel cut in the bottom of the deposits leading to the entrance I, such entrance or "*throat*" being set as low as it can possibly be done, whence from G it is taken up or propelled by the jet issuing from the nozzle C which is fixed at or near the entrance formed by the ascending pipe E; that stream of water, under pressure, as it impinges on the floating gravel and sand, forces the latter forward and upward through pipes E and F to its point of discharge into the open flume erected above the excavations, whence it is carried away by means of a line of sluice-boxes to any final point of discharge.

Confined, as the *moving débris* is, within the iron pipes, it is necessarily impelled forward at the same rate of velocity as that of the inlet stream itself, and as that involves a considerable amount of attrition, all the dissolvable parts are thereby considerably pulverised, as well as by the friction in the ascending pipe, and thus any ore thus liberated will be found at the bottom at G; D being a water-chamber only aiding the process. From the impinging and frictional action of the water upon the *débris*, it is evident that the greatest amount of wear and tear will be on the ground sections of G and E, and consequently these parts are made in half sections, and cast of white (hard) or chilled iron, so that they can be replaced when worn out.

These appliances or machines can be made of any capacity, but their effectual working is subject to the following conditions, viz. :—

The nozzle or nozzles operating on the gravel deposits must be worked simultaneously with the elevators, because the latter will not act advantageously upon a set or hardened deposit but will take up, so to speak, the flowing or liquid mass of water, sand, and gravel together as it falls into I, in the proportion of or consequent upon the head of water available.

In operating the gravel elevator, it should be the first thing to “pipe” or sluice as much gravel towards and into the throat I as possible, as it will do the work without stoppage after the water for nozzle C has been turned at full pressure. In other words, the elevator once properly set and worked, the amount or quantity of material that can by its means be raised through the upcast pipes is only governed and limited by the volume and consequently the capacity of the water to impel the whole mass to its final discharge as waste.

The following particulars are necessary when ordering machines of this description :—

1. Depth of gravel deposits from the surface to bed-rock, and below natural watercourses.
2. The available “head” of water on the site.
3. The volume of water available irrespective of that needed for the nozzles at the face or faces.

It is estimated that these elevators, with a head of 100 feet, or the hydraulic pressure of same, will lift water and gravel ten feet high, and as a higher pressure works better than low, a 200-feet head will lift 20 feet better, or whilst 100 feet will only lift 10 feet, 200 feet of pressure would lift same gravel, &c. 22 feet, and 300 feet, 40 feet, in perfectly level localities; that is to say, with an available head of 300 feet the Hydraulic Gravel Elevator will wash and remove any deposit 40 feet in depth, so that in such a case the *débris* will be removed so as to offer no obstacle to the working of deposits where the natural fall of the country or watercourses preclude the miners from doing so.

As the earth and gravel passing through E F occupies necessarily a certain space, and requires a proportionate quantity of water only, it follows that the volume of water required will not be equal to the capacity of the pipe,—in fact only one-half need be used; the remainder can be spared to the outer nozzles in “driving” the gravel towards and into the elevator.

Capacity of machines with 150 feet of pressure will move 300 Californian inches of water and gravel per minute.

At one of the Californian gravel gold mines, the Eureka Gold Mining Company, an elevator (improved by the inventor) has been found superior to others; a head of water 266 feet is there “elevating” through a sixteen-inch machine to a height of 35 feet and 3 inches or more.

The Inspector of Mines, in recommending these elevators to the attention of mine-owners at large, would take this opportunity of calling attention to the fact that many deposits now abandoned, not for the want of pressure by water, but from the otherwise insurmountable difficulties of getting rid of the tailings and waste, which could be wrought to advantage if elevators were introduced.

The following price list is therefore submitted, with a view that some mining company may be induced to purchase one to serve as a pattern for their manufactory in Tasmania, subject to any patent rights existing :—

“Gravel Elevators, invented and manufactured by Joshua Hendy, Machine Works, 49 and 51, Vermont-street, San Francisco, California—

1. 12-inch elevator, £200, f.o.b., San Francisco.
2. 16-inch ditto, £240, „ ditto.
3. 20-inch ditto, £360, „ ditto.”

By the courtesy of the President (Mr. W. Lamerton) of the Beaconsfield Miners' Association I have been furnished with a copy of their balance-sheet, which furnishes undoubted proofs of the great benefits arising from such prudential combinations, as resulting in the relief afforded to such members of the association who had suffered from accidents or sickness. Their total receipts amounted for the quarter ending 28th January to £134 3s. 8½d., and the expenditure to £44 14s., leaving a balance to credit of £89 9s. 8½d. The accidents for the quarter numbered nine, and the more serious ones were included in the list given in this Report.

The Diamond Drills.

These machines have during the year done a considerable amount of prospecting work, and, judging from the discoveries made by the No. 1 drill at the Back Creek and the Lefroy goldfields,

there cannot be any doubt whatever of their having become most valuable aids in the testing of those, till then, undefined metalliferous and mineral resources. The Commissioner of Mines and of Gold Fields at Launceston has very courteously supplied me with reports as to the nature of the strata passed through by both diamond drills, and likewise with collections of "cores" obtained from time to time. These cores furnish a valuable guide for any future operations.

The No. 1 drill bored during the year at Back Creek 691 feet in three separate bore-holes. These completed the series of tests in that locality, and it has been thereby satisfactorily proved that my report, No. 45, 1882, has been fully sustained, it having been established that auriferous sub-basaltic deposits or "leads" exist at Back Creek, and it is to be regretted that circumstances should have arisen preventing, temporarily it is hoped, the further development of that very promising mining district.

At Lefroy, also favourably reported on, a similar sub-basaltic auriferous deposit was proved by the same machine to exist, and, in this instance, gold (3 grs.) was reported by the foreman to have come up in the borings,—a most unusual circumstance, but very suggestive as to the intrinsic value of the underlying auriferous gravels. The Rock Shaft Alluvial G. M. Company's ground was, in four bore-holes, tested by the same drill, and an aggregate depth of 1011 feet 9 inches was bored, or, for the whole year, the No. 1 diamond drill bored 1702 feet 9 inches.

The No. 2 Diamond Drill, under the supervision of Mr. Harrison (who also performed, by consent of the Hon. Minister of Lands and Works, the duties of Inspector of Mines during my unavoidable absence elsewhere) was engaged by the Alpine Gold Mining Company, Mangana Gold Field, to prospect the nature of the strata ahead of their tunnel, then 400 feet in length, in a horizontal direction, and succeeded in doing so for a further distance of 544 feet and 7 inches. A full chart of the strata passed through, and a number of bores, were also in this instance kindly furnished by the Commissioner of Mines and Gold Fields.

The two Diamond Drills have, therefore, during the year bored a total distance of 2248 feet and 4 inches, and this work was performed in a very satisfactory manner; and there cannot be any question as to the great capabilities of these invaluable machines, if only the mine and landowners would be more liberal in their ideas, and cause their employment at full time, the same as is done in the other Colonies and in America.

Prosecutions under the Regulation of Mines Act, 45 Vict. No. 8, 1881, Section 4.

1883.	Fines.	Costs.	Witnesses and Counsels' Costs.	Remarks.
	£ s. d.	£ s. d.	£ s. d.	
January 2nd, Richd. Walmsley	0 5 0	0 10 6	9 4 0	} These cases were heard before the Police and another Magistrate at Launceston.
May 29th, Chas. Krushka	3 0 0	0 9 6	10 0 0	
August 31st, Joseph Davies	1 0 0	0 13 6	5 10 0	
	£4 5 0	£1 13 6	£24 14 0	

NOTE.—The sum of £5 18s. 6d., awarded for fines and costs, was paid into the General Revenue.

In concluding this Report, it may be remarked that the duties performed by the Inspector of Mines, in and outside his office, exhibit a very considerable increase if judged only by the amount of correspondence that has passed through his hands, and which correspondence does not include those numerous and special reports, that were accompanied by elaborate plans and sections, which he as a Mining Geologist was authorised to furnish after, in most instances, protracted field and underground surveys.

In 1882, 320 letters, telegrams, and memos. were received and attended to under the following heads; viz.—Mine accidents, 64; official, 206; general, 52. Total, 322.

In this year, 1883, under the same conditions, there were received and attended to—Mine accidents, 140; official, 353; general, 252; copy press letter book, 213. Total, 958, or 636 over the number dealt with in the previous year.

I have the honor to be,

Sir,

Your most obedient Servant,

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

The Hon. Minister of Lands and Works, Hobart.

APPENDIX A.

LIST of Accidents in the Mines of the Colony of Tasmania during the Year ended 31st December, 1883.

Gold District.	Mineral District.	Mine Owner.	Date of Accident.	Connective No.	Cause of Accident.	Killed.	Injured.	REMARKS.
								Name of Person injured. Name of Manager.
—	Mount Bischoff	Mt. Bischoff T.M. Co., Registered	5 January	1	Falling a distance of 10 ft. through the guide-rope breaking connected with a derrick used for swinging large stones across a gully.	...	1	Jas. Martin. H. W. Ferd. Kayser. Large stones were required for the foundation of the new "Ringtail" concentrator, and in taking same from a high bank by means of a derrick the miner held the tail-rope which guided the stone downward. On the rope breaking he fell backwards over a face 10 feet vertical and injured his leg.
—	Moorina	Frome River T. M. Co., Registered	20 January	2	The stump of a tree falling on a Chinaman.	1	...	Ah Wing (54). W. Oates. The above was working with Ah Sing at a face of alluvial gravel, and after a while he requested the latter to assist in removing or turning a stump on the top of a bank back from the face of working. Ah Sing did not immediately do as requested, and meanwhile Ah Wing used a handspike at the stump, when one of his feet slipped off the bank and he then fell into the face of the workings, whereupon the loosened stump immediately fell on top of him. The stump rested on his chest, and he was still alive when freed, with every despatch, of this great weight. The bank was but 4 ft., and the stump weighed from 4 to 5 cwts. He was about 54 years of age, and died the same day. (Verdict by jury: "Accidental death.")
—	Ringarooma	Briseis T. M. Co., Registered	31 January	3	Fall of earth.	...	1	Jas. Walker (22). per H. A. Thompson. This miner's leg was broken above the knee by a fall of earth.
Lefroy	...	East New Chum G. M. Co., Registered	17 February	4	Fall of a batten down the shaft.	...	1	Contractor. Thos. Woods. One of the contractors let a piece of batten fall down the shaft, striking a miner below on the hand and injuring his fingers.
—	Mount Bischoff	Mt. Bischoff T. M. Co., Registered	22 February	5	Stone falling from top of face, injuring leg.	...	1	Daniel Priest. H. W. F. Kayser. Whilst working at the "Tudor" face, a stone 30 lbs. rolled down and bruised his leg.
—	South Mount Cameron	Enterprise T. M. Co.	8 March	6	Fall of earth.	...	1	Lung Lehung. John Simpson. An accidental fall of earth was taking place, and in trying to get out of its way he stepped into a tail-race 2 ft. deep, injuring his groin.
—	Moorina	Native Youth T. M. Co., Registered	16 March	7	Fall of earth.	1	...	Lung Choon. M. J. Griffin. This miner, with some others, was engaged in removing the wash from a paddock they had stripped. Though cautioned, L. Choon proceeded to get more washdirt from under the face, when a large mass of earth slipped down, striking him on the back and hip. It was conjectured that his bladder was ruptured, and he died on the following day.
—	Gould's Country	Anchor Extended T. M. Co. Registered	23 March	8	Struck by the handle of a windlass.	...	1	Donald Blackwood. R. Carter. A windlass had been erected for the purpose of lifting heavy stones out of the way of the sluices; a heavy stone was slung and, as ordered, he let go the handle to swing the weight out of the road. Unfortunately he was struck by the handle and somewhat severely injured on the head. He recovered in about a month.

unately he was struck by the handle and somewhat severely injured on the head. He recovered in about a month.

Beaconsfield	...	Little Wonder G. M. Co., Registered	27 March	9	Working in a tunnel and collapse of same	...	1	David Henderson. H. Hays. This was one of a party of contractors for a tunnel; the latter was timbered up to the face by the last shift, when this miner and his colleague started to make a cut three feet "in" at each side of the drive, leaving a bank in the centre, which fell upon D. H. and threw him on the rails, whereby his side was injured. It was a gross case of carelessness in such clayey ground.
Beaconsfield	...	Florence Nightingale G. M. Co., Registered	13 April	10	Falling 20 feet whilst wheeling fuel to battery	...	1	Mat. O'Halloran. Geo. Webb. In wheeling a barrow filled with firewood across a deep cutting on a footbridge, he fell to a depth of 20 feet and broke his ankle.
—	Moorina	Brothers' Home T. M. Co., Registered	12 May	11	Fall of earth	...	1	John Hunter. Charles Krushka. In hydraulicking at the "new face," a mass of earth came down suddenly and the top part broke off, thus causing Hunter to be caught by the leg, and breaking the same. The Mine Manager, for neglecting to give notice under Sect. 4, was informed against and fined Three Pounds with costs, and Ten Pounds for two witnesses' expenses, subpoenaed.
—	Mt. Bischoff	Stanhope T. M. Co., Registered	19 May	12	Fall of rock	...	1	John Hy. Fairfield. Sub-Inspector of Police. This miner was engaged to widen the tunnel in order to make it straight where there was a bend. In doing so a piece of "gossan" 1 cwt. in weight cut the back of his head open.
—	Ben Lomond	Tasmania T. M. Co., Registered	11 June	13	Falling down a shaft 47 feet in depth	...	1	William Dodd. J. Denis. This miner was engaged at the brace winding stuff from the sinkers, 47 feet below. By some means an empty bucket, standing at the mouth of the shaft, tilted over and fell. As there were no pegs put in to prevent the handles from moving, W. Dodd caught hold of the rope and fell down to the bottom, without injuring or striking his mates there. He was bruised, but escaped more serious injury.
—	Ringarooma	Australian Alluvial T. M. Co., Registered	12 June	14	Fall of earth	...	1	John Cronin. J. Shephard. It appears the men had positive instructions from the Mine Manager not to go near the working face, as the pressure of water in the pipes for hydraulicking was ample for loosening the wash. J. Cronin, although warned by W. Ryan not to do so, went under the face, in opposition. A fall of earth took place, and a lump of hard clay rolled on his leg and broke same above the ankle.
Beaconsfield	...	Port Phillip G. M. Co. (Private)	21 June	15 & 16	Fall of earth	...	2	William Doby (45). Thomas Davis (50). B. Bruen. This is an alluvial claim, in which an open face was worked from a tunnel driven into the side of Cabbage Tree Hill. Some part of that face showed signs of falling in, and three men were sent to the top in order to take it down, when a mass of about 100 tons sank down with them, 4 feet in depth. It caught the two miners named, and partly buried them. They were extricated, and their injuries were found not to be severe.
—	Bruni Island, South Bruni	Adventure Bay Coal M. Co. (private)	26 June	17	Fall of rock	..	1	W. Zschachner (44). Superintendent of Police, Kingston. In taking in a new drive it was necessary to "rise" for a higher coal along a fault or "rotten slip" traversing the roof; in extending the upper drive a wedge-shaped piece fell from the corner of the slip and the roof upon Z.; it weighed about half a ton; he was extricated. It was believed that his spine was injured, as he could not take food.
Lefroy	..	East New Chum G.M. Co., Registered	26 June	18	Fall of rock	..	1	Benjamin Simpson. Working in a "rise" above the 360-feet level; a shot was fired, and B.S. went up to pull down the thereby shaken rock, when a piece of stone fell and broke a small bone in his leg.

* The Coroner very considerably furnished copies of the depositions taken at this inquest in full.

<i>Gold District.</i>	<i>Mineral District.</i>	<i>Mine-owner.</i>	<i>Date of Accident.</i>	<i>Con- nective No.</i>	<i>Cause of Accident.</i>	<i>Killed.</i>	<i>Injured.</i>	<i>REMARKS.</i> <i>Name of Person injured.]</i> <i>[Name of Manager.</i>
Lefroy	...	New Chum G.M. Co., Registered	13 July	19	Fall of rock	..	1	G. Herbert. H. Baker. A piece of ground coming away from the side of the drive injured G.H.'s foot, not severely.
Beaconsfield	..	Tasmania G.M. Co., Registered	14 July	20	Fall of rock	..	1	Richard Davey (64). Joseph Davis. This miner was working in the first stope above the No. 3 level, and suddenly a piece of rock, nearly half a ton in weight, fell out from the footwall 4 feet from the bottom of the stope; it rolled over and crushed R.D.'s leg against the footwall. The doctor considered the fracture a very bad one, and he had to take extraordinary measures for saving the limb from amputation.
Ditto	..	Moonlight G.M. Co., Registered	19 July	21	Fall of rock	..	1	John Hine (50). J. B. King. By a slip of rock from the footwall after clearing level of quartz, J.H.'s foot was bruised.
—	Branxholm	Golden Age T.M. Co., Registered	20 July	22	Collapse of fluming	..	1	A. Barry (31). M. 3. Rd. Walmsley. Whilst taking up the wash from under the fluming, which was about 6 feet 6 inches above the ground, it gave way and fell across A.B.'s loins. He was not very severely injured.
Beaconsfield	..	Tasmania G.M. Co., Registered	31 July	23	Not reported	..	1	James Newstead. Joseph Davies. In taking out the last stope on the reef between Nos. 3 and 2 levels, a mass slipped out of the hanging wall and fell across Newstead's loins; the rock was about 700 lbs. in weight, and fell from a height of three or four feet. This case was heard at the Police Court, Launceston, on the 31st of August, as the Mine Manager did not consider it a serious accident. The Magistrate, after hearing the doctor's and Newstead's own evidence, decided that the Inspector of Mines was right in laying the information, and the Mine Manager was fined £1, costs 13s. 6d., and the fees of the solicitor (Mr. Byron Miller), the doctor and assistant, making a total of £7 19s. 6d, the Mine Manager had to pay.
—	Moorina	Leopold T.M. Co., Registered	27 August	24	Fall of earth	..	1	Chas. Mortimer (30). Thos. Ainsworth. This miner, in running away from a fall of earth, stumbled against a block of cement, when the fall overtook him and broke his leg below the knee.
—	Ditto	Mutual T.M. Co., Registered	2 September	25	Falling of fluming, (not reported)	1	..	Ah How. F. H. Johnston. No one saw how this miner was killed. It is supposed that he moved a prop which supported the fluming, and which then fell upon him. The Superintendent of Police, on the 6th instant, telegraphed that at the inquest a verdict of "Accidental Death" was found by the jury, and no blame attached to the Mine Manager; it transpired during the enquiry that Ah How had no business to touch or interfere with the old and unused fluming. Under these circumstances the Hon. Minister accepted the recommendations of the Inspector of Mines not to proceed any further in the matter. On the same date the Mine Manager sent a full report substantiating in the main all the foregoing statements.
Beaconsfield	..	Little Wonder G.M. Co., Registered	6 Sept.	26	Fall of a back stope	..	1	C. Meekin. H. Hays. In resuming work in a stope which had been standing a few days, some loose ground was pointed out by the captain of the shift, but nevertheless insufficient care was exercised, and a fall took place cutting C.M.'s head open, but not seriously.

Ditto	..	Florence Nightingale G.M. Co., Registered	18 Sept.	27	Falling down a "rise"	..	1	Andrew Campbell. Geo. Webb. This miner was engaged in a "rise" put up from No. 3 to No. 2 levels; in ascending that rise to his work at the top, he had reached the top staging with his hands, but his hands slipped suddenly, and he fell the whole distance of thirty feet to the bottom. His back was injured so that he could not walk, but no bones were broken. Recovered, and commenced work in the beginning of October.
Ditto	..	Little Wonder G.M. Co., Registered	20 Sept.	28 & 29	Fall of quartz in a stope	..	2	Thos. Trevenna and Wm. Thomson. H. Hays. These two miners were informed by the shift they relieved that they (the former) had fired a shot, but that some "balky" or shaky ground yet remained to be taken down. The new shift, it appears, sounded the ground and considered it safe enough to work under, and they then started to bore another hole, when, from the concussions of the hammer the loose ground fell upon them hurting the head of Trevenna and the legs of Thomson. This appears to be one of those cases of utter carelessness which miners do commit, and for which they ought to be punished besides the suffering they undergo from the injuries inflicted upon themselves. They resumed work about eight days after the accident.
Lefroy	..	West New Chum G.M. Co., Registered	5 Oct.	30	Fail of a pile of slabs	..	1	William Hunkin. Thos. L. Kitto. Some slabs, which had been piled up for immediate use, by some means fell and struck this miner on the back. Not seriously injured however.
Beaconsfield	..	Florence Nightingale G.M. Co., Registered	10 Oct.	31	Fall off a stage whilst stoping	..	1	George House. Geo. Webb. Whilst stoping above the main level a temporary stage had been constructed with slabs laid upon the permanent timber; gradually the slabs worked back during the operations carried on, finally so as to slip down from one end, precipitating the miner to the next staging below, about eight feet. He was, however, only somewhat severely bruised.
—	Mt. Bischoff	Mount Bischoff T.M. Co., Registered	12 Oct.	32	Whilst cleaning some machinery the right hand was drawn in	..	1	Alfred Lucas. H. W. Ferd. Kayser. This employee whilst cleaning some machinery connected with the "Ring Tail" dressing-sheds is supposed to have slipped and his right hand was drawn into the gear. The hand was so badly crushed as to necessitate amputation of the third and fourth fingers at the second joint, and the thumb at the first joint.
—	Mount Bischoff	Mount Bischoff T. M. Co., Registered.	19 Oct.	33	Falling down an ore-shoot	...	1	Michael M'Namara. Superintendent of Police. This man was trucking from the "Red Face" to the "tip." Some dirt had accumulated at the sides of the shoot there, and in removing same he stood on a piece of timber, which, being not strong enough, gave way, and M'Namara fell head foremost down the shoot a distance of nearly 20 feet. When picked up he was insensible and considerably bruised. On the 21st following he was better and able to get about, and resumed his work at the mine.
—	Gladstone	Princess T. M. Co., Registered	23 Oct.	34	Fall of earth or wash	...	1	John Waite (37). Angus M'Pherson. In breaking up some hard washdirt to fit same for sluicing, a portion flaked off and caught him on the hip, causing a considerable bruise. He resumed his duties as a "race-keeper" on 29th October following.
—	Mount Bischoff	Mount Bischoff T. M. Co., Registered	2 Nov.	35	Falling from tip into a hopper into which he was delivering ore	...	1	Thomas Keating. H. W. F. Kayser. This accident, it appears, was not seen by anybody. Keating was trucking to a hopper, and by some means or other fell into the hopper at the tip, where he was found injured on the head through lacerated and contused wounds. It is surmised that the "strong arm" or lever slipped, causing the mishap to him. He was taken to the hospital and attended to by the doctor, who does not anticipate any dangerous results.

Gold District.	Mineral District.	Mine-owner.	Date of Accident.	Connective No.	Cause of Accident.	Killed.	Injured.	REMARKS.	
								Name of Person Injured.]	[Name of Manager.
—	Mt. Cameron	Mount Cameron Hydraulic T. M. Co., Limited	9 Nov.	36	Fall of earth	1	...	Ah Katt. This occurrence took place at some stream workings about four miles from Gladstone, on the east side of the Ringarooma River. The Chinaman in question, it is reported, was one of five in a party of tributors, and he was overwhelmed by a fall of earth eight feet in height, which face or bank he had undermined himself. The Hon. C. O'Reilly furnished, as Coroner, the following as the verdict of the jury at the inquest held at Gladstone, viz. :—Telegram,— "The Chinaman Ah Katt came to his death by the fall of a body of earth while working at the Mount Cameron Hydraulic Tin Mining Company, Limited, Claim. Deceased was working with a pick under the face, about eight or ten feet high, and two heads of water flowing over at the time, when the bank of earth fell on him and killed him." Quite dead when body was uncovered.	Geo. Whitnall.
—	Ringarooma	Sarah Ann T. M. Co.	18 Nov.	37	Fall of rock	...	1	W. Brennan. The above-mentioned mining manager was working in the face, and in loosening some gravel a large block of stone or boulder resting upon the former rolled down the bank on him and caused a fracture of the bones of his leg.	Hamilton Cuming.
—	Gladstone, Mt. Cameron	R. D. Wilson's Tin Mine	3 Dec.	38	Fall of earth	...	1	John White (20). This young man was working by himself in a tail-race, which was four feet wide by seven feet deep, cut through decomposed soft granite, here and there undermined by water. From the bottom of this race a joint in the rock composed of pipeclay (kaolin) extended upwards, at an angle of 45 degrees, so as to form a wedge from two to three feet thick at the top. This block was fissured by the action of the sun, and suddenly came away in a piece of four to five feet long, and caught W. on the chest and abdomen. He called out and was relieved of the fallen rock. Having been sent to the Launceston Hospital, Dr. Thompson reported, after examination, that his lung was ruptured, as the air escaped through the skin, and that likewise the spine was affected.	R. D. Wilson.
Mt. Victoria	—	Crown Prince G. M. Co., Registered	8 Dec.	39	Fall of rock whilst stoping	...	1	Oliver Rowe (49). In stoping out some quartz near the shaft about eight feet from the surface, R. neglected to obey the instructions given him by the mining manager in the morning to be careful and to secure the clayey seam (20 inches thick) by suitable timber which lay between the hanging wall and the reef. A fall of this ground took place, which threw the miner first against the footwall and then precipitated him down the shaft for a depth of 12 feet. It appears, however, that he was not much injured, and it is anticipated that he will soon recover. This case is one deserving of other punishment besides the injuries inflicted, because R. not only neglected wilfully to carry out the instructions given by the mining manager, but he also, in the same manner, neglected to use the tools given him for the purpose of securing the stope at the same time.	F. G. Hicks.

APPENDIX B

LIST of Mines inspected in the Colony of Tasmania during the Year ended 31st December, 1883.

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulation of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
January	Circulars sent to Mining Companies under Sect. 5.	...	...	Report on the state of the two Diamond Drills Ditto No. 1 Diamond Drill commenced to bore at Back Creek on the 5th Jan., 1882, in No. 5 bore, to a depth of 238 feet, of which 24 feet were completed by the end of 1882	First report of the Inspector of Mines forwarded to the Tasmanian Government. Received 24 carats of diamonds from the Mining Department of New South Wales.

LIST of Companies who have complied with the Circular Regulation of Mines Act, 1881, Sect. 5; viz.—

Gladstone	...	Royal Tasman G. M. Co.	Ditto	...	...	...	No. 1, one plan and section.
	Mt. Bischoff	Mt. Bischoff Tin M. Co.	Ditto	Exemption granted for smaller scale on account of larger workings.	...	...	No. 2, one plan and section.
Beaconsfield	...	Florence Nightingale G. M. Co.	Ditto	...	...	...	No. 3, ditto.
Lefroy	...	New Chum G. M. Co.	Ditto	...	...	...	No. 4, ditto
Beaconsfield	...	Tasmania G. M. Co.	Ditto	...	...	...	No. 5, one plan, two sections.
Lefroy	...	New Native Youth G. M. Co.	Ditto	...	...	...	No. 6, one plan, three sections.
Lefroy	...	West New Chum G. M. Co.	Ditto	...	...	...	No. 7, one plan, two sections.
	Mt. Heemskirk	Mt. Heemskirk T. M. Co.	Ditto	...	...	...	No. 8, ditto.
	Mt. Bischoff	Mt. Bischoff S. & L. M. Co.	Ditto	...	...	...	No. 9, ditto.
Beaconsfield	...	Garfield G. M. Co.	Ditto	...	...	...	No. 10, one plan, one section.
Lefroy	...	East New Chum G. M. Co.	Ditto	...	...	...	No. 11, one plan, two sections.

<i>Bate.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulation of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
February	Beaconsfield	...	Little Wonder G. M. Co.	Circulars sent to Mining Companies under Sect. 5	...	...	...	No. 12, one plan, two sections.
	Lefroy	...	Morning Star G. M. Co.	Ditto	...	...	...	No. 13, one plan, two sections
		Mt. Claude	Mt. Claude S.-L. M. Co.	Ditto	...	...	...	No. 14, ditto. (Nos. 1, 4 to 14 were made by the Mining Managers of their respective mines. Nos. 2 and 4 were from surveys made by authorised surveyors.)
	Beaconsfield	...	Olive Branch G. M. Co., Registered	...	Exemption granted from producing underground plans under Sect. 6.	...	...	Not quite 200 feet deep with their shaft from surface.
	Beaconsfield	...	Leviathan G. M. Co., Registered	Notice served to secure their ladder shaft below tunnel level	...	...	...	The ladder reached to within two feet only above the "sollars" or platforms, which was deemed dangerous. Proper hasps or handles were since placed above the ladders.
		...	...	...	...	...	No. 6 bore was drilled to a depth of 254 feet	Flinders Island topazes and Ringarooma sapphires tested with No. 2 Diamond Drill at Beaconsfield, with no practical result.
				Notice to Phoenix G. M. Co. to supply safety appliances	...	...	...	Vide General Rules, 11., Clause xv. (Within one month from date.)
				Notice to the Port Phillip G. M. Co. to fence in excavations	...	...	...	Vide Section 9.
	Beaconsfield	...	...	Notice to Moonlight G. M. Co. to secure ladder roads	...	...	...	Ditto.
				Notice to Little Wonder to effect better ventilation	...	...	...	Vide General Rules, 11., Clause I. (Within one week.)
			Pyrates Calcining and Reduction Works	Complied with	...	...	...	These were inspected in presence of the Hon. Minister of Lands and Works, and they were found in good working order, the noxious fumes having been deprived of their deleterious properties. Had not injured the health of the inhabitants.
	Lefroy	...	New Native Youth Crushing Works	...	...	...	...	These important works were found in full work, and the way they were looked after and kept in a clean state was very creditable.
	Lefroy	...	Morning Star G. M. Co., Registered	...	...	...	...	This proprietary were raising some good payable stone from their bottom level.

April	Lefroy	...	West New Chum G.M. Co., Registered	...	...	...	...	At the instance of the Hon. Minister, the safety appliances used at this Company's shaft were set to work, and by direction of the Inspector of Mines tested to their full capacity. The Mine Manager explained the details, and stated that G. H. Seymour's, the inventor, were the best and most reliable.
	...	...	Lefroy Pyrites Calcining and Reduction Works	...	...	Multitubular,—* w.p., 30lb. per in. t.p., 68 lb. ditto	No. 7 bore was drilled to a depth of 223 feet.	New blow-off tap to be got.
			New Chum G.M. Co., Registered	...	...	Cornish flue,— w.p., 40 lb. per in. t.p., 73lb. ditto No. I,— w.p. 35lb. per in. t.p. 68lb. ditto No. II,— t.p., 72lb. per inch w.p., 35lb. ditto	...	Battery.
			East New Chum G. M. Co., Registered	...	...	Portable,— w.p., 35lb. per in. t.p., 66lb. ditto	...	} Pumping and winding plant.
			West Chum Extended G.M. Co., Registered	...	...	Cornish flue,— w.p., 35lb. per in. t.p., 67lb. ditto	...	
			United Chum G.M. Co., Registered	...	...	Cornish flue,— w.p., 40lb. per in. t.p., 68lb. ditto No. II,— w.p., 45lb. per in. t.p., 73lb. ditto	...	Found the pressure gauge choked, and had it rectified.
			Rob Roy G.M. Co., Registered	...	...	Portable,— w.p., 45lb. per in. t.p., 72lb. ditto	...	This mine is now standing idle.
			Morning Star G.M. Co., Registered	...	...	Multitubular,— w.p., 45lb. per in. t.p., 70lb. ditto	...	
	Lefroy	...	New Native Youth G. M. Co., Registered	Complied with	...	Cornish flue,— w.p., 35lb. to inch t.p., 65lb. ditto w.p., 35lb. ditto t.p., 65lb. ditto w.p., 35lb. ditto t.p., 65lb. ditto w.p., 33lb. ditto t.p., 70lb. ditto w.p., 33lb. ditto t.p., 70lb. ditto w.p., 33lb. ditto t.p., 72lb. ditto	...	
							...	No. I., counting from next the engine : battery plant.
							...	No. II. ditto : ditto
							...	No. III. ditto : ditto
							...	No. I. } Pumping and winding plant.
							...	No. II. }
							...	No. III. }

* Working pressure thus—w.p. ; test pressure thus—t.p.

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulations of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
	Lefroy	...	West Chum G.M. Co., Registered	Complied with	...	w.p., 37lb. to inch t.p., 73lb. ditto w.p., 40lb. ditto t.p., 75lb. ditto	... ...	No. I. (battery). No. II. (pumping and winding.) MEMO.—Pointed out to the Mine Manager the neglected state of the taps on the boilers, they not being in a workable condition. He had them rectified, and he cautioned his drivers not to let them get into such a state again. (Copy.) <i>Form of Certificate.</i> This is to certify that I have this day submitted the steam boiler employed by this Company to a hydraulic test, viz.— Working pressure at lbs. per inch Test ditto I found also that the boiler was furnished in accordance with General Rule (xxi.) of the Regulation of Mines Act, 45 Vict. No. 8., 1881, with proper steam and water gauges; also safety-valve taps and every other requisite in a good working condition. (Signed) <i>Inspector of Mines.</i> <i>The Company</i> at _____ Date.
	Beaconsfield	...	Dundee G.M. Co., Registered	Complied with	...	...	...	This Company had just completed a winding plant, employing a portable engine for the purpose. Their shaft was 145 feet deep, and they had driven 150 feet along a lode formation 4 feet in width.
	Beaconsfield	...	Excelsior G.M. Co., Registered	...	...	...	...	Depth of shaft, 143 feet; bottom level at 137 feet; a lode formation has been driven on in main level, which for a width of 2ft. 6in. shows decomposed pyrites and a little gold.
	Beaconsfield	...	Garfield G. M. Co., Registered	...	...	...	...	This Company have found auriferous quartz on the crown of the hill in the Cabbage Tree Range, trending westerly; they have driven a tunnel from the western base of the hill for a distance of 890 feet, in order to intersect the former eventually at that lower level.
	Ditto	...	Little Wonder G. M. Co., Registered	Notice given to improve the ventilation of this mine, as complaints had been made	...	...	...	Depth of shafts, 150 and 219 feet; levels at 60 feet, 180 feet; and at bottom all the workings are dry. The lode is of a friable character, and the quartz of a whitish colour, generally containing the precious metal in good percentages. The "shoots" of gold assimilate to those at Sandhurst, Victoria, by dipping as from a common centre in opposite directions, gradually diverging with greater depths.

February	Beaconsfield	...	Moonlight G. M. Co., Registered	Complied with	...	...	...
	Ditto	...	Olive Branch G. M. Co., Registered		...	...	...
	Ditto	...	New Providence G. M. Co., Limited	...	...	...	...
	Ditto	...	Tasmania G. M. Co., Registered	...	...	...	...
	Ditto	...	Florence Nightingale G. M. Co., Registered	Complied with			
	Ditto	...	Lefroy G. M. and Drainage Co., Registered	Ditto	...	...	...

This mine adjoins the above, and in it the reef was first discovered, on the western side of the Cabbage Tree Range. Their shaft is 110 feet deep, and 120 feet in the eastern cross-cut the lode was cut. The reef varies from a few inches to two feet thick; and on crushing 205 tons of quartz, 311 ozs. of gold were obtained.

This proprietary has done a great deal of work; several tunnels were driven for considerable distances, but their endeavours are now concentrated upon the sinking of a main shaft in order to intersect the continuation of the same reef, which the last two Companies have found so remunerative to work.

This Company had done also a very considerable amount of prospecting; gold-bearing stone has occasionally been met with; but they are also following the Olive Branch's example, and are sinking a new shaft for the reef.

This Company are working a lode which constitutes the first discovery of auriferous vein-stone on the west side of the River Tamar. It has been worked very successfully, and the large profits obtained have been realised through the employment of excellent crushing machinery (50 heads), together with other gold and labour saving appliances, all of which have been paid for out of the product of this large mine. The lode observed a rather irregular course from east to west, and the first outcrop was found by Mr. Dally on the eastern slope of the Cabbage Tree Ranges. Four levels have been opened, and the stopes are all connected in a systematic manner by "winzes," "passes," and "rises," which in turn connect by means of the levels with the main adit and main shaft. The former, 2140 feet in length, gives nearly 260 feet of backs on a lode ranging from 2 to 15 inches in width, all gold-bearing. The quartz is stained black by carbonaceous matter—the reserve of what occurs on what is believed to be the same lode on the western slope of the range.

Total yield till February is stated at

Further particulars of this very valuable auriferous lode will be given in a special Report, accompanied by plans and sections.

The Golden Gate (late) Co. is now incorporated with the Tasmania Co.'s lease.

The water at the lower levels of the Tasmania Co.'s mine increasing at a considerable rate, and the cap of the lode having been denuded to a considerable depth from the surface of this mine—being replaced by diluvial clays and gravels—rendered it necessary that heavy pumping machinery should be erected, especially as the Florence Nightingale Co. adjoining, with their 22-inch lifts, could only just cope with the influx of water. This Company was thereby joined by the former as a Drainage Union, and the united proprietary have sunk a very large shaft, 12 feet by 6 feet, for pumping and winding purposes. They are now

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulations of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
	Beaconsfield	...	Daily's United G. M. Co., Registered	Not working	...	...	...	erecting a most powerful pumping plant, by means of which the mines will be unwatered, by means of plunger workings 20 inches in diameter, and draw-lifts 14½ inches in diameter.
	Ditto	...	Phoenix G. M. Co., Registered	Notified to have railings at brace and steps to top of brace	...	...	...	Total depth of shaft, 202 feet. First level at 104 feet, and second at 180 feet. This proprietary met with an extraordinary influx of water, and as the pumps could not cope with same they had to suspend operations.
	Ditto	...	Leviathan G. M. Co., Registered	Complied with	...	...	...	This Company's shaft is 178 feet deep; a lode running parallel to the Tasmania, but east of this shaft, was cut at a distance of 184 feet following same in the main levels, showed a good deal of sulphurets but a low yield of gold.
	Salisbury, Blue Tier	...	Blue Tier G. M. Co., Registered	Not working	...	...	...	The mouth of the adit this Company are driving is about 670 feet; the Phoenix Company's shaft and the blind shaft inside of it, 800 feet had been excavated. The shaft inside has been sunk 135 feet, and from the bottom of same on the 19th December the No. 2 Diamond Drill had bored in a horizontal direction (S 30°W.) to a distance of 20 feet.
	Ditto	...	Victoria G. M. Co., Registered	Ditto	...	...	...	The district is located about 5 miles south from Beaconsfield. This proprietary have driven an adit for 208 feet, carrying partly a flat reef on top and sandstone beneath; this singular formation has been proved moderately auriferous but not yet profitable to work. The underlying sandstone is slightly stained in places by the hydrate of nickel.
March	Mount Victoria	...	Prospecting Association Mercury ditto Mount Victoria ditto	...	...	...	...	This Company, like the above, have carried on their prospecting by means of which the one driven by this Company have driven has completely perforated the Blue Tier Range from side to side. At and for some distance below the surface the quartziferous veins gave in some cases rich returns from limited quantities of ore, the gold being very coarse at times. With greater depth sulphurets and other minerals appeared, thus making the returns poorer, and leading to cessation of work in the lower depths, when a remarkable increase in temperature was found to exist. On further examination I found a great chemical reaction going on, resulting in the deposition of hydrates of nickel ores, the full particulars of which will be found in my Geological Report for 1882. The tunnel was altogether 1200 feet in length. At the time of my visit to this then newly discovered mining district the three associations mentioned opposite has only just stripped some of the quartz, but they gave every prospect for future profitable development. As instructed by the Hon. Minister, a full report was made and forwarded by special request, and which was printed on the 6th of April following.

Ditto	Beaconsfield	...	Turner's Marsh	Little Wonder G.M. Co., Registered Bangor Slate Quarrying Co.	Notice expired re ventilation A complaint having been made to the Inspector of Mines regarding the unsafe state of the engine and boiler, Mr. Jas. Harrison was authorised to make an inspection, and report to the Inspector of Mines.	...	...	...	...	The tunnel broke into the lower workings or air shaft, thereby restoring ventilation. This Company are opening some very good beds of slate near Turner's Marsh, and have connected their quarries by a tramway with their jetty, 10 miles long, in the River Tamar. A tunnel has been driven and a large shaft, 12 feet by 7 feet, sunk to connect with the former; but all slate is to be hoisted to the mouth of the shaft, which was 100 feet in depth, but was to be sunk 65 feet additional. So far only 65 feet has been timbered. The machinery consists of a small vertical boiler, with the engine bolted on to it. The cylinder is 8 inches in diameter, with a 5-inch stroke of piston, like the donkey engines used at the wharves. The whole of the machinery was found to be in a very defective state; some of the tubes were blowing off steam, and the engine was out of repair through unskilful usage; the winding (Manila) rope worked through a small gin block on the poppet-heads, and the whole was in a primitive state. No more than 28 lbs. of steam could be obtained to the square inch, owing principally to leakage. The Inspector of Mines informed Mr. Williams, the Mine Manager of this quarry, that in consequence of the report by Mr. Jas. Harrison no more work should be done until repairs should be effected by a competent engineer; and that under no circumstances were the employees to ascend or descend the shaft by means of the engine pending the erection of their new machinery; to secure also temporarily the main shaft with timber; to construct also a proper penthouse for the protection of the sinks; and to post notices of General Rules, and to keep a proper diary. On a subsequent date an application was made by the same Company for permission to use the engine for lowering timber only. Permission was granted; but it was intimated also that a fine of £50 (fifty pounds) would be inflicted if men were either lowered or raised for so doing under the Act.
April	...	Mersey, Coal	Don C.M. Co. North Western ditto Dulverton ditto Riley's ditto Alfred ditto Mersey ditto	...	...	...	...	...	...	These various mining proprietaries are working the seam of coal existing in that region in a very primitive manner, though not so as to call for any special remark by the Inspector of Mines. Report 61 fully deals with these mines, and contains diagram of same.
	Beaconsfield	...	Florence Nightingale G.M. Co., Registered	...	...	...	I—Cornish Flue, w.p., 50 lbs. sq. inch; t.p., 84 lbs. ditto II—w.p., 50 lbs. ditto; t.p., 82 lbs. ditto	...	...	The engine drivers were working without any indicators on the winding gear, and the Mining Manager was directed to at once supply the want.
May	Ditto	...	Tasmania G.M. Co., Registered	...	...	...	I—Cornish Flue, w.p., 40 lbs. ditto; t.p., 80 lbs. ditto	...	...	Drew the attention of the Mine Manager to the pressure gauge of this boiler not working satisfactorily.

Date.	Gold.	Mineral.	Mine-owner.	Observance of Regulation of Mines Act, 1881.	Special Rules or Exemptions granted or refused.	No. of Steam Boilers tested; Amount of Pressure.	Diamond Drills: No. of Bores, and Depth.	REMARKS.
						H—w.p., 40 lbs. sq. inch; t.p., 77 lbs. ditto III—w.p., 40 lbs. ditto; t.p., 76 lbs. ditto Portable, w.p., 40 lbs. ditto; t.p., 85 lbs. ditto Portable, w.p., 41 lbs. ditto; t.p., 90 lbs. ditto Portable, w.p., 45 lbs. ditto; t.p., 85 lbs. ditto	...	Pressure gauge of this boiler not working satisfactorily. Mine manager undertook to have the same repaired.
	Beaconsfield	...	Messrs. Masters' Pyrites Works Florence Nightingale G.M. Co., Registered Ellis's Co.'s Battery Olive Branch G. M Co., Registered	... ... ... ...	... ... ... ...	... ... ... ...	...	The Hon. Minister granted permission to the manager of this claim to obtain and make a tracing of the Little Wonder Co.'s mine.
June and July	...	Hamilton & Ouse, Coal	Langloh Park Mine	...	...	...	No. 1 vertical bore at Rock Shaft Alluvial G. M. Co., Lefroy, bored 246 feet	Examined these districts for their coal-bearing properties, and furnished a report thereon. Also preliminary examination of coal measures near Rosegarland Estate, Derwent River.
August	...	Fingal & Mt. Nicholas, Coal	Mt. Malcolm Clerke & Co. Gathey's Co. Ransom Co. Killymoon Co.	...	...	...	No. 2 diamond drill bored at Alpine Company, Mangana, to a distance of 545 feet 7 inches	These districts were examined and duly report upon—(Report No. 131).
	Beaconsfield	...	Tasmania G.M. Co., Registered	Special inspection under the Act	...	...	No. 1 vertical bore ditto, 264 feet	In consequence of the evidence given at the Police Court, Launceston, with regard to an accident, this mine was carefully examined in all its workings, and a certificate given to testify to its safe condition and careful timbering throughout.
August	Lefroy	...	Native Youth G.M. Co., Registered Morning Star G.M. Co., No Liability West New Chum G.M. Co., Registered	...	...	...	...	These three principal mines, on the three principal lines of reef, were examined in order to elicit information as to the prospects of deep mining of quartz lodes, &c.; and a Report, No. 126, was submitted to the Hon. Minister of Lands and Works.
6 Sept.	Lefroy	...	East New Chum G.M. Co., Registered	Notice served under General Rule 11, Clause 15	...	...	...	This Company was allowed two months to obtain and keep in operation a safety cage and suitable appliances to prevent its sudden fall down the shaft, and also to prevent its coming into contact with the poppet heads.
September	Beaconsfield	...	Queen G.M. Co., Registered	Application for securing the stability of certain crushing machinery	...	...	No. 3 bore was drilled to a depth of 238 ft. 3 in.	This Company applied to the Inspector of Mines, and the latter recommended the following for approval, which was sanctioned by the Hon. the Minister of Lands and Works; viz.— "In order to secure stability for the battery and other

October	...	...	...	Notice served under Section 3.	...	...	...	machinery, a depth of 150 feet should be reserved in the alluvial workings; and no such workings should approach the outside of buildings and machinery nearer than 40 feet."
		Beaconsfield	W. Dally and other properties	...	...	...	...	A young woman was employed at the pit's mouth landing heavy kibbles and in trucking, also a very young boy. This being against the provisions of the Act, intimation was given to Mr. T. Meredith to discontinue these practices from date.
		Fingal & Mt. Nicholas	Mt. Nicholas C. M. Company	...	...	...	...	The inspections and examinations were confined to the carbonaceous and other associated mineral deposits near Beaconsfield,—the result of which was an exhaustive report, with geological plans and sketches.
November	Lefroy	...	New Native Youth G. M. Co., Registered	Notice served under Section 2, General Rule xxxiii. S. Richards, Mine Manager	...	...	...	A test of coal from those localities was witnessed, at the instance of the Hon. Minister, on the Launceston and Deloraine Railway; and a report upon the results achieved was furnished.
October	Lefroy	...	Lefroy Pyrites Reduction Co.	...	...	w.p., 30 lbs. per sq. inch., t.p. 70 ditto	No. 4 bore was drilled to a depth of 263 ft. 6 inches	No. I., one boiler (portable) only.
			New Native Youth G. M. Co., Registered	...	...	w.p., 35 ditto; t.p., 64 ditto; w.p., 35 ditto; t.p., 64 ditto; w.p., 33 ditto; t.p., 70 ditto; w.p., 33 ditto; t.p., 70 ditto	...	No. I. } No. II. } At crushing works.
			The Government diamond drill	...	...	w.p., 40 ditto; t.p., 95 ditto	...	No. III. } No. IV. } At the mine, employed to work their pumping and winding machinery.
								No. V. This diamond drill was employed for boring in the deep sub-basaltic ground below Lefroy at and near Sludge Creek. It was deemed necessary to test the boiler the first time after its having been employed after September last year.
								No. VI.

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulation of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested ; Amount of Pressure.</i>	<i>Diamond Drills : No. of Bores, and Depth.</i>	<i>REMARKS.</i>
	Beaconsfield	...	Morning Star G. M. Co., N. L.	...	...	w.p., 40 lbs. per in. ; t.p., 72 lbs. ditto	...	Portable boiler.
			New Chum G. M. Co., Registered	...	...	w.p., 40 lbs. ditto ; t.p., 70 lbs. ditto w.p., 40 lbs. ditto ; t.p., 66 lbs. ditto w.p., 37 lbs. ditto ; t.p., 70 lbs. ditto	...	No. 7. } No. 8. } Winding and pumping plant.
			West Chum G. M. Co., Registered	...	...	w.p., 40 lbs. ditto ; t.p., 70 lbs. ditto w.p., 40 lbs. ditto ; t.p., 70 lbs. ditto	...	No. 9. Crushing machinery. No. 10. Winding and pumping. No. 11. Crushing machinery.
			Tasmania G. M. Co., Registered	...	...	w.p., 45 lbs. ditto ; t.p., 70 lbs. ditto w.p., 45 lbs. ditto ; t.p., 70 lbs. ditto	...	No. 12. } No. 13. } Winding and pumping.
			Little Wonder G. M. Co., Regis- tered	...	...	w.p., 40 lbs. ditto ; t.p., 67 lbs. ditto	...	
			Leviathan G. M. Co., Registered	...	...	w.p., 40 lbs. ditto ; t.p., 70 lbs. ditto	...	No. XV. Crushing machinery.
			Tasmania G. M. Co., Registered	...	...	w.p., 40 lbs. ditto ; t.p., 80 lbs. ditto w.p., 40 lbs. ditto ; t.p., 80 lbs. ditto	...	No. XVI. } No. XVII. } Crushing machinery.
			Messrs. Masters' Pyrites Works	...	...	w.p., 40 lbs. ditto ; t.p., 77 lbs. ditto	...	No. XIII.
			Florence Nightin- gale G. M. Co., Registered	...	...	w.p., 40 lbs. ditto ; t.p., 75 lbs. ditto w.p., 50 lbs. ditto ; t.p., 76 lbs. ditto	...	No. XIX. No. XX. } No. XXI. } Pumping and winding.
		Ringarooma	North Brothers' Home Tin M. Co., Registered	Notice served to adopt a system of mining which is not so dan- gerous as at present	...	w.p., 50 lbs. ditto ; t.p., 76 lbs. ditto ...	...	This Company is working a large tin-bearing deposit on the north side of the River Ringarooma, the erosion of which modern watercourse has disclosed this and other deposits of the same geological age on the opposite or south side of the river. In reference to the notice served on this and other proprietaries in this locality under Section 9, it may be explained that the gravels, or rather sands, forming the stanniferous deposits, are of a very loose and non-adhesive character, being inter-stratified occasionally by beds of clays, and overlaid in places by more or less decomposed sheets of basalt. They are thus easily removed from their positions either by nozzles or sluices in order to con- centrate the tin ore therein contained. The modes for working gradually adopted with a view of

obtaining the ore from the lower or richer gravels, has resulted in the formation of almost vertical "faces" of this gravel, in some cases exceeding 110 feet in height. And, as the pressure of water employed through the nozzles was limited it followed as a matter of course that the employment in order to produce the best attainable effect with the water available for breaking and washing down the faces have to work close under these faces, the "working levels" on which these principal operations were being carried were besides, in several instances, obstructed by rocks, stumps, sand, and other *débris*, so that on a fall of gravel taking place the miners would be unable to escape in time. The Inspector of Mines having received complaints as to this dangerous method of working, after careful inspection notified the several companies that within a limited period they should initiate a system of working the mine as follows:—1st. to keep the "working levels" clear from all obstructions (as referred to above) for a width of from 30 to 40 feet from the base of the "face" for the whole width of the stanniferous deposit. 2nd. To work in future the main or other faces by means of terraces or "steps" as per sketch attached to this Report, no such "steps" to exceed 50 feet in vertical height from their base, and each terrace to have a clear and level space for working not less than 20 feet from the upper edge of the next lowest or working level 50 feet below same. The initiation of this system will entail in the beginning an increased amount of labour, and a reduction of the yield of tin ore, but when it is taken into consideration that the miners will work secure from danger, and cannot be interrupted by sudden falls of gravel as at present, more satisfactory progress can be made than at present. And when the terraces are cut there cannot be any doubt but what even higher yields will be produced, combined with greater regularity than has been possible under the present very dangerous mode of working.

This Company are working a main face 110 ft. in height from the highest point to the present working level, which latter is composed of a whitish clay. A shaft sunk to a depth of 25 ft. in very wet ground failed to reach the bedrock, but the gravel was very rich in tin ore.

The beds of the top gravel are overlaid by basalt, not yielding any ore for 20 ft.; the next 20 ft. are very poor, making about 40 ft. unremunerative to work. The remainder is, however, profitably worked, and, with 4 nozzles (having a head of 60 ft.) from 1 in. to 1½ in. in diameter, the yield has averaged from three to four tons per week. In this case the working level was encumbered to within a very few feet of the face by stumps, rocks, sand, and other *débris*, which was not only dangerous to the men but actually covered the

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulation of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
		Ruby Flat, Branxholm.	Standard T. M. Co.	...	...	...	...	<p>much richer tin ore deposits beneath the same. There were 45 miners employed at this mine,—the description of which now given would also apply more or less to the other mines in close vicinity.</p> <p>This Company have been working the stanniferous deposits—stream tin—on a tributary of the main creek, which latter embraces all that which is known as "Ruby Flat," which generally has proved very rich in the ore mined for, the only drawback being perhaps that frequently a considerable height of top-soil and gravel overlaid the older Tertiaries carrying the tin ores, and which had to be removed or "stripped" before the latter could be sluiced. There is apparently in this valley and its tributaries a very considerable quantity of tin-bearing gravel which has been left on account of the limited quantity of water at the disposal of the leaseholders, and because these poorer deposits would not pay to work unless an ample supply were available at less expense. On this Company's land two promising parallel vein deposits have been discovered, and they have been traced for a considerable distance. One of these is 12 ft. and the other 4 ft. wide, and they present at the surface a laminated appearance through regular seams of quartz, traversing, in conjunction with the micaceous porphyritic matter in which the ore occurs in veins and crystals, the granitoid rocks in the direction of S. 14 E. These deserve the attention of the mine-owners, and are a very promising feature for the future permanency of the district after all the alluvial deposits have been exhausted.</p> <p>This ground has yielded well in the past. With more and cheaper water a good deal of ground would give moderately good results.</p> <p>This Company's workings are situate about half a mile east of the Ringarooma River, and some 400 ft. above its level, on a range overlooking that rich alluvial deposit known as the "Blacksmith's Hit." This vein or, properly speaking, lode formation, occurs in coarse granite, from which it is distinguished by a softer vein of decomposed feldspar and mica at either wall. The strike is S. 85 E., the underlay to the north at an angle of 80 degrees, and its thickness about 7 ft. The formation is to some extent charged with crystalline tin ore, arsenical and copper pyrites, and blue carbonate of copper. The tin ore occurs as well-formed crystals, and it is well distributed throughout the vein matter. About 20 ft. have been sunk in a shaft and</p>
		Ruby Flat, Branxholm.	Golden Age T.M. Company.	...	...	...	...
		Ruby Flat, Blacksmith's Hit.	Eastman's Prospecting Company.	...	...	...	...

Ruby Flat.	Messrs. Harper & Company.	...	...	...	...
Ruby Flat.	Ibis T. M. Company.	...	...	...	...
Ruby Flat.	Ah Moy & Company.	...	...	...	...
Ruby* Flat.	Ah Hon.	...	...	...	...
Ruby Flat.	The Hope T. M. Co., (private.)	...	...	...	...
Branzholm.	Arba T. M. Co. (private)	...	...	...	...
Ringarooma.	Payne & another Co., (private).	...	...	...	...

25 ft. driven to the lode, where it was found exactly the same as at the surface, but a "fault" had thrown one portion to the eastward for a distance of 12 ft. The whole formation possesses considerable promise, and as tunnelling would strike it about 150 ft. below the outcrop, further operations to prove its value at that level are warranted by the present prospects.

This proprietary had commenced operations below the Ibis Co.'s workings on a valuable stanniferous deposit over 16 feet in thickness.

This Company having secured certain water-rights from the Government are cutting a tail-race in order to commence operations on a well prospecting valuable section of tin-bearing ground.

Are employing a large number of men (50) in stripping and sluicing stanniferous gravel $2\frac{1}{2}$ chains wide by a depth of 14 feet, 6 feet wash-dirt, and packing the cleansed ore to Bridport for shipment.

Working a rich piece of ground near the Blacksmith's Hit claim.

This Company employ 18 men in stripping, working, and sluicing tin ground 100 feet wide. The stripping is nearly 20 feet high, and the wash-dirt from 1 to 4 feet. Three days' stripping gives three days' sluicing, and the yield was from $\frac{1}{4}$ to 1 ton of very pure ore per diem.

This proprietary is employing nearly 40 miners in stripping, trucking, sluicing, and cleansing tin ore, which they procure from a face 80 feet in height, but of which only the lower 45 feet are taken for dressing. That peculiar Pliocene gravel so prevalent in the older river channels of this district is characterised, like other similar formations of the same geological age, by a sandy gravelly wash containing but very few stones beyond the size of ordinary pebbles. Here and there nests and streaks of rich fine tin ore are discernible, which yield well. The works are carried on systematically. The face is wrought by means of a terrace or step above the working level, and as the wash is harder than usual, and sometimes connected by ferruginous bands, the miners with ordinary care are in no danger from falls of earth. It may be stated that a shaft was sunk 13 feet below the working level in rich tin wash and not bottomed, and that the face is about 4 chains in width.

They are working what appears to be a southern tributary to the main Pliocene channel of the same character and age as the Arba. The present River Ringarooma has evidently during its process of its erosion severed this subsidiary channel from the main deposit, as the lithological character of it and this ore are distinctly of the same nature. The claim is now worked on tribute let to Chinamen, 8 in number. The wash-dirt is from 6 to 8 feet thick, but of its yield no information could be obtained.

<i>Bate.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulation of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
		Ringarooma.	Triangle T. M. Co., Registered.	Notice served, under Section 9, to adopt a system which is not so dangerous as at present.	...	...	...	This Company is located on the north side of the Ringarooma River; they employ about 15 men, and have raised thus far over 7 tons of tin ore. The principal and richest deposit of ore has been proved to exist north of their present workings, which are close to the river. In order to obtain the necessary supply of water an 8-inch centrifugal pump worked by steam power is employed, by means of which it is lifted to a height of 30 feet, thus supplying a nozzle, with but very limited power, to hydraulic the hard gravel in the face. At the same time this pump also furnishes 8 heads of water for sluicing, &c. A tunnel was driven from the river 200 feet, mostly in wash. In a cross drive 100 feet long very good tin was discovered.
		Ringarooma.	Brothers' Home (Krushka's) T.M. Co. (private)	29.11.83. Notice served under Sect. 9—1st. To erect a substantial fence on top of the deep cutting (118 ft.) in the close vicinity of traffic. 2nd. To work their mine on a system less dangerous, as per diagram and instructions.	...	...	...	The owners of this mine were the original discoverers of those rich stanniferous deposits, and, owing to the facilities offered in working and the ample water power which they have secured, the concern is one of, if not the most, profitable in Tasmania. Gradually as their works progressed the height of the wash and the overlying "stripping" increased until the present main face has a vertical height of 118 feet. The width of the gutter, bounded on each side by the granitoid bedrocks is, at their present working level, about 5 chains, and the lower layers of gravel are very rich in tin ore, but the 26 feet sunk through the gravels beneath the working level have been proved to be even more productive. With about 40 men employed, from 25 to 30 tons, sometimes more, is produced per month without touching the richer ground beneath the present working level, which is, so to speak, held in reserve. As the workings progress in a south south-easterly direction, the stripping is gradually capped, in the first instance by the detritus of basalt shed from an outlier of that volcanic rock known as the "Sugar-loaf," and secondly by that outlier itself, which latter overlies the Tertiary gravels beneath. In this manner, owing to the rapid rise in the hill above the main face, it will be and now is impossible to carry on mining operations except by means of benches or terraces, which the mine-owners have been notified to cut within 10 days of the 29th of November, 1883. Their working level was not, comparatively speaking, nearly so much obstructed as in other mines in the vicinity. It was observed that the average effect of the jets of water issuing

Ringarooma.	Brothers' Home, No. 1., T. M. Co., Registered.	On 29th Nov. '83 this Company was served with a notice to adopt a safer system of mining in the face. The Directors re- quested recon- sideration, and the Inspector of Mines after due consideration, modified his views, and issued a fresh notice instead of the one then can- celled.	...	...	...
Ringarooma	Briseis Tin M. Co., No Liability	...	...	...	...

under various pressures per square inch at all these mines was unsatisfactory, owing to the jets of water becoming less and less solid at various distances after leaving the nozzles, and thereby depriving the already limited power of the water against the banks of gravel of the greater portion of the effect necessary for the purpose. The Inspector of Mines recommended the introduction of nozzles with straightening pieces, as per diagram herewith, and which he found to conserve in the Californian gravel mines with faces nearly 400 feet high the solid jets so very necessary for the rapid dislodgment of the gravels *in situ*. If working the Californian gold gravels in their ancient river channels was a necessity for these improved nozzles, it follows that they are almost compulsory for our miners to adopt with only one quarter the pressure and a limited supply of water, so that their introduction cannot take place too soon in order to achieve by their means more favourable results than is the case at present. Their adoption will likewise lessen the danger to the miners close to and under these faces, as with more solid jets they can do the same or more work in the breaking down of the gravels when plying the nozzles at increased distances from the base of those faces.

This Company's leases adjoin those of the last, and they are situated so as to compel them to obtain permission for constructing a tail-race through their neighbours' ground in order to get rid of their tailings and other *débris*. As they are operating on the western part of the same lead of tin-bearing gravel which has already been described, it is not necessary to refer to it again. This Company having brought in a head-race from the Cascade River, commands a head of water 104 ft. in height, and in order to augment that pressure they have converted that race, passing through a deep cutting into a service reservoir, which supplies a string of pipes 20 inches in diameter, throws a powerful stream of water for a distance of nearly 80 ft., and thereby precludes the miners from working so close to or under the faces where nozzles of less capacity and pressure are likewise employed in this locality. The great height of unproductive gravel capped with basalt (80ft.) and the difficulty experienced in disposing of their *débris* caused the Inspector of mines to permit the working of this mine on a "batter" only, and not by means of terraces or benches. The "batter" adopted temporarily ranges from 40 degrees from the vertical to 20 degrees; and the first slope mentioned includes the 40ft. from the top of the face, and the second for the remainder to the base or working level, the face being about 110 feet high.

Still further south, and over a saddle in a spur descending from the main range in the west, which terminates with a basaltic outlier known as Sugar-loaf Hill, this Company's leases are located. Mining operations were confined to the sluicing of some tin-bearing gravels overlying here and there in the most recent

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulations of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
		Moorina.	David's Creek Tin Mines (Prospectors.)	...	...	...	...	<p>bed of the Cascade River, a continuation of the older stanniferous drifts. Boreholes, I was informed, were put down at several places, exhibiting the existence of metalliferous gravels, but these older deposits were otherwise not sufficiently opened up in order to enable, after inspection, the formation of any opinion as to their extent and value.</p> <p>These are situate about four miles from the Moorina township in a north north-westerly direction. Several boreholes have been sunk, either from the bottom of shafts or from the surface, through Tertiary drifts without bottoming on the bedrock, owing to the influx of water, but principally on account of the heavy drifts encountered. It appears, however, that by means of these prospecting operations sufficient data were obtained to establish a close connection between those deposits and those at the Brothers' Home, rather more than four miles distant in a direct line. The lithological character of these upper gravels were found to be identical with those in the above tin-gravel mines, and the fact of the bores having penetrated the same and proved a good tin-bearing wash beneath the former supports the conclusion of their being on the same "ancient" river channel. It may, however, be mentioned that between Brothers' Home and David's Creek on the one side and towards Mount Cameron on the other side, from the latter high basaltic plains occur overlying that now obliterated prehistoric watershed. Lower down this creek other boreholes have shown that owing to the denudation of these upper worthless gravels the tin-bearing strata occurred at less than 40 ft. from the surface, but in very wet ground containing very heavy drifts of sand, &c.</p> <p>The mining operations of this Company are carried on at a distance of about eight miles from Moorina and close to the road to Gladstone, North Mount Cameron. They are working a blackish-brown deposit of a sandy nature, in which rounded pebbles occur sparsely. The tin ore, which they obtain in the ordinary manner by sluicing, bears a close resemblance to that of the David's Creek boreholes and shafts, the Brothers' Home claim, and the Arba, and there is presumptive evidence that in this vicinity the outlet of the older Tertiaries carrying tin ore exists, and that further north these metalliferous deposits have been partly and wholly removed by denudation. This wash becomes more and argillaceous in depth, reddish-white in colour, and it gradually passes into a decomposed granite, which, however, still retains a per-centage of ore, so that the real bed-rock, it appears, has not yet been reached. The claim</p>
		Moorina.	Pioneer T. M. Co.	...	...	...	...

Mt. Victoria, quartz.	...	The Mercury G.M. Co., Registered.	...	...	...	...
		Premier G.M. Co., Registered.	...	...	...	...

is systematically worked, and gives satisfactory returns for the labour of about 30 miners employed thereat. This proprietary have, since my last inspection in March, continued to develop their mining property with a very considerable amount of vigour, and their efforts have been attended with success in proving their lodes to continue to a depth of nearly 90 ft., and no indications have appeared for any disruption at still greater depths. They have sunk underlay shafts on two distinct bodies of laminated, highly mineralised gold-bearing quartz, and so far the very fine gold disseminated through the stone has, if anything, shown a distinct improvement at the greater depths. In order to work the mines economically a tunnel has been driven at a lower level, which will, on connection with the shafts, give a large stope of ground to take out. This tunnel was 120 ft. in length and would leave 110 ft. to drive in order to break into the bottom of the northern underlay shaft. A peculiar feature has been observed,—viz., that wherever the lodes are of good width the richer the quartz in gold. Meanwhile the erection of crushing machinery was also taken in hand and the laying down of a tramway in order to convey the broken out quartz from the mines to the batteries, which consist of 10 heads and a Berdan basin, to be driven by a waterwheel 40 ft. in diameter and 3 ft. 6 in. breast, all of which are in an advanced state of progress.

This Company having discovered some gold-bearing quartz cropping out at the surface, followed same down some distance, and then they erected crushing machinery, driven by a waterwheel 37 ft. 6 in. in diameter, 3 ft. breast. This works at present but 10 heads of stamps with the buckets but partly filled, and the quantity of water available permits the working of additional crushing power if necessary. The tunnel in which the cap of an auriferous vein 1 ft. wide was first intersected has been driven for a distance of 210 ft., where a body of stone nearly 5 ft. thick was met with—the continuation of the stone first discovered at the surface—and this was submitted to the test of their new battery, but proved to be much less in value than it was estimated to be. The gratings used in this first trial crushing at Mount Victoria were coarse, having but 140 holes to the square inch, and had it not been for the electro-copper sheets, plated with pure silver and coated by mercury, recommended for the so very fine gold at Mount Victoria by the Inspector of Mines, on the Californian principle, the result would have been very much less even than a little over 3 dwts. 8 grs. to the ton for the 346 tons of quartz crushed.

In the first report of the Inspector of Mines in April last this very matter was pointedly referred to as follows:—"The gold is rather light in colour, denoting an admixture of silver, and it is, generally speaking, more of a fine than oven of a moderately coarse description, which will necessitate the use of the very

<i>Date.</i>	<i>Gold.</i>	<i>Mineral.</i>	<i>Mine-owner.</i>	<i>Observance of Regulation of Mines Act, 1881.</i>	<i>Special Rules or Exemptions granted or refused.</i>	<i>No. of Steam Boilers tested; Amount of Pressure.</i>	<i>Diamond Drills: No. of Bores, and Depth.</i>	<i>REMARKS.</i>
			Gumsueker Prospecting Association.	...	...	...	...	best appliances in crushing and amalgamation in order to treat this fine gold, which, if treated in the ordinary way only, will entail a considerable loss of gold during the manipulation necessary in separating the gold from its matrices."
			Caxton. Hope. United Mt. Victoria	...	...	...	...	A vein of hard (gold-bearing) quartz was followed from the surface to a depth of 36 feet, where the water became too strong for further progress. An adit is now being driven on contract in order to intersect this stone at a depth of 75 feet below the surface outcrop in one hill, and 150 feet in a hill on the opposite side of a gully intervening. It is intended to sink the shaft again as soon as the water drains off into the tunnel below.
			Mt. Victoria G.M. Co., Registered.	...	...	...	...	In these sections—21 in number—but two men were actually employed at the time of my inspection, though gold-bearing bodies of quartz had been discovered of good width and considerable extent along their course or strike. In the Caxton ground, for instance, a reef exhibiting gold at or near the surface had been bared and traced for a distance of 7 chains (462 feet) for a width ranging from 2 to 3 feet, and yet nothing was being done to test its behaviour in depth by the proprietors, nor yet would they let anybody else do so on such terms as could be agreed.
			I. Alluvial Prospecting Co. II. Ditto.	...	...	...	...	The discovery of these very promising lodes belonging to the Company was due to the finding of a huge boulder of laminated quartz showing gold in several places in a branch gully leading down to the Dorset River. The outcrop where this boulder came from was soon afterwards found, and is being followed down by means of a shaft 72 feet deep. A tunnel driven from the same gully for a distance of 164 feet had a crosscut extended west, when the lode was intersected at 26 or 30 feet to the opposite wall. This is a strongly laminated body of mineralised quartz, in which both fine and coarse gold occurs in remunerative percentages if the gold-saving appliances are carefully selected and attended to during crushing. The striated friction planes occurring so frequently in this reef are always considered in other quartz-mining districts as a favourable indication for the permanency of such metalliferous vein-stones.

The two Diamond Drills were engaged at Jack Creek and Lefroy for No. 1, and at Mangana for No. 2 Drill. Aggregate depth bored at Jack Creek, 691 ft.; at Lefroy, 1011 ft. 9 in. Total for year by No. 1 Drill, 1702 ft. 6 in. No. 2 Drill at Mangana, 545 ft. 7 in. Grand Total for this year bored by both Drills, 2248 ft. 4 in.

These were two proprietaries in course of formation for the purpose of thoroughly testing the gravel deposits along the banks of the River Dorset for gold. As operations were yet in the initial state no opinion could be formed as to the success of these undertakings, though it is probable that runs of alluvial gold as shed from the Mt. Victoria reefs will be found if properly prospected for.

APPENDIX C.

To all persons, whether Contractors or not, employed by "The Company, Registered."

Mining

ALL persons employed by the above Company are engaged subject to the following Rules and Conditions:—

1. All persons employed, except Contractors, shall be deemed to be engaged by the Shift only.
2. All persons employed, whether Contractors or otherwise, shall be subject in their work to the control of the Company's officers for the time being.
3. The Company will not be responsible to individual members of contracting parties for moneys due on account of work and labour done other than to the person or persons whose name or names may appear in the Company's accounts as the recognised heads of contracting parties.
4. In accepting employment, you consent to be searched at whatever time the Directors or Manager of the Company may think proper, and if any unmanufactured gold or other ore is found upon your person, it shall be deemed the property of the Company; and the Company shall be at liberty to take proceedings against you in any Court of Justice.
5. If any property belonging to the Company shall be destroyed through your carelessness, you shall be liable for the value of the property so destroyed, or to the full amount of wages that may be due to you.

The following working signals to be used:—

For WINDING—

1	shall signify	Heave up
1	" (when the cage is in motion)	Stop
2	"	Lower
3	"	Speak
3 & 1	"	Men coming up

For PUMPING—

4	"	Work
4	" (when pumps are working)	Stop
5	"	Slower
6	"	Faster

For CHANGING LEVELS—

4 & 1	"	No. 1 Level
4 & 2	"	No. 2 Level
4 & 3	"	No. 3 Level

To Engineers or Drivers.

6. Before taking charge for the Shift, you shall examine well all machinery and boilers committed to your care; and should you observe any defect you shall report the same to the Manager immediately, so that the defect may be remedied at once if necessary; and the engine-man, before being relieved, shall communicate to the one taking charge anything he may have noticed necessary to be known.

7. The safety-valves and water-gauges are to be particularly attended to during your Shift; and, without the authority of the Manager or the Engineer, you shall not allow any person to interfere with the engines, or any machinery connected therewith.

8. The braceman shall daily inspect the ropes, chains, and shackles used for hauling; and if found faulty in any respect you are to report the same to the Manager immediately, and prevent any one from using that rope until the requisite repairs are made.

9. You shall pay due attention to the shaft signals, and if they should not be rung distinctly you shall neither raise nor lower the cage until they are rung so as to be clearly understood.

10. You shall, on no pretext, leave the brake of the engine while the cage is in motion, neither shall you wind up or lower fast while men are on the cage. No conversation allowed while the cage is in motion.

11. Should the signal "stop pumping" be given, you shall not again start the engine until the pumps are either disconnected or the signal "start the pumps" is rung.

12. No person is allowed to descend the mine without permission from the proper authority; and it is the duty of the braceman or engine-driver, in the absence of Manager or other person in charge, to see that this rule is attended to; and that no one is allowed to go down, or be employed in any way about the Company's works, while in a state of intoxication.

To Miners and others.

13. While working three Shifts of eight hours, you shall not leave your place of work until relieved; you shall then report the condition of the face to those relieving you, pointing out any source of danger; and if there are missed holes, those who may have charged them shall give notice of the same to the relieving Shift.

14. You shall ring the signals distinctly, so that the engine-driver may clearly understand them.
15. When ascending or descending the mine, you shall keep yourself straight and well within the cage, and on no account should you lean over the winding shaft from the levels, or attempt to get on or off the cage while it is in motion.
16. The number of persons allowed to ascend or descend the shaft in one cage shall not exceed four (4), and any one transgressing this or any of these rules shall be liable to be immediately discharged.
17. All tools are to be securely placed in a truck while passing up or down the shaft, and you shall not ascend or descend the shaft in the same cage as the tools.
18. All persons employed in the works are enjoined to use every precaution against accident or unnecessary risk ; and in all cases where any doubt or unusual difficulty arises in any part of the work, the Mining Manager or Captain of the Shift in charge for the time being must be immediately informed thereof.
19. Every miner shall be held responsible for the safety of that part of the mine in which he is employed, and shall be careful to run no unnecessary risk from baulked or dangerous ground, or from want of timber.
20. Two sets of iron dogs shall be used in each drive for supporting the timber next the face, and should you neglect to use the same you will be discharged without notice.
21. Under no circumstances will any one be allowed to draw out any timber without the consent of the Mining Manager.
22. Should any accident, loss, or casualty occur through your neglect or carelessness, you will be discharged, and disqualified from further employment.
23. It will be the duty of the bracedmen and platmen to give all the signals required in the working of the shaft, and in no case whatever will any one be allowed to give the signals unless authorised to do so by the Engine-driver for the time being.
24. No intoxicating drink shall be taken down into the mine without the permission of the Manager or person in charge, who will only give such permission in case of necessity ; and no person will be allowed to descend the mine, or remain on the works, in a state of intoxication ; and the bracedman for the time being will be held responsible for allowing any man to descend the mine in such state.
25. Every person employed will be required to sign the Roll-book of the Company, binding himself to abide by the foregoing Rules and Regulations.

By order of the Board of Directors,

Manager.

APPENDIX D.

GENERAL RULES.

Gunpowder and blasting.

It shall not be stored on the surface of or adjacent to the mine unless in such magazine and in such quantities as may in writing be approved by the Minister.

No person shall enter with a naked light a powder magazine or any excavation in a mine where powder or other explosive or inflammable substance is stored. And no iron or steel pricker or tamping bar shall be taken into any mine.

A charge which has missed fire may be drawn by a copper pricker, but shall not be visited until one hour has elapsed from the time of lighting the fuse of such charge ; but in no case shall an iron or steel drill be used for the purpose of drawing or drilling out such charge ; but this sub-section shall not apply to charges fired by an electric current.

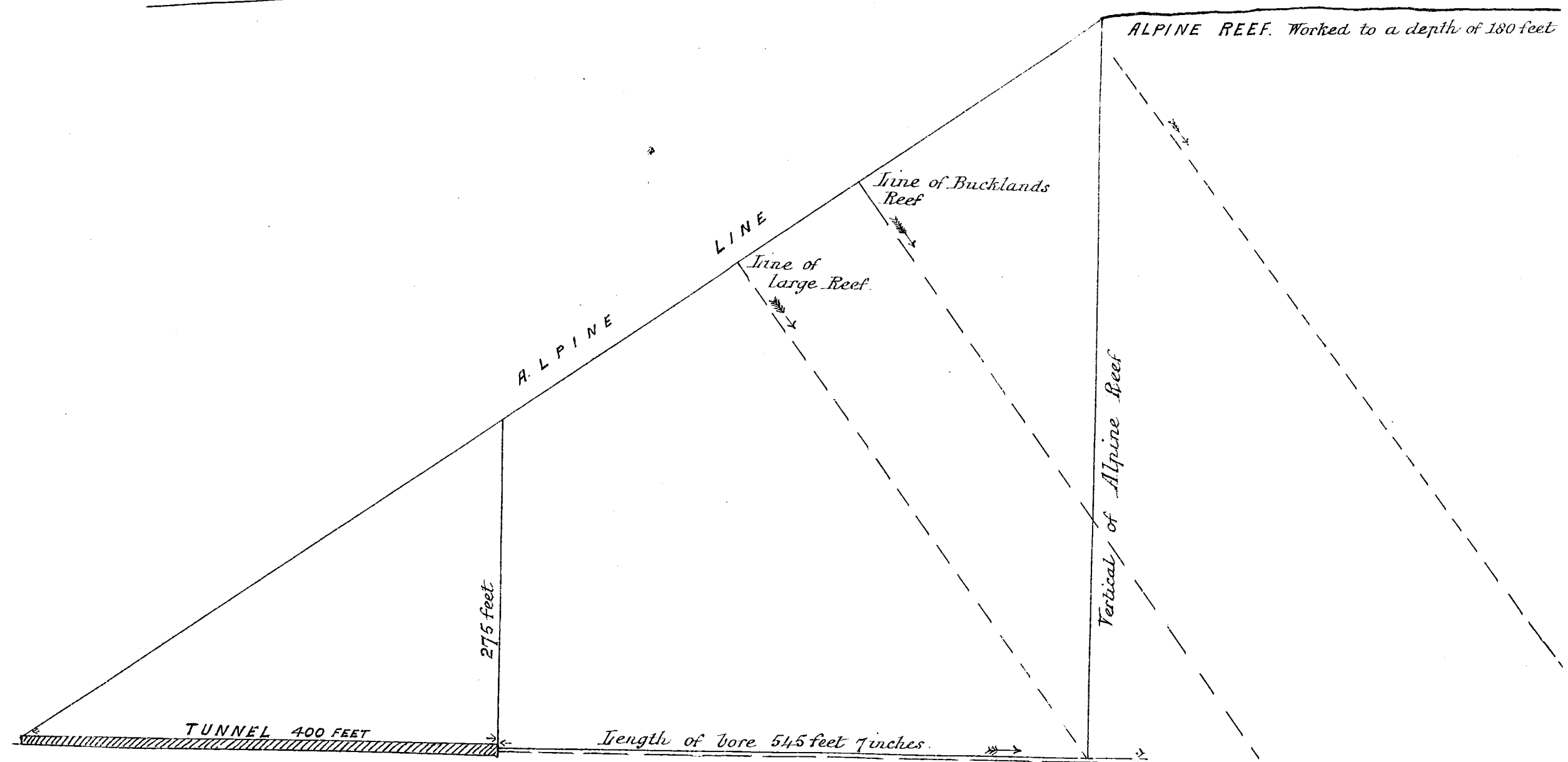
No boy under the age of eighteen years shall be allowed to charge a hole with explosives or to fire any charge of explosives.

No drill hole shall be bored within a distance of three feet directly below or within one foot in any other direction from the site of a previously exploded charge of any nitro-glycerine compound, and no drill hole shall be bored in any remaining portion of a hole in which a charge of nitro-glycerine compound has been previously exploded.

In all cases where the fumes arising from the explosion of any nitro-glycerine compound cannot be effectively dispersed by ventilation or spray of water from the mine, such fumes shall be neutralised or rendered innocuous by the person in charge of the blasting operations by the use of a spray of solution of sulphate of iron before the miners are permitted to return to the sites of such blasting operations.

Mining companies or persons employing miners in blasting with nitro-glycerine compounds shall supply such miners with the means of thawing such compounds and with the means of producing sulphate of iron spray.

Appendix E



APPENDIX F.

CHARTS of Strata passed through by the Diamond Drills.

The following were selected from a number for this Report, viz.:—

No. 1. DRILL, No. 5 BORE,—VERTICAL.

Date.	Locality.	No. of Feet.	Strata.
1883.		ft. in.	
Jan. 5	Back Creek	12 0	Clay (surface.)
		12 0	Soft volcanic rock ("first flow of lava.")
		54 0	Hard basaltic rock.
		5 0	Ditto porous rock.
6	..	9 0	Decomposed rock.
		3 0	Dark-brown clay.
		3 0	Gravel (recent.)
		2 0	White clay (scoriæ.)
		11 4	Brown sandy clay, gravelly and semi-lignite.
		20 0	Dark-brown clay with drifted lignite.
		28 8	Ditto.
		2 0	Soft porous basaltic rock (second flow of lava.)
		2 0	Ditto.
		28 6	Hard basaltic rock, becoming soft and porous at bottom.
		13 6	Brown sandy clay, intermixed with semi-lignite.
		2 0	Cemented quartz drift.
		4 0	Sandy clay and gravel.
		2 0	Gravel, i.e., wash-dirt on bottom rock.
TOTAL		238 0	

No. 2 DRILL, No. 2 BORE,—HORIZONTAL.*

June 4	Alpine G.M. Co., Registered, Mangana Gold-field	101 0	Metamorphic sandstone and slate.
		9 0	Grey ditto, full of small quartz veins.
		15 6	Ditto ditto and slate.
		1 8	Very hard band of metamorphic rock.
		76 11	Metamorphic sandstone and slate.
July 10	..	64 11	Alternate beds of slate and sandstone with quartz veins.
14	..	16 11	Metamorphic sandstone.
16	..	6 2	Quartz.
		1 11	Very hard quartz.
26	..	29 5	Slate, quartz, and metamorphic sandstone.
28	..	5 10	Very hard quartz.
30	..	17 5	Sandstone, with quartz veins.
		10 7	Depth of bore, 346 ft. 8 in.; change of country,—coarse free sandstone.
		53 11	Sandstone, full of small quartz veins.
		10 11	Very hard sandstone with quartz veins.
		12 6	Sandstone, with numerous quartz veins.
Aug. 8 to 10.	..	22 10	Quartz veins in sandstone.
		1 2	Hard white quartz.
		20 5	Ditto with quartz veins.
		19 7	Quartz veins in slate and sandstone.
		11 2	Ditto
		5 10	Quartz and sandstone.
		6 0	Sandstone.
		15 2	Sandstone and quartz veins.
		1 2	Solid white quartz.
		10 2	Sandstone and quartz veins.
		1 0	Solid white quartz, barren.
Extent of bore....		545 7	

*MEMO.—This diamond drill is worked by means of compressed air supplied from an air compressor, and the air is subsequently stored in an air receiver previous to supplying the drill. No. 1 Diamond Drill is operated direct by steam power.