

(No. 138.)



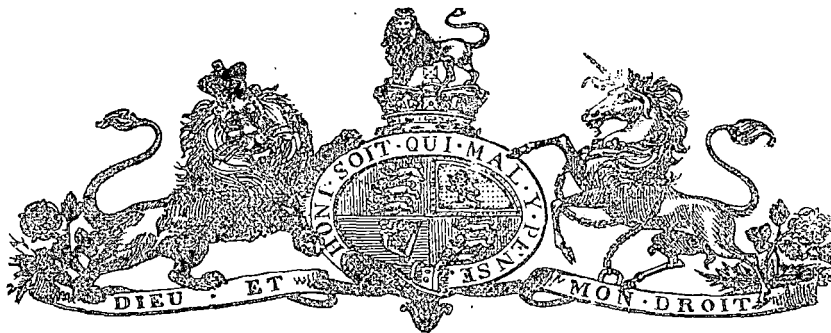
1885.

PARLIAMENT OF TASMANIA.

THE MOUNT CAMERON HYDRAULIC COMPANY'S WATER RACE:

**REPORT FROM THE SELECT COMMITTEE, WITH MINUTES
OF PROCEEDINGS AND EVIDENCE.**

Brought up by Mr. Minister of Lands, and ordered by the House of Assembly to
be printed, October 27, 1885.



SELECT COMMITTEE appointed, on the 2nd October, 1885, to enquire into and report upon the object of the proposed Vote of £18,000 to purchase the Mount Cameron Hydraulic Company's Water Race, and for the completion of same; with power to send for Persons and Papers.

MEMBERS OF THE COMMITTEE.

MR. GELLIBRAND.
MR. PILLINGER.
MR. BRADDON.
MR. REIBEY.

MR. ROOKE.
MR. NORTON-SMITH.
MR. MINISTER OF LANDS. (*Mover.*)

DAYS OF MEETING.

Tuesday, 8th October; Friday, 9th October; Wednesday, 14th October; Friday, 16th October; Tuesday, 20th October; Thursday, 22nd October; Friday, 23rd October; Thursday, 27th October.

WITNESSES EXAMINED.

Mr. J. M'Kenzie, Launceston; Mr. W. T. Pearce, Gladstone; Mr. G. J. Burke, Hobart; Mr. E. Mace, Hobart; Mr. D. Campbell, Boobyalla; Mr. J. Brown, Gladstone; Mr. J. Mallinson, Gladstone; Mr. E. G. Walpole, Moorina; Mr. B. Shaw, Secretary of Mines, Hobart; Mr. P. Dickinson, Gladstone.

EXPENSES OF WITNESSES.

| | £ | s. | d. | | £ | s. | d. |
|------------------------|----|----|----|------------------------|----|----|----|
| Mr. J. M'Kenzie..... | 3 | 15 | 0 | Mr. P. Dickinson | 11 | 17 | 0 |
| Mr. E. G. Walpole..... | 23 | 1 | 0 | Mr. W. Nobes..... | 10 | 13 | 0 |
| Mr. J. Brown | 8 | 17 | 6 | Mr. J. Mallinson | 11 | 0 | 0 |
| Mr. D. Campbell | 6 | 15 | 0 | | | | |

MINUTES OF MEETINGS.

TUESDAY, OCTOBER 6, 1885.

The Committee met at 3-30 P.M.

Present—The Minister of Lands, Mr. Braddon, Mr. Reibey.

Mr. Minister of Lands was voted to the Chair.

Resolved, That the following witnesses be summoned to give evidence before the Committee:—Mr. G. Thureau, Launceston; Mr. J. M'Kenzie, Launceston; Mr. Clarke, Surveyor, Launceston; Mr. Maxwell Bruce, High-street, Launceston—for Thursday, the 8th instant, at 11-30 A.M. Mr. Mace, Collins-street, Hobart; Mr. Burke, Hobart; Mr. E. Pearce, Hobart; Mr. J. Browne, Gladstone; Mr. D. Campbell, Boobyalla; Mr. Mallinson, Gladstone; Mr. E. Walpole, Moorina—for Friday, the 9th instant, at 11-30 A.M.

The Committee adjourned till Thursday, the 8th inst., at 11 A.M.

THURSDAY, OCTOBER 8, 1885.

The Committee met at 11 A.M.

Present—The Minister of Lands (Chairman), Messrs. Rooke, Braddon, Reibey, Gellibrand, and Smith. Minutes of the previous meeting read and confirmed.

A telegram was received from Mr. Thureau stating indisposition prevented his attending the Committee for a few days.

Mr. Bruce forwarded a medical certificate showing his inability to attend.

Messrs. John M'Kenzie and W. T. Pearce gave evidence, and withdrew.

The Committee adjourned at 1.20 till 2.45 P.M.

The Committee re-assembled at 2.45 P.M.

The Minutes of the last meeting were read and confirmed.

Mr. George John Burke, M.I.C.E., was called in and examined.

Mr. Burke withdrew.

Ordered, That Messrs. Mace and Campbell be summoned to give evidence.

The Committee adjourned at 4 P.M. until next day, the 9th instant.

FRIDAY, OCTOBER 9, 1885.

The Committee met at 11 A.M.

Present—The Minister of Lands (Chairman), Messrs. Pillinger, Rooke, Smith, Reibey, Gellibrand, and Braddon.

Messrs. E. Mace and Donald Campbell gave evidence, and withdrew.

Mr. James Brown, of Gladstone, was called in and examined.

Mr. Brown withdrew.

Mr. John Mallinson, of Gladstone, was called in and examined.

Mr. Mallinson withdrew.

Ordered, That Mr. Walpole, of Moorina, be summoned to give evidence on Tuesday, the 13th instant.

The Committee adjourned at 4 P.M. until Tuesday, 13th instant.

WEDNESDAY, OCTOBER 14, 1885.

The Committee met at 11 A.M.

Present—The Minister of Lands, Messrs. Braddon, Reibey, Gellibrand.

The Minutes of the last meeting were read and confirmed.

Mr. Edward Gloucester Walpole was called in and examined.

Mr. Walpole withdrew.

Mr. Bernard Shaw, Secretary of Mines, was called in and examined.

Mr. Shaw withdrew.

Ordered, That Mr. Shaw be summoned to give further evidence on Friday, the 16th instant.

The Committee adjourned at 1 P.M.

FRIDAY, OCTOBER 16, 1885.

The Committee met at 11.30 A.M.

Present—The Minister of Lands (Chairman), Messrs. Rooke, Gellibrand, Pillinger, and Smith.

The Minutes of the last meeting were read and confirmed.

Mr. G. Thureau, Inspector of Mines, was called and examined.

It was ordered that Messrs. Dickenson and Nobes be summoned to give evidence at 3 P.M.

In the absence of the Minister of Lands, Mr. Gellibrand was voted to the Chair.

Present—Messrs. Gellibrand, Rooke, and Smith.

Messrs. Wm. Nobes and Percy Dickenson, of Gladstone, were called in and examined.

Ordered, That Mr. G. J. Burke be summoned to give evidence on Tuesday, October 20.

At 4 P.M. the Committee adjourned till 11.30 A.M. on Tuesday.

TUESDAY, OCTOBER 20, 1885.

The Committee met at 11.30 A.M.

Present—The Minister of Lands (in the Chair), Messrs. Gellibrand, Rooke, Reibey, Smith.

The Minutes of the last meeting were read and confirmed.

The Chairman laid on the table a letter from Mr. Shaw, excusing himself attending Committee on the ground of ill-health; also a return from Mr. Shaw of land leased for mining purposes in the District of Gladstone.

Mr. George John Burke was called in and examined.

Mr. Burke withdrew.

Ordered, That Mr. Bernard Shaw be summoned to give evidence on Thursday, the 22nd instant.

The Committee adjourned at 1 P.M. until Thursday, the 22nd instant.

THURSDAY, OCTOBER 22, 1885.

The Committee met at 11:30 A.M.

Present—Messrs. Gellibrand, Smith, and Rooke.

The Minutes of the last meeting were read and confirmed.

In the absence of the Minister of Lands, Mr. Gellibrand was voted to the Chair.

The Minutes of the previous meeting were read and confirmed.

The Chairman said he had received a letter from the Minister of Lands stating his inability to be present, and that Mr. B. Shaw was too unwell to attend.

Mr. Rooke said the Committee had met to receive Mr. Shaw's evidence, and, as he was too unwell to attend, he moved that the Committee adjourn till 11:30 the next day. This was agreed to, and the Committee accordingly adjourned.

FRIDAY, OCTOBER 23, 1885.

The Committee met at 11 A.M.

Present—The Minister of Lands (Chairman), Messrs. Pillinger, Gellibrand, Smith, Reibey, Braddon, and Rooke.

The Minutes of the previous meeting were read and confirmed.

Plans showing the ground taken up and applied for in the vicinity of the proposed Race were tabled.

The Committee decided that it would be unnecessary to recall Mr. Shaw.

The Committee having deliberated on the evidence received, with the concurrence of the Committee, the Chairman submitted the following Resolutions:—

(1.) "That in the opinion of this Committee it is desirable that the Race be completed."

(2.) "That in the opinion of this Committee it is desirable that the Race be purchased and completed by the Government at a cost not exceeding £18,000."

To which Mr. Braddon moved the following Amendment:—

"That the Government guarantee the amount (£11,000) required to complete the work, on condition that the Mount Cameron Hydraulic Company set aside out of their profits an amount equal to 4 per cent. per annum interest on such loan, and a further sum equal to 6 per cent. as a sinking fund."

The Amendment put. Committee divided:—

AYES.

Mr. Braddon.

Mr. Reibey.

NOES.

Mr. Rooke.

Mr. Pillinger.

Mr. Gellibrand.

Mr. Smith.

And so it passed in the Negative.

The Resolution, "That in the opinion of this Committee it is desirable that the Race be completed," was put, and agreed to.

The Resolution, "That in the opinion of this Committee it is desirable that the Race be purchased and completed by the Government at a cost not exceeding £18,000," having been put;

The Committee divided:—

AYES.

Mr. Rooke.

Mr. Pillinger.

Mr. Smith.

NOES.

Mr. Gellibrand.

Mr. Braddon.

Mr. Reibey.

The Chairman gave his casting vote with the Ayes, and the Question passed in the Affirmative.

The Committee adjourned till Tuesday, the 27th instant, at 11:30 A.M.

TUESDAY, OCTOBER 27, 1885.

The Committee met at 11:30 A.M.

Present—The Minister of Lands (Chairman), Messrs. Smith, Braddon, and Pillinger.

The Minutes of the last meeting were read and confirmed.

The Draft Report was submitted and adopted.

The Committee adjourned *sine die*.

R E P O R T.

YOUR Committee have fully enquired into the matter remitted to them for their consideration, and have examined nine witnesses.

The preponderance of the evidence appears to a majority of your Committee to warrant them in recommending to your Honorable House that the Water Race of the Mount Cameron Hydraulic Company should be purchased and completed by the Government, at a cost not exceeding the amount proposed for that purpose,—viz., £18,000.

NICHOLAS J. BROWN, *Chairman of Committee.*

EVIDENCE.

THURSDAY, OCTOBER 8, 1885.

MR. JOHN M'KENZIE *examined.*

1. *By the Chairman.*—Where do you reside? Launceston.
2. What opportunities have you had of acquainting yourself with the mineral-bearing country through which the proposed Mount Cameron hydraulic water-race will pass? I was on that ground from the year 1877 till 1882. I was storekeeping, tin-mining, and prospecting during that time.
3. Are you aware of the history of the construction of that race? Yes, perfectly, from the commencement.
4. What extent of mineral-bearing ground will be served by the race if completed as proposed? The ground that I prospected personally and saw worked would warrant my saying that the land served will be about 10 miles along the bank of the river, more or less mineral-bearing all the way through.
5. What is the width of the tin-bearing country? About a mile or a mile and a half wide.
6. Do you know the Esk Company's works? Yes, well; I know both the dam and pumping works.
7. What portion of the country can be served from the Esk dam? A good deal of the ground in the immediate vicinity; but there would not be enough water to supply the claims except in the immediate neighbourhood.
8. It is from the Ringarooma River? Yes; there is a small race taken by gravitation to the Princess on the other side of the river and pumped up the hill.
9. To what height? Speaking from memory, 280 feet.
10. What is the approximate height of the highest tin-bearing land? That is the highest (280 feet); from this point the country falls away.
11. Do you understand that there is nothing but the absence of sufficient water to prevent the Esk Company supplying the whole neighbourhood? Yes. All the water they have is taken up; there is not sufficient water, and the distance the water would have to be taken is very great. It would have to go six or eight miles, and the risk is very great. Their dam might give way any day, and then the race would be useless.
12. Can you tell us what number of claims would be served by the Mount Cameron hydraulic water-race? A great many. There would be the Scotia, Aberfoyle, Imperial, and Empress Companies. These are the only companies now, but a great number of small sections are in private hands, and these would be worked if there were a supply of water.
13. *By Mr. Gellibrand.*—Would that race reach the highest level? Yes, where there is good tin.
14. *By Mr. Rooke.*—How many companies does the Esk serve? About five or six parties and companies are supplied. All their water is taken up.
15. How many public companies does it serve? Not more than four or five; the balance of the water is supplied to private working parties. The ground is more suitable for working parties.
16. How many companies have been worked there? A lot of companies have got out tin.
17. Will this race open up a large area? Yes, a large area,—thousands of acres.
18. Is it tin-bearing? Yes, nearly all of it. I have not the slightest doubt it would pay if water were supplied. From one half acre of land there 30 tons of tin were obtained.
19. *By Mr. Braddon.*—What would be the average width of the land served? About a mile.
20. To what extent has that area actually been tested? Shafts have been sunk by hundreds, and nearly always tin was found, but it could not be raised without water, and water was too dear.
21. Have many companies been formed to work that ground? Yes, a great many.
22. What has become of them? They died out, and were mostly wound up owing to the want of water. They were unable to obtain by pumps enough water to keep sufficient men employed to render a company payable.
23. Is all the water from the Esk race employed? Yes; and applications for more have had to be refused.
24. Would not the national scheme which is proposed for the western bank also supply the eastern bank? Yes, but it would be very expensive; besides, there would not be enough water in the river to get up to this point. It would all be taken up before it reached this locality.
25. *By Mr. Reibey.*—Are you interested in the Mount Cameron Hydraulic Company? No, nor ever have been.
26. Are you interested in any claims that would be benefited by its completion? Only one.
27. Do you believe there is payable tin in a majority of those claims which will be served by this scheme? A great many of the claims have proved unpayable, but many of them will turn out well.
28. How can you account for the Company being unable to get capital to carry out this work without applying to Government? The Company was floated under false pretences. The party that floated it said

a certain sum, £3000, would carry out the scheme, but call after call was made on the shareholders, who got tired of paying up, seeing that they had been deceived. Mining collapsed just at that time, and the company could not raise any more money to complete the scheme. It was a Melbourne company, and Melbourne people had been so heavily hit in Tasmanian mines that the shareholders did not believe in the scheme.

29. Who is the working manager of the company? Mr. James Brown.

30. Was the original company formed under false pretences? Yes, by the parties who formed it.

31. Have that company still a claim upon the works? I do not think so; they sold out to a second company, or else it is under offer. It was the prospectors who made the false representations. The company took the scheme up on good faith. The misrepresentations were made by the prospectors to the parties taking up the scheme as to the cost of carrying out the water-race.

32. Do you know the prospector in question? Yes, it was Alexander Heslop.

33. In what year was the company formed? About 1880 or 1881.

34. Do you know what amount of money the company have expended on this work? About £13,000 or £14,000 of its own capital. When the company was formed the prospectors got a certain amount, and the rest, £3000, was to complete the race.

35. Granting the company have no more money, and believing the tin deposits to be so valuable, do you think a legitimate company would have any difficulty in getting capital? Yes, under the circumstances.

36. Why? Because no one, either in Victoria or Tasmania, especially in Victoria, appear to have any faith either in gold or tin—they have been so got at in the past.

37. Would not the Government be likely to be got at and fleeced? I do not see how the Government could be fleeced; there is a large area of tin-bearing land.

38. Do you think it is a safe venture for the Government? Yes.

39. What could the parties afford to pay for the water? From my experience, £1 per sluice-head is the charge, and no miner would grudge that amount. A working party with two or three men can use three sluice-heads, and they would never feel the cost: but cutting a race for months and laying out money is a very different thing.

40. Do you think an expenditure of £11,000 would complete the works? Yes, so far as I know. I am confident that £5000 would carry it to the Aberfoyle sections, but I do not know what it would take to complete the other end.

41. If any one says it would cost £30,000 or £40,000 to complete the work, would that be wrong? Yes. I would undertake to do it for £11,000, both upper and lower. I have had considerable experience in race-cutting.

42. Do you think it would be a safe speculation for the Government to undertake? I think it would be thoroughly safe, and would give a return from the water.

43. *By the Chairman.*—Would it provide interest on the outlay and sinking fund? Yes. Suppose the money were borrowed it ought to pay 7 or 8 per cent.

44. *By Mr. Rooke.*—You know something of Launceston: would anyone there take shares in it?—would you, on the strength of its paying 7 or 8 per cent.? I would myself; I do not think others would.

45. *By Mr. Braddon.*—If Government guaranteed the interest on the loan of £11,000, would not a Company then take it up? That would be a question of terms. I would take shares if we could make a profit, but not to give the Government all the profit.

46. *By Mr. Gellibrand.*—Why did not the Mount Cameron Hydraulic scheme pay? Because they never got the water to work.

47. Was that for want of capital? Yes; they have now several tributes let, which are paying well, but the race only just got to the commencement of the good mineral land when it stopped. It got to a large valley, and it would be expensive to get over it.

48. *By Mr. Smith.*—How many shafts have been sunk there? A large number; myself and two men sank about 100.

49. How many went down on payable wash? Every one of them were tin-bearing, but a great number of them would not pay.

50. Would there be one out of every five payable? Yes, if they were put down in the tin area.

51. Do you believe there is a run of tin which is payable? There are a number of runs. There are a number of old beaches or river-beds, all of which are payable.

52. How many of those old river-courses are there? I know about 8 or 12.

53. Are they within the mile said to be payable? No; they run over between four and five miles in length.

54. Are they distinct parallel beds? No; they run in all directions, where the river has cut through in different ages?

55. What would be the proportion of tin-bearing land? I cannot answer that. Some of the runs are as much as three or four chains wide, the average being about two chains.

56. What proportion of ground could we expect to prove payable? I should say about a quarter of a mile would be good tin ground; that is, about a fourth of the width.

57. What was the average depth of the wash? It runs in layers, there being sometimes three layers of wash and clay alternately before you get to the bed-rock at the bottom.

58. Would you get a third of it wash? No, about a fourth.

59. What percentage would that go? We calculate if we get a shilling's worth of tin per yard it pays well. Threepence will pay expenses with water. We reckon the price of tin at a standard of about 12s. per unit.

60. *By the Chairman.*—Your calculations are to pay £1 per head for the water? Yes; a yard of wash is easily put away with water.

61. *By Mr. Smith.*—Would it average two per cent.? Yes, about that; some of it would go more, but that is about the average.

62. What is the nature of the wash? We get all sorts of wash; sometimes it is ordinary gravel, and again it is pure white quartz.

63. Are there any large boulders? Only near the head of the payable country, where the race finishes now.

64. Do you consider half the work of bringing the water on is done? Yes, excepting the valley.

65. Without any exception, is half the work done now as to cost? Yes.

66. Are you certain of that? Yes; it has been very rough country through which the race has come.

67. *By Mr. Reibey.*—Do you know Mr. Donald Campbell? Yes, he and I were partners on the Ringarooma River.

68. Has he any interest in the tin claims affected by this water? Yes, in the Empress; but that is supplied by the Esk Company.

69. Were Dean & Collins members of the original company? I cannot say.

70. Have they any tin claims? They are, I believe, merely sharebrokers.

71. Do you know Maxwell Bruce? Yes.

72. Do you think his opinion is valuable? Yes, if he is in a position to give an opinion; but I do not know if he has been over the country. If he has been, he has sufficient judgment to give an opinion.

73. If any one has stated that the present race must be enlarged and new fluming put in, would that be correct? The race does not require any fluming. To take the whole of the river the race would require widening, but that could be done at very small expense.

74. Is not the present race too flat? I do not think so; speaking from memory, it is four feet to the mile.

75. Could the present race carry the quantity of water required? It would not take the whole of the river.

76. Would it take enough water to work the ground? I do not think so.

77. If it is said that the fluming is a bad job, would that statement be correct? There is no fluming, except very short pieces.

78. Is that a good job? It is not a good job, but there is no extent of it. It could be put right at a cost of about £3 per chain. There is only about half a mile of fluming; it might require a few new legs, but no other new material.

79. *By the Chairman.*—Could the saplings for legs be easily obtained? Yes, saplings 30 feet long can be got for 1s. or 1s. 6d. each.

MR. WM. THOS. PEARCE *examined.*

80. *By the Chairman.*—Where do you reside? At Gladstone.

81. What is your occupation? Miner and contractor.

82. Have you resided long at Gladstone? Five years; but I have been in the district 10 years.

83. Have you spent much of that time mining? For the first six years I did nothing but mining.

84. Do you know the country intended to be served by the Mount Cameron Hydraulic Water Race? I know it well.

85. What portion of it do you believe to be tin-bearing? The tin-bearing deposits commence on the eastern side of the Mussel Roe, and is then intersected by the Mussel Roe River, the country apparently being washed away. On the high country there are from 2000 to 3000 acres of extensive deposits of tin-bearing country, varying in depth up to 40 feet. Near the Esk Company's ground the good ground commences. There has been a deal of prospecting done, especially on the Garfield Company's ground. The tin deposits continue right down to Foster's private property.

86. *By Mr. Rooke.*—Is it all payable tin? Yes.

87. Is water from the Mount Cameron race necessary for the Aberfoyle sections? Yes; they could not get it nearer, the river being too flat. The Esk Company tried it, but could not manage it.

88. *By the Chairman.*—Is the water from the Mussel Roe River necessary to work those claims? Yes.

89. *By Mr. Braddon.*—How much tin has been got out of the country that will be served by this water-race? I cannot say; but the Edina race, 7 miles long, was constructed by me for £500, carrying three sluice-heads. By it we have obtained 40 tons of tin in three years.

90. What area of tin-bearing ground did you work for the 40 tons of tin? I do not suppose it would be an acre.

91. *By Mr. Gellibrand.*—How many men were employed? In summer not more than four or five; it depends on the water.

92. Did you depend on the race entirely for water? Yes, without it we had no water. It is very important that the proposed race should be carried out at a high level. If the race were dropped 40 feet at the ravine it would lower the pressure.

93. *By the Chairman.*—Suppose the Government were informed that the fluming across the valley would necessitate an increase in the cost and maintenance, would you say it should be carried out at any cost? No, not at any cost, but at a reasonable cost. Miners would rather pay 30s. per head for a high pressure than 10s. for a low pressure. I think the difference in the cost of the fluming would be about £3000. Possibly it might be got across with a fall of 20 feet, instead of 40 feet. We could not make our mine pay with a low pressure; we had to get high pressure before we could make it pay.

94. Do you mean that the loss of 40 feet pressure would make the water useless? No, it would still be useful for all except the top of the Esk Company's ground.

95. *By Mr. Rooke.*—Suppose the £11,000 were expended, and the race completed, how many men would be employed by it? We employ at the rate of about a man per sluice-head. It would employ about 150 men, for all the sluice-heads would be taken up. A number of men would also be employed on general work.

96. *By Mr. Smith.*—Could you get a tail-race to carry away the *débris*? Yes, they have all a good fall; it is splendidly situated for sluicing.

97. Have you prospected the country? Yes, I have used boring-rods, and got good tin. The lowest bore put down was 114 feet 6 inches. This was on the western side of the river.

98. Were the bores put down on the river flats? No, on the high terraces; the river flats are too flat to be got away by tail-races.

99. What is the average width of the runs of tin? In some places the runs are from a mile and a half to two miles in length, and in places only 15 or 16 chains.

100. What is the total length of the payable ground? About 14 or 15 miles.

101. Would it all be served by the water from the race? Yes.

102. *By Mr. Rooke.*—Is it all tin-bearing? No, not in all places.

103. *By Mr. Smith.*—Would there be ten miles of tin-bearing country? No, about eight miles.

104. What would be the average width of the eight miles? About 20 chains.

105. How many yards of dirt would you have to shift for a ton of tin? We are shifting the deposits for 3*d.* a cubic yard; tributaries are getting £35 a ton for the tin, and are raising it for £20, thus making a profit of £15 per ton, on the Empress ground.

106. Is the ground patchy? There are rich patches, or potholes, on it.

107. Would it pay without those rich patches? Yes; the ordinary ground pays, and the patches are regarded as extra.

108. What is the average depth of the alluvial? About 25 feet. Some shafts on the Garfield claim were down 49 feet. The wash was of fine description down to the last six feet; it then ran from the size of hen-eggs to goose-eggs. It was all wash from top to bottom.

109. Was none of it vegetable soil? No, it all carries tin. Sometimes there will be layer of pug about a foot wide; but, except that, it all carries tin from top to bottom. These pugs are rarely three feet, and with a good water pressure the nozzles will break them away.

MR. GEORGE JOHN BURKE *examined.*

110. *By the Chairman.*—Your name? George John Burke. I reside at Newbury House, Hobart. I am a Civil Engineer and M.I.C.E.

111. You have examined the race, for the Government, of the Mount Cameron Hydraulic Company? Yes.

112. I would like to know what experience you have had in the laying out of water channels: will you please inform the Committee? My first experience in such work commenced in the year 1869, when I entered the service of the Indian Government, which appointment was attained by competition in the Public Works Department, and early in that year I was posted as Assistant Engineer to the works of the Sirhim Canal then being started. I was employed also in the construction of the Sone Canal, and on some other large works as Assistant Engineer for about three years. During the remainder of my service, about seven years, I was acting as Executive Engineer in charge of works. I was specially selected by Government to prepare schemes for two of the districts in the north-west of India. I was also employed as Executive Engineer of Defence Works of the river Indus, and in the prevention of floods in the vicinity of the same river. I was also in charge of the canals of the River Indus. During my eleven years' service I was engaged in water-schemes engineering.

113. Will you be good enough to explain to the Committee the general course of the water-race, and the alteration you propose to make? The race commences at a point known as the Great Mussel Roe River, and that portion of the race for six and a half miles is not complete,—in fact it was never started. Further on from this point for a distance of twelve and a half miles the race is complete and in working order, and derives its supply of water from a large creek known as the Little Mussel Roe River. I

measured nine sluice-heads, an amount that would not be incurred except in time of floods. There are two or three sluice-heads running to waste under the temporary dam constructed across the mouth of the creek.

114. *By Mr. Smith.*—What about the fluming? There is about three quarters of a mile of fluming.

115. What is the work like? Not the style of work I should put up myself. It is a very rough and ready bit of work, but it is good fluming as far as sound straight spars go to make it so.

116. *By Mr. Rooke.*—It carries the water. Yes. But if I were doing it myself, I should use more bolts and iron-work; but still it does not leak to any extent.

117. *By Mr. Smith.*—How is it held together? All the boxing is right enough. It is $1\frac{1}{2}$ inch material inside.

118. Could they be keyed up? Yes, the fluming is made to be keyed up,—not made specially for keying up. It is simply a plain framework.

119. It is an improvement to make the sluices so that they may key up the boxes? Yes.

120. They could get a few sluices extra in Branch No. 2, Little Mussel Roe River, for I suppose the water is now running underneath the tresselling? Yes, they did commence a channel, and then operations were suspended.

121. That creek is not valuable? No, it is not, and I think the Edina Company have the right of its water, as they have a dam constructed there, and a race running from that dam.

122. The plan on the table shows the work done? Yes; with the exception of the six and a half miles I said was not complete.

123. *By the Chairman.*—What is the general character of the work?—first of all, as to the laying out, and, secondly, as to the construction? Well, the levels for the race must have been taken with great care, because of the flow of water, which is very even. Throughout the race the dimensions are well maintained, and the whole is a good and well constructed race.

124. As to its width and carrying capacity—is it large enough to carry the whole flow of the Great Mussel Roe River? No, it would require to be made double its present carrying capacity. The fluming of the race channels would have to be doubled.

125. Would the cost of widening be included in the estimate of £11,000? Oh, no!

126. Then will they have to add a certain amount on the estimate for widening the race? Certainly,—a very large amount if you make a larger race all through.

127. What amount would that be? Well, there is a great difficulty in answering that question, as there is a good deal of rock-cutting.

128. Then am I to understand from what you have observed that, in order to supply all the water that is said to be required for the purpose of tin-mining, it would be necessary to widen the race; or would it answer the purpose if it were to remain its present size, and would widening be giving a superabundant amount of water? I think with its present capacity it is sufficient for its present requirements. I quote from the Report of the Victorian Water Commission, dated August 31st, 1885, in which it is stated that the Coliban Water Scheme gives a maximum supply of 20,000,000 gallons in twenty-four hours. The cost of that scheme was £1,004,500, being at the rate of £50,000 per million gallons. The Great Mussel Roe River Race could carry a supply of 11,500,000 of gallons in twenty-four hours, and estimated to cost £18,000, being at the rate of £1565 per million gallons, or £50,000 as against £1565.

129. I should like you to explain to the Committee your proposal to substitute syphons? Well, immediately below the tail of the race there is a deep depression which runs across from the valley of Ringarooma to the valley of the Great Mussel Roe River. The proposal I submitted was that by immediate lowering to get on the table land by means of syphons; but the people about there are anxious to have the high-level race proposal carried out. My estimate for fluming was £2000, but if the high-level scheme is adopted it will involve a considerable increase of expenditure.

130. *By Mr. Rooke.*—Would the lower scheme give sufficient pressure? That is a question for the tin-miners. Of course it is desirable to have the greatest amount of pressure you can get.

131. *By Mr. Smith.*—What piping did you arrange for? 22 inches.

132. That would carry all the water? Yes.

133. This pipe would not be large enough to carry the extra water supply spoken of from the Mussel Roe River? No, but the 22-inch pipe is quite large enough for the existing supply.

134. If you get a pipe sufficiently large it would cost as much as the fluming? By Mr. Burke: Are you speaking of the low-level?

135. Yes. I wish to know whether, provided we want the whole of the Mussel Roe River, it would be cheaper to have pipes sufficiently large to meet all requirements, or to have the original proposal? I would recommend fluming, for this reason, when you have an increased size of box there would be but a slight increase of expense, but if the whole of the water is brought in at the higher level I would abandon syphons. To have piping the whole length would absorb the additional head. The level would then be practically lost.

136. Of course, these pipes become more expensive when they increase in size? Yes, because of the increase of thickness which is necessary in making the pipes larger.

137. Then a 24-inch diameter pipe would cost four times as much as a 12-inch one? Yes, because the thickness would have to be increased proportionately.

138. *By Mr. Rooke.*—Do you think that at the present time there is half the work in connection with the race done? No, I do not. There is the $6\frac{1}{2}$ miles section I have mentioned, in which there is

very expensive cutting, the character of the country being rocky; and then, of course, there is the very expensive work of crossing the depression I have mentioned, and, comparatively speaking, that is the only expense.

139. *By the Chairman.*—Then what do you consider to be the value of the work which is already done? I stated in my report that I valued it at £7000, which I think is a liberal and fair estimate. In making these estimates for an incomplete work which Government propose to buy and complete, my desire was to value the work done at the lowest rate; but, on the other hand, to estimate at liberal rates that part of the work which remains to be done. I therefore cut down the value of the existing work to what I considered an absolute minimum, £5500.

140. *By Mr. Smith.*—How many gallons did you say were in a sluice head? There are nine thousand gallons per hour for one sluice-head. The present race could carry 53 sluice-heads. If you take it in gallons, the present race delivers about 11,500,000 in twenty-four hours. That is the reason I mentioned the Coliban Race.

141. You said there would be a deal of trouble in widening the present race. Where would the trouble come in? About the middle three miles of the completed section, and further on, as it is granite cutting. From my experience you can make a new cutting of a given size much easier than you can widen one already made.

142. You said the dam is defective: is it leaking? Yes, it is simply a temporary structure—a few logs, &c. thrown together. If the race is ever carried up to the Great Mussel Roe River this dam would not be required at all. The dam at the head is provided for in the estimate of £11,000.

143. And do you think the present fluming would carry water for a time? Yes; the fluming boxes are two feet in depth, and there has been a considerable amount of shrinkage. The fluming as it stands is perfectly capable of carrying water with 53 sluice-heads.

144. Did you make any estimate of the high-level fluming? Yes.

145. What would the extra cost be? About £4500 over and above the cost of syphons.

146. *By the Chairman.*—Then if it is determined to keep to the high level you would add £4500? Yes, it is a liberal estimate.

147. *By Mr. Smith.*—Provided the high level is adopted, it would be brought along the higher ground above where you proposed the race? Yes, it is the easiest ditching; you are in a good alluvial granite drift. That is the only question about this extension. I wish to state that I have read the statement made to the effect that the expense would be some thirty or forty thousand pounds, and my own opinion is that there has been a great deal of exaggeration, and the estimate is an incompetent one.

148. *By Mr. Rooke.*—Do you think it necessary to have the high level, or do you think the lower level would do? I think the lower level would serve the district well.

149. Then £4500 added would cover the whole lot? It is a liberal estimate.

150. *By the Chairman.*—Are you in a position to give us any information as to what tin-bearing land would be served by the race? I don't think that what I know would be worth while mentioning to the Committee. I would not give an opinion on the subject, not being an expert.

151. *By Mr. Gellibrand.*—How long have you been employed in examining this work? The only work I did was to walk along the route, and it took me four days. I took no levels. My instructions were to make an examination of the work and report upon it. It was such a report as an engineer is frequently called upon to give without going into details.

152. *By Mr. Smith.*—You have made an estimate of the extension. Who provided you with the levels. The levels were taken in that section by Mr. Brown, the Company's Manager.

153. *By Mr. Gellibrand.*—Then from four days' examination you made your report? Yes.

FRIDAY, OCTOBER 9, 1885.

MR. EDWARD MACE *examined.*

154. *By the Chairman.*—Where do you reside? At Hobart. I am a stockbroker.

155. You are aware of the subject of the Committee's investigation? I am.

156. Have you had any opportunity of forming an opinion as to whether it is advisable or not to construct the Mount Cameron Hydraulic Water Race? I cannot say much about the race, as I do not know its position. (The plans of the proposed race were then exhibited and explained to witness.)

157. Do you know anything of the neighbourhood? I have never been so far as the Edina claim.

158. Have you not expressed an opinion on the subject? My opinion was expressed not so much against the Mount Cameron scheme as against the original Ringarooma scheme.

159. To what scheme did your expressed opinion relate? To the National Water scheme, on the western side of the river.

160. Are the Committee distinctly to understand that your opinion applies to the National scheme, and not to the one now proposed? Yes. I have perhaps said also that the ground yet worked at Mount Cameron has not proved payable, but we cannot say what will be done in the future.

161. Are you in a position to give any information on the subject? No, I am not.

162. *By Mr. Smith.*—Have you seen any prospecting claims there? Yes.

163. What was the result? Some of them got good prospects, but the majority of them have not paid.

164. Did you see any of the bores? Not in the prospecting shafts.

165. What were the results of the shafts? I have seen hundreds of shafts sunk on the Premier, Cube Rock, Shallamar, and other claims. They have had good prospects in some places, but the ground is very patchy.

166. What proportion of the shafts went through payable ground? I cannot say what was payable ground; that remains to be proved.

167. What proportion was tin-bearing ground? I believe there are thousands of acres of tin-bearing ground, but whether it is payable remains to be proved.

168. Would the proposed water-race command this ground? A great deal of it.

169. Would it support a considerable body of miners? That I cannot say; it can only be proved by experience.

170. *By Mr. Rooke.*—Do you think an expenditure of £18,000 is warranted on the water-race from what you have seen of the country? My opinion is that it is not warranted. Of course, that is only my opinion.

171. *By Mr. Smith.*—If the race were constructed and you were not otherwise engaged, would you consider the prospects there good enough to take up a claim? I might think it good enough to go and look for a claim; but I do not know any ground not taken up. Very poor ground will pay with water; and with pressure to work hydraulic sluicing very little tin will pay compared to that required to pay by pick and shovel work.

172. Could 10 cwt. of tin be got out of 100 yds. alluvial? More than that; a square yard ought to produce 12 lbs.; from 10 to 12 lbs. would be about the quantity, but with hydraulic pressure much less would pay.

173. *By Mr. Gellibrand.*—Did the companies there pay as a rule? No, at present there has not been a dividend paid from any of them.

174. *By the Chairman.*—Was that owing to want of water? Partly from want of water, partly owing to bad management, and partly from want of tin.

175. *By Mr. Gellibrand.*—Do you believe there is land in the neighbourhood that could be used for agricultural purposes? Yes, there are thousands of acres of large flats that would be taken up south of Gladstone if water could be obtained for irrigation.

176. *By Mr. Pillinger.*—Is it want of water that has caused that land not to be taken up? No, there is not sufficient population.

177. *By Mr. Smith.*—Do you consider the Esk Company's ground an average of the whole in richness? No, I think the ground being worked is better than the remainder.

178. Is the water supplied by the Esk Company sufficient to enable their working the ground economically? It would be better if they had more. The greater the amount of water the greater the amount of dirt that can be removed at a small expense.

179. *By the Chairman.*—Did you mean, when you said that you would go to look for ground, that all the known tin-bearing ground is secured already? Yes, the land is nearly all taken up within the run.

180. Do you mean to imply that the land is not worth taking up? No, but that it is all taken up already.

181. *By Mr. Reibey.*—Do you know anything of the Boobyalla race? Yes.

182. Can the Gladstone tin-bearing claims be supplied from that race? No, not so high as high as this. There was a flying survey made, but it would not go nearly so high as the Mussel Roe. It was surveyed by Aikenhead's and Hoyt's parties, each of whom wanted to take a race from Boobyalla.

183. *By Mr. Braddon.*—Have you had considerable experience in mining generally? Yes.

184. Would private capital be available for this scheme if it were certain to yield a profitable return? I doubt it; people are so full of mining that even if you could show them a good interest for their money on paper they would be shy of it. It is very doubtful if a company could be floated.

MR. DONALD CAMPBELL *examined.*

185. *By the Chairman.*—Where do you reside? At Boobyalla, ten miles from Gladstone.

186. How long have you resided in that neighbourhood? Twenty-four years.

187. Are you a miner? Yes, and a purchaser of tin from the miners.

188. Do you know the country that would be served by the Mount Cameron race, if completed? Yes, I know it well.

189. Can you give any information as to the extent of tin-bearing land that would be served by the race? About ten miles in length, as the crow flies; the width varies, generally being about a mile.

190. Have you had an opportunity of actually seeing to what extent it is tin-bearing? I have done most of the prospecting there, and have been on all the workings repeatedly. I had the Esk and Empress on tribute seven years ago. I relieved the Esk of a debt of £1200, and the Empress of £500 in two seasons.

191. Where was the water got? From dams.
192. Was one of the dams that of the Esk? Yes; the Empress dam was not high enough to reach the top of the ground.
193. Have you put down many prospecting shafts on the ground in work? Yes, 87.
194. With what results? The prospects were very good,—from $\frac{1}{4}$ lb. to 2 or 3 dwts. per dish. I believe most of the land mentioned is forfeited.
195. Have you prospected outside the land taken up? No.
196. Do you know anything of the cost of the water-race made by the Mount Cameron Company? I tendered for the upper $6\frac{1}{2}$ miles; my tender was £2400.
197. What would be the probable cost of completing the lower portion? That would be the syphon and fluming. I cannot say what that work would cost.
198. Is it difficult country? No, it is nice country; there is no rock or stone, but there is a difficulty at the gully.
199. *By Mr. Gellibrand.*—Do you consider the country rich? It is payable, and pays well with water.
200. Do you think Foster's land payable? Part of it; the tin runs into a corner of it. About £2000 has been expended prospecting on the Aberfoyle sections alone.
201. Would the lower claims be benefited by the water-race? Yes.
202. *By Mr. Rooke.*—Do you know the Esk works? Yes.
203. Is all their water applied for? I think so. I never heard of their having any to spare; 17½ sluice-heads are taken.
204. Are any claims near the Esk stopped for want of water? All the claims that the Esk cannot reach are stopped.
205. What companies would be reached by the proposed race? The Imperial, Doon, Scotia, Whitaker, Nobes, Aberfoyle, and Seashell.
206. What are their areas? Some 20 acres, some 40, and some 80.
207. Would it be the means of ground being taken up and worked by working miners? No doubt of it.
208. You believe if water were available the ground would be taken up? The ground would all be taken up.
209. How many men do you think would be employed? With hydraulic there are not so many men employed as under the old system, but I suppose between 200 and 300 men would be employed.
210. *By Mr. Smith.*—Has the Esk Company ever paid a dividend? No; it cost them £18,000 to construct their race and wheel.
211. Has not that been provided for? No, they have been making calls ever since. They are raising tin now at £27 per ton, and it has been working 10 or 11 years. If they were not in debt they would be getting dividends regularly.
212. *By Mr. Braddon.*—What quantity of tin are they getting? About 3½ tons per month.
213. They have an unlimited supply of water, have they not? No, they only allow the Chinamen so many sluice-heads.
214. Is the Esk worked on tribute? Yes, they found it could be better worked on tribute.
215. Is the ground you prospected better or worse than the Esk's ground? Better, and easier worked. It seems like a sea-bed; 39 feet was the lowest we went, then we did not bottom. It is not so rich as the Esk, but deeper.
216. What are the other companies' ground like compared with the Esk,—were they taken up on the richest sections? They were taken up almost joining the Esk; there is no difference in the country, it is all alike.
217. *By the Chairman.*—Do you know anything about the proposals to get the water in,—regarding the high and low levels, which would be the most advantageous? The high level; the low level would be no good—it would not give pressure enough for hydraulic, and we would have to go back to ground-sluicing.
218. How many heads of water would be required to work the ground advantageously? 140 heads.
219. *By Mr. Braddon.*—Do you think it would be a highly remunerative work when completed? Yes.
220. How do you account for its not being completed? We were in the hands of experts; some advocated engines for pumping the water, others went for pumping from a dam by wheel, and the whole lot collapsed, except the Esk. The money was expended, and the shareholders were tired paying calls.
221. You say the Company had expended £13,000 on the partial completion of this work, and that when completed it will pay a large profit: what induced the Company to stop the work at a loss to themselves rather than complete it and make a large profit out of it? When many calls are made in a company most of the shareholders sell out, and the whole expense falls on three or four shareholders.
222. That means that a majority of the shareholders have lost faith in the Company? They have lost their money. They have paid about eleven calls.
223. Do you think it possible, with these great prospects, to float a new company for the purpose of completing the race? I hardly think so now.

224. *By the Chairman.*—Is not some water being brought from the Little Mussel Roe up this race? Yes, five sluice-heads. The owner is getting £5 a week for it, and using some himself.

225. *By Mr. Reibey.*—Are you a shareholder in the Company? No, I have never had anything to do with it.

226. Are you interested in claims that would be benefited by the race? Yes, in the country round it that would be benefited by the water.

227. Is not the ground through which the race has to be made far more difficult than that through which it has passed? The made part is merely ditch-cutting of the simplest kind; the part to be completed is the more difficult and expensive.

228. Then if the work already done has cost £13,000, would it not be fair to assume that the completion of the work would cost three times what it has already cost? No, it would not.

229. Is the ground richer in tin where the race now stops than it is down below? Where the race now stops is the poorest part of the country.

230. Is not the tin-bearing ground below where the race stops very limited? It is not limited, but a little iron is mixed with it outside the Garfield, making it poorer. It has never been tried except by prospecting.

231. During the dry season would not there be a very limited supply of water? No, the Mussel Roe is a permanent river.

232. As a practical man, do you believe that if the race is completed it would pay for maintenance and interest on the money expended? I do honestly and sincerely believe so.

233. Do you think the Government could get a reliable tenant to rent it from them for £1800 a year? Yes.

234. *By Mr. Gellibrand.*—How many companies in that neighbourhood are paying dividends? Hardly any of them; it is only working miners who are paying; none of the companies are paying dividends.

235. *By the Chairman.*—Are there many parties of co-operative miners in the neighbourhood? Yes, all round Gladstone.

236. *By Mr. Gellibrand.*—Can you tell us what is the monthly output of tin? From Bridport alone in 1883, it was 157 tons; in 1884, 187 tons; and for the first nine months of 1885, 113 tons;—being a total of 457 tons for the last 2 years 9 months.

237. How many heads of water do you think the race will carry with its present width? I estimate it at 50 sluice-heads.

238. *By Mr. Smith.*—Is it reasonable to suppose that the shareholders refuse to pay calls because the ground was so poor? Yes, that is the true reason; when the ground got so poor all the shareholders backed out, except seven.

MR. JAMES BROWN *examined.*

239. *By the Chairman.*—Your name? James Brown. I reside at Gladstone.

240. You are the manager of the Mount Cameron Hydraulic Company? Yes. I have been manager for the last three years and nine months. I was previously in Victoria, and was connected with the Coliban water scheme; for 11 years I was in the employ of the Victorian Water Commission.

241. You know the history of the whole undertaking? Yes, pretty well. It has been under my management ever since I took charge of it.

242. Can you give evidence with regard to the formation of the Company? Well, the Company was formed before I took charge of it, and was in working order before I came to the colony.

243. Can you give evidence as to the cost of so much of the race as has been made? Well, it has cost about £12,000. Mind, you must understand that money has been spent otherwise than exactly on the race. A party going to work now could do it cheaper than formerly, because the country has been opened up materially of late. The Company has spent £11,000 on a trial survey to the Blue River. It would cost besides that an amount for the erection of huts and races to cut.

244. *By Mr. Smith.*—What sort of country is it,—there are several miles completed of it, are there not? There are 21 miles cut, and 12 miles of the main race towards the Great Mussel Roe River. It has been surveyed and partly finished.

245. What is the length of the branch cuttings? One branch is five miles, and another is four and a half miles.

246. I suppose the economical way would be to start at the bottom and go along forwards? The get-away would run into Ringarooma.

247. What is the capacity of the race—how many sluice-heads are there? Well, about 60 sluice-heads, and two feet of water running into it.

248. Is that sufficient for the district? Yes, quite sufficient for eight hours' working of the race. It would be bad policy on the part of any company to cut a race large enough for everybody to work for 24 hours, because during 16 hours of the 24 the water would be running to waste. The miners could then build their own dams, and run the water in at night. It would be quite large enough for eight hours' working.

249. *By Mr. Rooke.*—Would the £11,000 set down by Government towards the completion of the race finish it, and carry water so as to supply ten miles of country? I think it would.

250. Then would it, from your knowledge of the country generally, set a lot of miners at work? Yes, it would be the making of that district.

251. Besides being the means of setting more miners at work, would it open up any new ground? Oh, yes; it is all new ground.

252. And do you think it is payable tin-bearing ground? Yes—*i.e.*, it would not pay fortunes. I may tell you I have laid out some 8000 feet of pipes, out of my own pocket, to work ground the Chinamen gave up.

253. Then you are of opinion that if this water were brought to bear on the district a lot of ground which has been given up would be taken up again, work resumed, and mining brought into active operation? Yes, I do.

254. How much ground could be worked with sixty sluice-heads? I should think there must be ten miles by half a mile, and that ground would find work for men to pay for over the next fifty years to come; and if you follow the contour of the lead there may be more.

255. Then if this scheme were completed you think there would be a large working population drawn to the district? Yes, I do; not at the start—but it would grow.

256. You know the Esk Company's Water Supply Dam?—has their water been fully taken up? Yes, the demand is greater than the supply. They could employ more sluice-heads than they have now. There are men who have been refused water supply. I may tell you about the spare head. There is always a waste of water running in the race.

257. *By Mr. Smith.*—What happens? It is always leaking. The water loss is about a fifth.

258. *By Mr. Rooke.*—Are the tin mining companies there paying dividends? I don't know of one company that has ever paid a fraction.

259. Do you think that by this higher level it would have the effect of making the companies there pay? I don't know of any ground that would pay wages of 8s. per day; but it would pay small bodies of men—co-operative miners.

260. *By Mr. Smith.*—You know the levels well? Do you know there are two different levels to bring the water on from the end of your race? Yes.

261. Which is the best for the continuation of the race? My opinion is the original one would be the best. It would necessitate a fluming of 2 miles 42 chains in their division. The last one would be a mile and a half. I proposed a way to the company to bring it down to 55 chains of fluming. I thought it would induce them to go on with it, but the money is not forthcoming. Mr. Burke has looked at it, and he is the best judge in the matter.

262. The low level would be best for all requirements? No, but it would pay to keep it at the lower level.

263. Is the low level sufficient for the working of the ground economically? Well, you would command more ground and pressure with the high level. The upper level is best. The more pressure you can get the better.

264. *By Mr. Braddon.*—And would supply a greater extent of ground? Yes.

265. *By Mr. Smith.*—How much ground would the high level include which the lower level would leave? About 1000 acres.

266. But the high level between the Empress and Shield's claim—is that 1000 acres of the average quality? I have never been there.

267. Am I to understand you that for the ground that would be supplied the lower level is quite as efficient as the higher level? No, for the reason it would not give so much pressure.

268. Then I presume the higher level would enable ground to be worked which cannot be worked from the lower level? Yes.

269. Where the Esk Company and your Company are provided with water, is the ground the average of the whole value? I think the Imperial Company is a little over the average. It is a good Company, and it was turning out from two to four tons per week; but it is not working now. I should say paying £22 10s. per week should account for it.

270. Can you account for the Empress not paying a dividend? It has never been working properly until now. They are working steadily now because they are supplied with water—before, they had to trust to Providence for their supply. They have only had water about two months.

271. You stated, I think, that your Company would not allow you to go on for lack of funds? Yes.

272. Had the quality of the ground anything to do with the shareholders refusing to pay calls? No, there were men getting four bags. I advised them to go in for a water supply and abandon their claims, because, as I told them, it would never pay to pay wages of £2 10s. per week, and £3 to the foreman, as the Company could not stand it. So they dismissed all the men excepting one man and myself.

273. Then you think the result of the ground generally had nothing to do with the shareholders refusing to pay calls?—were the shareholders influenced in refusing to pay calls by the character of the ground proving poorer than anticipated? I have no doubt that had some weight.

274. Then you think this ground, speaking generally, is sufficiently rich to pay co-operative working parties, but not companies? That is my opinion of the district.

275. I don't think you have told us how many men it would supply? It would supply 200 men.

276. How many men would be required to each sluice-head? Two men to each nozzle.

277. *By Mr. Braddon.*—Do you believe this will be a highly remunerative work when completed?

Well, it would pay, but I cannot say whether it would be highly remunerative. It will bring people into the district and return a sufficient revenue to pay for the outlay. In fact, we are now turning out more tin in the Gladstone District than we ever did before.

278. Then you do not think it will prove sufficiently remunerative to induce the original company to complete the work? Well, they cannot raise the money.

MR. JOHN MALLINSON *examined.*

279. *By the Chairman.*—Your name? John Mallinson.

280. Where do you reside? At Gladstone.

281. Your occupation? I am a miner.

282. *By Mr. Rooke.*—Have you been living long there? Eight or nine years.

283. You know all the claims in that district? Yes.

284. You know of the contemplated expenditure? I do.

285. Do you think from your knowledge of all circumstances in connection with the matter, that an expenditure of £18,000 would be sufficient to make the companies resume work? Yes; I believe that every drop of water would be taken up, at a fairly remunerative rate.

286. Supposing there were 60 sluice-heads, would they all be taken up? Yes, and more. I believe if water was offered at the present time, fully 100 would take advantage of it and call for it at once, at £1 per head per week, for eight hours per day. A running head would then be £3 per week.

287. Are you actually employed in mining there now? Yes; I am working in the Esk and another piece of ground.

288. Is it your opinion that if this scheme were finished co-operative companies would start? Yes; it would be all done by co-operative companies and small parties.

289. You think that by having command of this water a considerable amount of population would accrue through it, and parties would co-operate for the purpose of tin mining? Yes; I do. The mining up there has resolved itself into that already. The work is let by tribute. The companies will not give them water, and they are looking to this scheme for work, and a large amount of ground has been taken up in anticipation of this scheme being completed.

290. Do you think there is any ground not in the possession of big companies now?—do you think that miners would take up new ground apart from the companies? I do, to a very large extent. In a fair time almost double the amount of land would be taken up.

291. You know the country thoroughly well? Yes.

292. Is it your opinion that there is any quantity of payable tin-bearing ground that would be thrown open if this water scheme was done? Yes. We have cut the same strata as in the old ground, and that will carry us back two miles from the river. The tin continues all through that two miles. It is deep ground, and there is no chance of getting water. No one has hitherto prospected it on that account.

293. *By Mr. Smith.*—What about the level?—would the lower level give a sufficient head of water to enable this ground to be worked economically? A portion of it. All that it would reach it would give head enough for; but round by the Esk Company's ground would be altogether lost to the miner if brought in at the lower level.

294. And what number of men could find employment on the ground? 150 heads would occupy 300 men.

295. Well, how much water would it take to employ them profitably? Well, it would take 250 heads to employ them profitably. On the ground I am working all have to employ four men to each head. The average would be two or three to each sluice-head, because one piece of ground would take four men and another only two men.

296. *By Mr. Pillinger.*—Fifty sluice-heads in a race practically means 150 men? Yes.

297. *By the Chairman.*—How many men are required to work a head? Well, it depends much upon the nature of the ground. The water will do the work with two men in some parts, and in other parts it would take four men. Some ground is much harder than other, and we have to assist the water with manual labour.

298. *By Mr. Smith.*—Is the present race large enough to run all the water required there? Well, if the race was made larger all the water that would come through would be utilised.

299. Is its present size capable of giving sufficient water to work all the ground economically? Well, perhaps it is for all the ground that is at present opened; but there are only a few faces here and there opened, and these would consume all the water without any further finds.

300. Well, would the ground as yet untouched be opened up if the race was enlarged?—you think this race is only large enough for the present requirements, and that it requires to be larger to work all the ground anticipated to be worked? Yes, I do.

301. *By the Chairman.*—Then you think if this race were completed it would pay for its maintenance and interest upon the money? Yes, I think so, and a little over, that is, allowing the interest at 5 per cent., there ought to be an income of £3000 a year from it.

302. How long would that interest last? Well, I should think a good many years, from the small

quantity of ground that has been worked. It would last a considerable time—twenty or thirty years. The higher ground has not been prospected. Mr. Bell got some very good tin on the top of the terraces.

303. Would you be prepared to give £3000 a year if you were in a position to do so? Yes, I would if I were in a position to do so.

304. *By Mr. Braddon.*—If this race is likely to prove so remunerative, how is it the Company does not complete it? Because the working of the Company has been so unsatisfactory—so little got for the large sum expended that the shareholders lose heart, there has been such a waste of the Company's money.

305. *By the Chairman.*—Then you think the system carried on by the Company has been anything but creditable? None of them have a creditable system.

306. *By Mr. Smith.*—This race at the present time would run 150 heads in twenty-four hours, but to enable this to be done the different Companies would have to work their own dams? Yes.

307. Would these little parties of miners be strong enough to work their own dams? We have got water at the Esk for which we had to make a four-mile race and had to pay for the conserve of water too.

308. *By Mr. Braddon.*—Do you think this race would give a constant supply of 60 heads all through the 24 hours? Well, I have not measured it. I should think the race is big enough; but still I should not like to give a decided answer to that.

309. Has the country this race would serve been thoroughly well tested throughout? No, only portions, and those portions have proved good enough to work with hydraulic power remuneratively; but a large area—not a third—has been prospected. Some of the higher ground has been prospected and found to be payable ground, which the lower level would not command, but the higher level would.

WEDNESDAY, OCTOBER 14, 1885.

MR. EDWARD GLOUCESTER WALPOLE *examined.*

310. *By the Chairman.*—Your name? Edward Gloucester Walpole.

311. Where do you reside? At Moorina.

312. What are you? I am a Government District Surveyor.

313. How long have you resided in the District? About 10 years, I think.

314. During that time have you had many opportunities of seeing the country in the vicinity of Mount Cameron? Yes, I know the country thoroughly well.

315. Do you know the course of the water-race—the constructed course and the extension north and southwards? I don't know it southwards, but I know it northwards.

316. Do you know anything of the number of mineral sections taken up, for the purpose of working tin, that would be served by the race being completed? Well, I cannot tell you exactly without referring to the chart; but I know there are a good number that would be served on the eastern and northern banks of Ringarooma. There are several blocks in Aberfoyle and Campbell,—the Imperial, the Scotia; and two or three small claims,—the Empress, the Martha, and the Mary. All would be served by the completion of the race.

317. Are there any of those claims on which no work has yet been done? Oh, yes.

318. Why not? Because they are waiting for water.

319. Can you give the Committee any information as to the richness or otherwise of the tin deposits expected to be worked: speaking generally, what extent of country do you believe to be tin-bearing, and available to be worked by that water?—how long, and how wide? I should be within the limit when I say between six and seven miles long, and the average a mile wide,—the terraces.

320. Do you believe that to be all tin-bearing? Yes, I thoroughly believe that; for wherever it has been prospected it would be rich enough to pay, and it could be worked very advantageously, as there is a very good tail-fall. It is a deep deposit,—50 feet I should think, and some of it is 70 feet. It is tin-bearing all the way, and some of that I have seen has given $\frac{1}{2}$ lb. to the dish; in fact, I have washed that myself in one hole, and I have heard of prospectors and others taking $\frac{1}{2}$ lb. in one place and the same quantity in another.

321. You are aware that a proposal has been made to the Government to carry the water at some lower level, by putting syphons across two deep depressions in the vicinity of Gladstone, recommended by Mr. Burke, instead of carrying the water by fluming? Yes, I have heard such a thing.

322. Can you give any information as to the result of losing that 40 ft. of level,—as to how it would affect the tin deposit you speak of?—would it be available for that deposit? Well, you see, they would have to drop their water to come down to this ground, because there is not height enough in the country to carry it.

323. It is proposed to lose 40 ft. of level in order to get across the gullies economically,—would it lose much water? Only so far as the claims the Garfield and the Esk are concerned. After you get beyond the Imperial there is no ground to carry the water, consequently you would have to lose the water.

324. The water being dropped 40 feet would leave out some claims? Yes. The water would be available for the great bulk of the ground available in the Gladstone district.

325. You have surveyed most of the mineral sections of which you have been speaking yourself? Yes; Gladstone is my district.

326. *By Mr. Reibey.*—Do you know how many tin claims there are on the east bank of Ringarooma? Not exactly; the chart will show that. I know there is the Aberfoyle, the Doon, the New Imperial, and the Scotia. There are two or three co-operative claims,—the Esk, the Empress, the Tamar, and Garfield.

327. How many of those claims send in tin? The Empress is doing so now in a considerable quantity. The Scotia sent in tin for a short time, but pumping became too expensive.

328. If any one has stated that only three of these claims send in tin would he be correct? He would be pretty correct; but, I think, there are about four—the Esk, the Empress, the Martha, the Mary, and the Scotia; he would not be far wrong.

329. *By Mr. Braddon.*—The Martha and the Mary are separate claims—it would not be strictly correct? No; but the want of water is the thing.

330. *By Mr. Reibey.*—If anyone has stated positively that the great bulk of ground will be unpayable do you think he is correct? No, I do not. Indeed, the greater bulk of tin-bearing ground is, in my opinion, payable, but not now. Directly it commands water it will be payable.

331. *By Mr. Gellibrand.*—I suppose these claims are only paying expenses now? Yes.

332. *By Mr. Reibey.*—Do any one of these claims pay a dividend? There is not one out of debt. They are all in debt except the Scotia. They will never get out of debt.

333. Are any of these claims making any profit over and above expenses? I don't think so. The co-operative claims are paying. The Esk and the Scotia are not working now for want of water.

334. *By Mr. Braddon.*—Are they making a profit in reducing their debt? I am not aware of any company making a profit after the reduction of their debt. My answers are confined to the eastern side.

335. *By the Chairman.*—Are you aware of many co-operative parties working there? There are none, except one small claim, working there; there is no water for working them,—that is the only reason. Any quantity of ground would be taken there up if there was water.

336. How many men would be employed if the water was available? It is very hard to say. 53 sluice-heads, not conserved, would only employ something like 150 men.

337. *By Mr. Braddon.*—But these sluice-heads are only let for eight hours? Yes, for if the sluice-heads were running the whole twenty-four hours it would mean three times the quantity. No claims work at night. In case of the water running the whole twenty-four hours you would have to conserve the water; and, if the water was conserved, it would employ three times the number of men, or 450 to 53 sluice-heads. There is room for 1000 men to earn good wages. It is an exceptional kind of tin.

338. Do you know anything of the cost of work already done by the company? No, I do not, but I think it was money wasted. This extension would be very cheap to make, for there is no better country in the colony for working. It is very easily cut.

339. Do you know anything about the water supply? Well, I think they could get 100 heads, taking in the Great Mussel Roe—there would not be much in the little stream. They could not carry 100 heads in the present race.

340. *By Mr. Reibey.*—From which river does the Esk Company get water? From the Ringarooma.

341. Then, if the Manager of the Esk Company has stated that for a sum not exceeding £800 that river could be made to supply double the quantity, would he be correct? No, certainly not. All they can pump is 10 heads.

342. Then, do you think they could with the expense of £800? They could pump 60 heads with another pumping plant.

343. *By the Chairman.*—But that water from the Esk Company's dam would be pumped into the present reservoir—would that serve the present level? Yes, it would serve all that country I have been speaking of.

344. *By Mr. Reibey.*—And at a cheaper cost than the Mount Cameron Race? I am not prepared to say that. £1 is considered a fair charge per head, but they charge £3—that is what I have heard. I have been told by people in the district that they give £3 per head to the Esk Company for water.

345. *By the Chairman.*—Do you know anything of the Esk Company's dam, as to its construction? It is well constructed. I was there during its construction. It is able to stand a heavy flood. Of course, time will destroy it, but no flood will. It has already stood very heavy floods.

346. *By Mr. Braddon.*—Are they turning out a large quantity of tin? No, it is all old ground there.

MR. BERNARD SHAW, *Secretary of Mines, examined.*

347. *By the Chairman.*—Your name? Bernard Shaw, Secretary of Mines.

348. Do you know the country through which the race is proposed to pass? I don't know all the country between the Mussel Roe River and the eastern side of the Ringarooma. I know the western side of the Ringarooma pretty well, but not more than a few of the claims on the eastern side in that part through which the race will pass.

349. Can you give the Committee any information as to the quantity of land taken up for tin-mining purposes on the eastern side of the river? I will furnish Returns showing the exact area.—*Vide Appendix.*

350. Do you know if there are many applications for small co-operative parties of miners, apart from large companies? Yes, a number of applications have been received for land which is forfeited, and which would be served by this race. I cannot say how many exactly, but I can get the information for the Committee of exactly the number of applications, and the area of land.

351. *By Mr. Gellibrand.*—You stated that about 2900 acres are already leased, and that this water would supply that ground: do you think that if this water was available, more leases would be taken up? Undoubtedly; for a considerable portion has been thrown up for want of water.

352. Do you think the Government would lease this race for £1800 a year, or do you think that the amount of rent received from private individuals would reach £1800 a year? Well, that would require an amount of calculation. Buyers would be prepared to pay £1 per week per sluice-head. It depends on how many sluice-heads would be employed. There would be no difficulty in selling the sluice-heads at £1 per week. I believe the race would pay. The sale of water would pay 10 per cent., irrespective of the increased rental. I estimate the quantity of water that would be used to be 53 heads. Take 50 heads at £1 per head per week, and that would be £2500 per annum. I am not experienced in what the cost of maintenance would be, but I think it would not be very great; I think it would be less than £1000 per annum.

353. Is it good soil in that district? No, very poor indeed.

354. I suppose sluicing would thoroughly destroy it? It is utterly worthless as it is now; it cannot be destroyed.

FRIDAY, OCTOBER 16, 1885.

MR. G. THUREAU *examined.*

355. *By the Chairman.*—What position do you occupy? Inspector of Mines.

356. Do you know the country through which the Mount Cameron Hydraulic Race is to be carried? Yes.

357. What opportunities have you had of acquainting yourself with it? I examined that country in October, 1881, and in October, 1884.

358. Having the map before you, will you explain the extent of tin-bearing land served by the race? From the Middle Huts to the Aberfoyle Company's ground, near the mouth of the Ringarooma.

359. What extent of the country you examined was tin-bearing? It is all tin-bearing with a few exceptions, where the granite protrudes through the wash.

360. What extent of it is payable? I should think from eight to ten miles in length.

361. What is the width of the payable ground? In no case that I remember is it less than half a mile wide.

362. Would it average more than half a mile? Yes.

363. Did you examine any shafts? Yes, I examined a number of them. In all the shafts I saw tin ore. I took out wash-dirt indiscriminately, and got good prospects.

364. What do you call good prospects? From half-an-ounce upwards per dish.

365. Is there any great extent of ground as rich as that, to your knowledge? Yes, I may say the ground in that locality, so far as I could see, is scarcely worked at all. A number of shafts have been worked and faces opened here and there, but the ground generally is virgin.

366. In order to work the ground is the water by the contemplated race necessary? Yes.

367. Is there any other way of getting it? No; it would be the making of that district if water could be supplied cheaply to the miners.

368. What do you call cheaply? A pound per head.

369. Do you believe the miners would be willing to pay that amount? I think they would be only too glad to do so.

370. We have had it given in evidence by Mr. Burke, who examined the route of the race, that to construct the continuation syphons could be used crossing gullies, thus losing 40 feet level; do you think that would materially affect the quantity of land available by the race? Yes.

371. Would it affect the race injuriously? Yes, very much. I would not like the Committee to entertain a low level; if the water scheme is carried out let it be at a high level. At the lower end the Aberfoyle and other companies will require pressure to dispose of the *débris*.

372. Are they not very much below the race? Yes, but they will require all the pressure they can get to dispose of the *débris*. It is a question of level between the Middle Huts and Campbell's sections. If these were reached by a low level I would not say anything against it, but if there is material difference in the levels I should say have the high level. If the water can be supplied by reducing the depression between these two points the low level would answer. Of course, the low level would not command so much scope for claims; the high level would command a great many more.

373. *By Mr. Rooke.*—In your opinion, if the low level were constructed, would it do good to the district? Yes, but not so much as the high level.

374. Would it bring a number of claims into work? Yes.

375. Would 60 sluice-heads be taken up? Yes, more than that.

376. *By Mr. Gellibrand.*—Are you a geologist? Yes.

377. Have you had practical experience in mining? Yes; I have had over 30 years' experience in California and the Old Country in my present business. I have had experience in hydraulic sluicing.

378. How many heads of water would this ground consume to work it all? I think it would require 100 heads.

379. How much would the water let for per head? That is a question between the Government and the companies. I would like to impress on the Committee the experience gained by the Hon. A. Deakin, in California, respecting inverted pipes in connection with irrigation. There is a depression from the end of the proposed race, and it is much cheaper to convey the water by means of malleable iron pipes than by tresseling and fluming. In California I have seen an inverted syphon which conveys water with a pressure of 920 feet in a length of 13,000 feet, and it conveys the water much cheaper than by fluming.

380. What size was that piping? 33 inches; of course, at the outlet and inlet the metal was thickened.

381. Then, if no great extent of land were shut out by losing the level mentioned, you would recommend the use of syphons? Yes.

382. *By Mr. Rooke.*—As a Government officer, would you, from your own opinion, recommend the expenditure of £18,000—would it prove conducive to the welfare of the colony? I think so.

383. By letting the sluice-heads to the miners would the Government be repaid ordinary interest for the money? Yes; the Government would derive an income right off if the race were completed.

384. *By Mr. Smith.*—What would be the average weight of the dishes of wash from which you got your prospects? It varies; what I got were very good prospects. You can see the tin by turning over the stuff; it is very rich.

385. What would be the percentage per ton? I could not say; I think it is very rich in places.

386. You must have formed some opinion of the general richness of the country? I could not give an opinion on it, the wash does not average right through; in some places there was more tin than sand. I took about half a dozen prospects from the Aberfoyle and other claims. I saw a washing from a sluice-head which was very rich; they were just giving it up because they had no water. The scope of country there is almost unlimited, and if the Government were to construct the race I believe the country would derive a large benefit, both directly and indirectly.

387. Do you think that the country ten miles long by half a mile wide is payable? I think so.

388. What is the average depth of the wash? At the lower end a number of shafts were sunk to 20 feet when they bottomed on quicksand—what is below that nobody knows; above it is rich payable ground. Higher up the lead a shaft was sunk 56 feet, all proving payable. This ground is not taken up; a great deal of it is not taken up.

389. As a geologist, what do you think would be below the quicksand? I think it is very likely there would be tin.

390. Do you think 100 sluice-heads would be sufficient to work the ground profitably? I think so.

391. That would be 100 sluice-heads running constantly night and day? Yes, 100 sluice-heads per diem; that same amount of water could be worked again and again at lower levels where no pressure is required.

392. How many years do you think it would take to sluice this ground away with 100 sluice-heads? More than 20 years I should think, but it is very difficult to say, as the water itself proves such a great prospector.

393. Will it keep 300 or 400 men profitably employed for 20 years? Yes, more than that.

394. *By Mr. Rooke.*—Would 60 sluice-heads be kept going if it worked 24 hours per day—that is working three shifts? Yes, I think it would.

395. *By Mr. Pillinger.*—Are there any companies already at work in that neighbourhood? They only work about two months in the year.

396. What do they pay per sluice-head? I do not know; it varies.

397. Do any of them pay working expenses? They have not got water. The Seashell only worked a month and a half, and then the water failed. The Esk Company pumps the water up from the river.

398. Do you think that the country you tested is richer than that being worked by the Esk? It is much richer.

399. *By the Chairman.*—What extent of this country could be served by water from the Esk Company? Very little; just on the margin of the river.

400. How much higher would the proposed race come than the Esk? The Esk is 300 feet, and the proposed race would come 200 feet higher.

401. Would there be any possibility of this country being supplied by the National Water Scheme? Eventually it might be by having inverted pipes to convey the water from the other bank of the river.

402. Do you think the water from the National race would be absorbed before it reached the country in question? I think not.

403. *By Mr. Gellibrand.*—Would any of the water from the Mount Cameron race be available for irrigation? I think so.

404. How much land would the water serve? I could not say.

405. *By Mr. Smith.*—Besides the companies working by the Esk's water, are not lower companies being worked by water supplied from the proposed race as far as it now runs? Yes, occasionally.

406. Why only occasionally? Because it does not supply water all the year round.

407. Why does it only supply water during a portion of the year? Because it is not complete.

408. Does it not run constantly so far as it is complete? No; it only takes the water from tributaries, and they run dry in summer.

409. *By Mr. Rooke.*—Do you think it would run all the year round when completed? I think so.

410. How long does the race now supply water? Three months.
411. What is the yield of the companies it supplies during the three months? I could not say.
412. *By Mr. Smith.*—Do they pay a dividend during that time? I could not say.
413. *By the Chairman.*—What time did you expend in examining that country? On the first occasion I was there six weeks, the second time I was in that particular part four or five days.
414. Did you acquaint yourself sufficiently to be in a position to have a correct knowledge of it? Yes.
415. With a full knowledge of the country and its tin-bearing area, would you recommend the Government to carry out the proposed work at a cost of £18,000? Yes, I would.
416. *By Mr. Smith.*—What would be the maximum amount you would consider it judicious to expend to obtain the water? I do not think the Government would be justified in expending more than £10,000. If the Government were to entertain this matter it would well repay them to employ a Californian mining engineer to carry on the work economically and within the estimate, and the miners would also have his advice to work the ground properly. After I have seen all the schemes I do not think we have a man here who can do so.
417. *By the Chairman.*—Supposing you were told that the work would cost £20,000, would you recommend it to be completed? I would not go above £10,000 in addition to the work already done.
418. But we shall have to pay for the work already done—that would mean nearly £20,000? Yes, I mean £10,000 to complete the work.
419. If the Government have to purchase the work already done, and expend £10,000 additional in completing it, would you still recommend its completion? Yes, I would.
420. Do you think it likely after the race was completed, we could obtain a reliable man to rent it, we simply getting an annual rent? You might, but I decidedly think the Government ought to keep control of the water.
421. Is there any information you would like to place before the Committee to enable them to obtain a decision? I do not think so.

WILLIAM NOBES *examined.*

422. *By the Chairman.*—What is your occupation? Mining manager.
423. How long have you been so employed? Eight and a half years.
424. Do you know the country through which the proposed water race will pass? Yes, very well.
425. How long have you been in that district? Nine years in December.
426. Do you consider the ground there rich tin ground? Yes, a very great deal of it. There is a large area that would be payable with water.
427. Do the companies there pay now? The co-operative parties pay very well, but I do not think the companies have been successful, except the Mount Cameron Company.
428. Is that for want of water? Yes.
429. Have you any means of knowing what population would be employed there if the race were made? That would depend on the water supply. There is a large area of ground.
430. What would the lower scheme supply? I should think about 50 or 60 heads.
431. What population would that employ? It would be hard to say; it might employ 150 men if it were brought on to the best advantage. It would command a great area of ground if properly brought on.
432. *By Mr. Smith.*—What length of payable ground would there be? I should say eight or nine miles known at present.
433. What is the width? It might run a mile from the river at places, but very little of the terraces have been prospected, there being no means of working them.
434. What is the width of the known payable ground? From half a mile to a mile.
435. Would it average three-quarters of a mile? About that, or it might be more.
436. Have you seen the prospecting shafts? A great many of them.
437. What proportion of them are payable? Very little of the ground prospected is not payable; fully three-fourths of it is payable.
438. What is the average depth of the wash? It ranges from 6 feet to 20 feet, all fairly payable.
439. You say the working parties are doing fairly well,—what wages are they making? They are making over 8s. a day. No party that I know to be working are not making more than wages. Wherever there is water payable ground is being worked.
440. Do you know the high and low level schemes? Yes.
441. Would the low scheme meet all requirements? It would if it will serve the Imperial and Scotia claims. It would be sufficient without doubt if these two companies can be reached.
442. Is there not some higher ground that this scheme would not be able to reach—is that not worth working? Yes, it is now being worked and paying well, but there is more ground at the lower level than the water could supply.
443. What is the area of the ground between the high and low levels? I should say about 400 or 500 acres. There are the Garfield, Empress, and Tamar Companies, and there might be more. The Empress is working now.

444. *By Mr. Rooke.*—Do you think if the scheme now contemplated were completed all the water would be taken up? There is not the slightest doubt about it.

445. Do you think if the water were taken up it would prove advantageous to the district in the way of causing co-operative parties of miners to work the ground? Yes, and without it the district must go down. Most of the stream tin on the low level is worked out, and there is no water for the high level.

446. The Mussel Roe would open up a larger tract of country, would it not? No doubt of it, and it would be better.

447. Would the low level pay interest and prove productive of good to the district by employing working miners? Yes, if the water were sold at a reasonable rate.

448. What would be reasonable? A pound per head for 12 hours in winter, and 8 hours in summer, when there would be less water. That would amount to almost the same thing in the end, for there would be more water in winter.

449. Would this water be taken up by co-operative miners? Yes, by working parties.

450. *By Mr. Smith.*—Are there any companies working there now? Yes, the Mount Cameron, Esk and Empress.

451. Are they paying? Yes, in every instance.

452. Do they pay dividends? No, they have spent too much money to allow them to pay dividends for some time, but they have been paying more than working expenses since the commencement.

453. Does that include the ground worked by the part of the proposed race that is completed? No, that merely puts water on to the poorer ground near the Edina.

454. Is the Esk company's ground a fair average? Yes, and it would average from three to four bags per man. The Empress is paying better,—its tributers are doing very well indeed.

455. Is the Esk's ground as good as the other claims, or better? It varies a great deal; the country round the Aberfoyle is better than the Esk's ground. The whole of the ground is quite as rich as that being worked by the Esk and Empress.

456. Are you interested in the land there? Yes, near the Aberfoyle. If the water were brought on I could work it at a profit at once. I prospected it from 20 feet to 25 feet deep, and it was payable.

457. If the water were brought on how many sluice-heads could be profitably employed? 100 sluice-heads would develop a great part of it, but I am certain if 200 heads were brought in they would all be taken up.

458. Do you mean that as a continuous flow? No, it would not be used more than eight hours in summer or twelve in winter.

459. If you could get water eight hours per day, would you be prepared to build a reservoir so that you might dam the water during the night for your use when wanted? I should expect the water when I wanted it.

460. Then you think the race would have to be constructed to carry the whole of the water? I do not know.

461. *By Mr. Rooke.*—Is there any great difficulty in preserving the water that could be supplied during the night? There would not be any difficulty, as the ground is so well suited for storing.

462. *By Mr. Smith.*—How many sluice-heads would you be prepared to use? I should want 10 to start with, and 20 after the ground is opened up. There are 170 acres, all payable.

463. What would it cost you to make a dam to store the water supplied during the night? That would depend upon the position of the race and the ground; very little money would be required if the race were constructed at a high level, for it could be dammed everywhere.

464. *By Mr. Rooke.*—You think there is no great difficulty in storing water during the night to be used during the day? I think not. It would all be used.

465. *By Mr. Gellibrand.*—Could the water be stored along the race? Yes, at a lower part of the race. In many places it could be stored in the gullies.

466. *By Mr. Rooke.*—Do you think the water could be dammed so as to preserve it until wanted? Yes, in many places.

PERCY DICKINSON *examined.*

467. *By the Chairman.*—What position do you occupy? I am Registrar of Mines at Gladstone.

468. Have you had practical experience in mining? I have had unfortunate experience as a shareholder. I have been at Gladstone four years, but have never been a miner.

469. Do you know that country well?—what is your opinion on the subject of the proposed water race? I believe the prosperity of the district depends on it. I have no interest in any of the mines there, but speak in the interests of the district.

470. What do you compute the area of tin-bearing ground to be? I should think fully 10 or 12 miles.

471. What is the width? I should say 2 or 3 miles. I know tin has been found within that area.

472. If the proposed race were constructed, do you think the water would be required? I am sure three times the amount would be required.

473. Would it be the means of employing a large population? I am sure it would.

474. Do you think the ground would last any time? I think it would last many years.
475. Would you recommend the construction of the proposed race? I do, most sincerely.
476. *By Mr. Rooke.*—As a business man, do you think it would pay ordinary interest on the expenditure? With an expenditure of £18,000, I should say it would pay 20 per cent.
477. Do you think that the output of tin would be considerably increased by the race? Yes, I am quite sure of it. One party of men have been working a 20-acre section joining the Martha Claim with 2 or 3 sluice-heads from the Esk; their cheque for the month's work was £20 per man.
478. Would they get that without water? No. These men have taken up two sections on the strength of the proposed race being constructed. This locality is not suited for companies so much as for co-operative parties of working miners.
479. If the race were constructed, do you think a large number of working miners would be employed? Yes, I believe there would be. Hitherto there has always been a few surviving companies. As they can only work during a portion of the year, the co-operative parties work on wages when water is not available to work their own ground.
480. *By Mr. Smith.*—Was the ground worked by the men you mentioned a fair average? I have no doubt in my own mind it is, but the ground has never been honestly prospected.
481. *By Mr. Rooke.*—If the race were constructed do you think it would result in fresh ground being prospected and worked? It is being prospected now. The men who would take the ground up are working miners, and would not pay for the leases unless they meant to work it.
482. *By Mr. Smith.*—Do you know the proposed high and low levels? Yes.
483. What is your opinion of them? If the low level were selected all the water would be taken up. If the high level were used it would serve the high ground before it got to the lower land. I am afraid the cost would deter the Government undertaking the high level.
484. Do you think if the Government would not undertake the high level that the low level would prove beneficial? Yes. All the water would be taken up.
485. Do you know what area there is between the two levels? I do not think there would be very much. The Empress lies below the low level, but that is supplied by the Esk, and the Esk will not be able to work its ground much more. The Esk is charging £3 per sluice-head for twenty-four hours.

TUESDAY, OCTOBER 20, 1885.

MR. GEORGE JOHN BURKE, *M.I.C.E.*, examined.

486. *By the Chairman.*—In reply to Mr. Gellibrand's question, where you stated that all you did to enable you to report fully on the Mount Cameron Hydraulic Company's race was to walk along the race, which took you four days, did you mean to imply that you had no other means of obtaining other information? Yes. I had other information regarding the levels already laid out, and information from the company's manager regarding the proposals he had submitted as to the completion of the race.
487. Had you Mr. Clark's plans of the survey? No, but I had a plan on which Mr. Clark's survey had been reduced.
488. Mr. Clark being the engineer? Yes.
489. Do you consider that, from the four days' examination you made of the ground, and the examination of whatever plans and documents which were furnished to you by the company's manager, you had sufficient means of forming a judgment of the full value of the race? Most certainly I do.
490. You would not require any further examination for the work? No. I made ample examination, and I gave an ample amount of time in making my report.
491. Who is Mr. Clark? Mr. Clark is of Launceston, and he is the consulting engineer of the Marine Board, and was employed by the Company.
492. Do you consider the work was well laid out? Certainly I do, with the exception of some minor points, which I pointed out in my report. I also mentioned in my report that Mr. Clark's part of the work was very well done, and that the Company had acted unwisely in not retaining his services.
493. As a matter of fact, his services were not availed of? So I was informed. The work was carried out under the manager.
494. *By Mr. Smith.*—The matter of making the fluming would be detail? Purely a matter of detail—a very important detail all the same—but one, I think, Mr. Clark had nothing to do with.
495. *By Mr. Gellibrand.*—I desire to know whether all Mr. Clark did was to simply lay out the line—was that so? I understand that Mr. Clark simply laid out the line, and then his services ceased with the company. I understand that he was paid two or three hundred pounds, at a mileage rate, for his work, and then his work ceased.
496. You think he did it as efficiently as you could do it yourself? Yes, I do, most decidedly. He laid it out as carefully and as well as I could do it. In a channel of uniform size, the water varies in velocity, if it is not laid out properly; and, as I said in my last evidence, the flow of water, in this channel is very even. In fact, as a rule, an engineer who has been accustomed to measure water channels can judge pretty well by looking at it whether it is laid out properly.

497. *By Mr. Smith.*—You told us you thought it would cost £4000 more to run the high level. Did you make any plans going into detail? Well, not directly, but in preparing estimates of the Ringarooma scheme, I worked out several types in detail. It was from that estimate I mentioned the sum in question.

498. With the syphons you lose some 40 feet? Yes, I proposed 40 feet under the high level.

499. Would it be possible to use the syphons, and still retain some 30 feet out of that 40 feet? No, certainly not. In fact, for the Ringarooma scheme, I have adopted a fall of 1 in 100.

500. I suppose the pipes would vary in thickness with the extra pressure of the syphon from the top to the bottom? Oh, certainly! according to the pressure, of course the thickness would vary.

501. You provide for the pipes losing fall in this? Yes. I propose to utilise the 40 feet of height to obtain the necessary velocity in the two syphons.

502. *By the Chairman.*—I suppose, from your answer to Mr. Gellibrand, you think the low level scheme would serve all purposes? Yes; but I don't say the higher level scheme is not the better, and, of course, to carry out the better scheme would mean a much larger expenditure. Another thing in connection with fluming—I don't look so much at the original cost of it, but at the expense in maintaining it.

503. *By Mr. Gellibrand.*—What sort of soil is it through which the race runs—would it hold water? The soil through which the race is cut is principally granite drift, and it holds water very well, on account of the large amount of cement which it contains, or the ordinary stiff yellow clay.

504. *By Mr. Smith.*—Is the ground where the tin exists suitable for making reservoirs? Oh, yes; a good many reservoirs have been made in the district already. The ground is very favourable for making them.

505. Do you think the miners would make these reservoirs themselves? Yes, I think they would, as it would not be costly work.

506. What about the swamps? Well, down in the neighbourhood of Harden's Ravine and Pig-and-Whistle Creek there are a good many places holding water. It is good holding ground the whole way.

507. Would these places be made without a further loss of fall? Oh, no; for wherever you have a reservoir you must have a certain amount of loss of head. All that would be lost, as the water would be used for claims in the lower level.

508. Would the water be as effective from reservoirs? No; because by high pressure you get more power, and the more power you have the better.

509. Of course the loss of power would be occasioned by using a small pipe? Yes.

510. Then a large pipe,—say 36 inches,—would not lose so much power? No. Of course the more you increase the size of pipe the less head you require; and the more you diminish the size of the pipe the greater head of water you require to force it through.

511. Did you make any calculation of syphons large enough to carry the water without losing this head? Oh, no.

512. Then, without making any calculation, do you think it would be cheaper to run the fluming? Yes; because a large pipe requires a greater surface and a greater thickness; for as you increase the size of the pipe so you must increase the thickness. A 30-inch pipe would require for the same pressure double the thickness of a 15-inch pipe.



APPENDIX.

| | | | | |
|---|------|------|----|----|
| <i>East Ringarooma—</i> | | £ | s. | d. |
| Land leased, 1910 acres | rent | 477 | 10 | 0 |
| Under application, 200 acres | rent | 50 | 0 | 0 |
| Annual Rental | | £527 | 10 | 0 |
| Area of land formerly leased under "The Mineral Lands Act," but now abandoned—3036 acres—the rental of which would amount, if let again, to | | £759 | 0 | 0 |
| <i>West Ringarooma, vicinity of Gladstone—</i> | | | | |
| Land leased, 1232 acres | | 308 | 0 | 0 |
| Under application, 60 acres | | 15 | 0 | 0 |
| Annual Rental..... | | £323 | 0 | 0 |
| Area of land formerly leased under "The Mineral Lands Act," but now abandoned—2094 acres—the rental of which would amount to | | £523 | 10 | 0 |

Mineral Leases in existence West side of the Ringarooma River, in the vicinity of Gladstone.

| <i>No. of Lease.</i> | <i>Name of Lessee.</i> | <i>Area.</i> |
|----------------------|--|--------------|
| | | ACRES. |
| 673M | Native Lass T. M. Co., Registered | 56 |
| 674M | Ditto | 12 |
| 770 | Samuel Pinnington | 20 |
| 775 | Ditto | 20 |
| 818 | Ditto | 20 |
| 711M | John Williams | 20 |
| 706M | Native Lass T. M. Co., Registered | 20 |
| 991M | Lee Ah Hong | 20 |
| 1020M | Ditto | 20 |
| 973M | N. E. Geach | 20 |
| 1052M | James Barclay | 20 |
| 854M | George R. Bell | 5 |
| 985M | C. A. Ogilvie | 20 |
| 932 | J. R. Chaffey | 40 |
| 892M | R. M'Kimmie | 28 |
| 763M | J. R. Chaffey | 11 |
| 1011M | Lee, Ah Hong | 20 |
| 999M | G. C. Gilham | 20 |
| 917M | J. Richardson | 20 |
| 1130M | James Wann | 80 |
| 982 | W. F. Pollard | 20 |
| 905 | J. Simpson | 20 |
| 803 | S. C. Sadler | 20 |
| 128 | R. J. Sadler | 80 |
| 31M | John Dally | 50 |
| 964 | Robert Ure | 50 |
| 1036M | W. Matterson | 20 |
| 1813 | R. D. Wilson | 20 |
| 100 | Mount Cameron T. M. Co., Registered..... | 80 |
| 1047M | L. Petersen | 20 |
| 624 | Mount Cameron T. M. Co., Registered..... | 80 |
| 823 | E. A. Marsden, sen. | 20 |
| 224 | Chin Tan | 20 |
| 916 | George Weymouth | 80 |
| 1851 | Mount Cameron T. M. Co., Registered..... | 80 |
| 1100 | R. D. Wilson | 20 |
| 51M | D. Williams | 20 |
| 1022M | T. Morrisby | 20 |
| 1844 | Lauritz Petersen | 20 |
| TOTAL AREA | | 1232 |

15th October, 1885.

BERNARD SHAW, *Secretary of Mines.*

Mineral Leases in existence East side of the Ringarooma River, in the vicinity of the proposed Mussel Roe Water Race.

| <i>No. of Lease.</i> | <i>Name of Lessee.</i> | <i>Area.</i> |
|----------------------|--|--------------|
| | | ACRES. |
| 1097 ^M | J. Richards..... | 20 |
| 1623 | Richards and Richards..... | 20 |
| 2091 | William Nobes..... | 40 |
| 2090 | Ditto | 80 |
| 2089 | Ditto | 40 |
| 618 ^M | Ditto | 10 |
| 868 ^M | G. C. Gillan..... | 20 |
| 1035 | Donald Campbell..... | 20 |
| 1036 | Ditto | 20 |
| 1080 | James Ogilvie..... | 20 |
| 1375 | Mount Cameron Hydraulic Tin Mining Company..... | 80 |
| 1033 ^M | E. Gaunt..... | 20 |
| 940 | T. Moore..... | 20 |
| | J. Mallison..... | 5 |
| 2011 | Adam Stacpoole..... | 20 |
| 164 | Farrell and Kennedy..... | 80 |
| 677 | J. Kennedy, jun..... | 25 |
| 2041 | Adye Douglas..... | 80 |
| 856 ^M | Tamar Mining Company..... | 70 |
| 167 | Charles H. Smith..... | 20 |
| 161 | Ditto | 80 |
| 166 | Ditto | 80 |
| 165 | Ditto | 80 |
| 1282 | Ditto | 80 |
| 1283 | Ditto | 80 |
| 1351 | Ditto | 80 |
| 1352 | Ditto | 80 |
| 2143 | Esk Tin Mining and H. S. Company..... | 80 |
| 1335 | Garfield Tin Mining Company, Registered..... | 40 |
| 1336 | Ditto | 40 |
| 2194 | Ditto | 20 |
| 1437 | J. H. Shields..... | 40 |
| 403 ^M | Charles Fry | 48 |
| 824 ^M | Mount Cameron Hydraulic Tin Mining Company, Limited... | 32 |
| 945 ^M | Ditto | 20 |
| 399 ^M | Charles Fry | 20 |
| 986 | Charles Ogilvie..... | 20 |
| 988 | Ditto | 20 |
| 987 | Donald Campbell..... | 20 |
| 790 | Ah Yen..... | 20 |
| 929 ^M | James Brown..... | 20 |
| 310 | Mount Cameron Hydraulic Tin Mining Company, Limited... | 20 |
| 1016 | James Ogilvie..... | 20 |
| 1930 | Ditto | 20 |
| 903 ^M | Ditto | 20 |
| 1056 ^M | J. R. Chaffey..... | 20 |
| 1015 ^M | Chaffey and Gilham..... | 20 |
| 63 ^M | Jarvis, Dickinson, and Gilham..... | 20 |
| 1095 ^M | W. Birch | 20 |
| 764 | Ah Cow | 20 |
| 804 ^M | J. Williams..... | 20 |
| | TOTAL AREA | 1910 |

BERNARD SHAW, *Secretary of Mines.*
15th October, 1885.

*Mineral Applications not yet disposed of, East side of Ringarooma River,
in the vicinity of the proposed Mussel Roe Water Race.*

| <i>Name.</i> | <i>Area.</i> |
|-------------------------------------|--------------|
| | ACRES. |
| Wm. Nobes..... | 68 |
| Ditto..... | 70 |
| J. R. Chaffey and G. C. Gilham..... | 20 |
| J. Ogilvie..... | 20 |
| W. Birch..... | 20 |
| J. Richards..... | 20 |
| John Thompson..... | 20 |
| Ditto..... | 20 |
| Ditto..... | 20 |
| J. Whitaker..... | 20 |
| E. Richards..... | 20 |
| Ditto..... | 20 |
| | 338 |

W. A. PRETYMAN, *Registrar of Mines.*
20th October, 1885.

*Mineral Applications not yet disposed of, West side of Ringarooma River,
in the vicinity of Gladstone.*

| <i>Name.</i> | <i>Area.</i> |
|----------------------------|--------------|
| | ACRES. |
| George Chaffey Gilham..... | 20 |
| Lee Ah Hong | 20 |
| R. D. Wilson | 20 |

W. A. PRETYMAN, *Registrar of Mines.*
20th October, 1885.