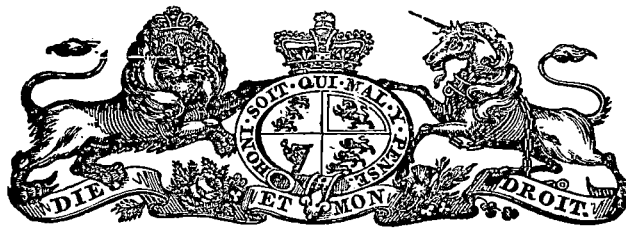


(No. 115.)



1880.

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T A S M A N I A .

H O U S E O F A S S E M B L Y .

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PUBLIC WORKS DEPARTMENT.

REPORT OF SELECT COMMITTEE, WITH MINUTES OF  
MEETINGS, EVIDENCE, AND APPENDICES.

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Brought up by Mr. Braddon, September 30, 1880, and ordered by the House  
to be printed.



***SELECT COMMITTEE, No. 8, Session 1880, to enquire into the working of the  
Public Works Department; appointed August 27, 1880.***

**MEMBERS OF THE COMMITTEE.**

THE HON. MINISTER OF LANDS.  
THE HON. N. J. BROWN.  
MR. RIDDOCH.  
MR. COX.

MR. MITCHELL.  
MR. LAMB.  
MR. BRADDON. (*Mover.*)

**DAYS OF MEETING.**

1st, 2nd, 3rd, 7th, 8th, 9th, 10th, 14th, 15th, 16th, 17th, 21st, 22nd, 23rd, 25th, 29th September.

**WITNESSES EXAMINED.**

J. M. Dooley, Esq., M.H.A.  
Jas. Fincham, Esq., Engineer-in-Chief, Public Works Department.  
Messrs. M. Cresswell and John Helmer, District Inspectors, Public Works Department.  
Mr. John Thurley.  
Mr. B. R. Dyer.  
Mr. Geo. Todd.  
Mr. John Lloyd.  
Mr. William Smith, Chief Clerk, Public Works Department.  
Mr. Thos. Townsend.  
Mr. Jonathan Graham.  
Mr. James Nimmo.  
Robert Henry, Esq., Superintendent of Telegraphs.  
Mr. J. T. Coram.  
Mr. Geo. Marshall, junr.  
Mr. Wm. Hawkins.

**WITNESSES' EXPENSES.**

	£	s.	d.		£	s.	d.
Thos. Townsend .....	9	15	6	W. Hawkins .....	3	6	0
J. Graham .....	6	10	6	J. Nimmo .....	4	6	0
J. Lloyd .....	2	8	6	J. T. Coram .....	1	3	0
J. Thurley .....	1	8	6				
G. Todd .....	1	8	6				
					£30	6	6

## MINUTES OF MEETINGS OF COMMITTEE.

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### No. 1.

WEDNESDAY, SEPTEMBER 1, 1880.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), the Hon. Minister of Lands, the Hon. N. J. Brown, Mr. Riddoch, Mr. Cox, Mr. Mitchell.

1. Resolution of the House appointing the Committee (Votes and Proceedings, No. 11, entry 7.) read.
  2. Ordered that the Engineer-in-Chief, and Chief Clerk of the Public Works Department, be summoned for 11 o'clock to-morrow, and Mr. Dooley for 12 o'clock.
  3. Ordered that the Chairman communicate with the Editor of the *Mercury* with the view of ascertaining the names of the anonymous writers "Spikenall" and "Sledgehammer," in order that they may be summoned to give evidence before the Committee.
  4. Committee adjourned till to-morrow at 11 o'clock.
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### No. 2.

THURSDAY, SEPTEMBER 2, 1880.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Cox, Mr. Mitchell, Mr. Lamb, Mr. Riddoch, the Hon. N. J. Brown, the Hon. Minister of Lands.

1. Letter from Editor of the *Mercury* with reference to anonymous correspondents read, (filed herewith).
  2. Mr. Dooley attended and was examined. Rough plan, by Mr. Dooley, of Sheffield Road filed. (Appendix A.)
  3. Mr. Fincham attended and was examined.
  4. The Committee adjourned till 11 o'clock to-morrow.
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### No. 3.

FRIDAY, SEPTEMBER 3, 1880.

The Committee met at 11 o'clock.

*Present.*—Mr. Braddon (Chairman), Mr. Mitchell, Mr. Cox, Mr. Riddoch, the Hon. Minister of Lands, the Hon. N. J. Brown.

1. Mr. M. Cresswell, C.E., attended and was examined. Plan of Sheffield road drawn from memory filed by Mr. Cresswell. (Appendix B.) Testimonials as to competency, &c., submitted by Mr. Cresswell. (Appendix C.)
  2. Ordered that Mr. Helmer be summoned for Tuesday, 7th inst., at 11 o'clock; and Messrs. John Lloyd, John Hurley, Geo. Todd, and Dyer, for Wednesday, 8th inst., at 11 o'clock.
  3. The Committee adjourned till Tuesday, at 11 o'clock.
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### No. 4.

TUESDAY, SEPTEMBER 7, 1880.

The Committee met at 11 o'clock.

*Present.*—Mr. Braddon (Chairman), Mr. Mitchell, the Hon. Minister of Lands.

1. Mr. J. Helmer attended, and was examined.
  2. Ordered that Mr. Thomas Townsend be summoned for Tuesday, 14th inst.
  3. The Committee adjourned till to-morrow, at 11 o'clock.
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### No. 5.

WEDNESDAY, SEPTEMBER 8, 1880.

The Committee met at 11 o'clock.

*Present.*—Mr. Braddon (Chairman), Mr. Riddoch, Mr. Cox, Mr. Mitchell, Mr. Lamb, the Hon. N. J. Brown.

1. A letter from Mr. Dooley, urging that the case of Mr. Gerrand and the Government *re* Cam Bridge be brought before the Committee for investigation, was received and replied to.
  2. Messrs. John Thurley, B. R. Dyer, Geo. Todd, and John Lloyd attended, and were examined.
  3. Ordered, that Mr. Jonathan Graham, of Sassafras, be summoned for Tuesday, 14th inst.
- The Committee adjourned till to-morrow, at 10:30 A.M.
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No. 6.

THURSDAY, SEPTEMBER 8, 1890.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), the Hon. N. J. Brown, the Hon. Minister of Lands, Mr. Mitchell, Mr. Cox, Mr. Lamb, Mr. Riddoch.

1. A letter from J. M. Dooley, Esq., M.H.A., was read, urging that the case of Mr. Crocker *versus* the Government should be heard by the Committee. Replied to, that the Committee is not prepared to summon Mr. Crocker, but will hear his case if he attends at his own expense.

2. Ordered, that Mr. A. Andrewartha be summoned for Wednesday, 15th instant.

3. Examination of Jas. Fincham, Esq., continued.

The Committee adjourned till to-morrow, at 11 o'clock.

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No. 7.

FRIDAY, SEPTEMBER 10, 1890.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Cox, Mr. Riddoch, Mr. Mitchell, Hon. N. J. Brown.

Mr. Wm. Smith, Chief Clerk Public Works Department, examined.

The Committee adjourned till Tuesday, at 11 o'clock.

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No. 8.

TUESDAY, SEPTEMBER 14, 1890.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), Hon. N. J. Brown, Mr. Mitchell, Hon. Minister of Lands.

1. A letter was forwarded to the *Mercury* asking whether the anonymous correspondents "Spikenail" and "Sledgehammer" would attend for the purpose of being examined.

2. Mr. Thomas Townsend, C.E., was examined.

3. The Committee adjourned till to-morrow, at 11 o'clock.

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No. 9.

WEDNESDAY, SEPTEMBER 15, 1890.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Riddoch, the Hon. N. J. Brown, the Hon. Minister of Lands, Mr. Lamb.

1. Mr. Jonathan Graham and Mr. Fincham attended and were examined.

2. A telegram was received from Mr. W. Andrewartha, who had been summoned before the Committee, stating that he could not attend through illness, but would write.

3. The Committee adjourned till 10 A.M. to-morrow.

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No. 10.

THURSDAY, SEPTEMBER 16, 1890.

The Committee met at 10.30 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Mitchell, Mr. Riddoch, Mr. Lamb, Hon. N. J. Brown.

1. James Fincham, Esq., was further examined.

2. A letter from the *Mercury* was read disclosing the name of the anonymous correspondent "Spikenail," and stating that he would attend the Committee and give evidence.

3. Ordered, that Messrs. George Marshall and J. T. Coram be summoned for to-morrow, and Messrs. James Nimmo and Wm. Hawkins for Tuesday, 21st instant.

4. The Committee adjourned till to-morrow at 10.30.

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No. 11.

FRIDAY, SEPTEMBER 17, 1890.

The Committee met at 2.30.

*Present.*—Mr. Braddon (Chairman), Mr. Lamb, Mr. Mitchell, Hon. N. J. Brown.

1. James Fincham, Esq., attended and was further examined.

2. Ordered, that Mr. Henry, Telegraph Office, be summoned for Wednesday, at 10.30 A.M.

3. The Committee adjourned till Tuesday, at 10.30 A.M.

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## VI

No. 12.

TUESDAY, SEPTEMBER 21, 1880.

The Committee met at 11 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Cox, Mr. Mitchell, Mr. Riddoch, Hon. Minister of Lands.

Mr. James Nimmo, writer of the letter signed "Spikenail," and Robert Henry, Esq., Superintendent of Telegraphs, attended and were examined.

The Committee adjourned till to-morrow at 10.30 A.M.

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No. 13.

WEDNESDAY, SEPTEMBER 22, 1880.

The Committee met at 10.30 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Lamb, Mr. Cox, Mr. Riddoch, Mr. Mitchell, Hon. Minister of Lands.

Messrs. J. T. Coram and George Marshall, jun., of Sorell, James Fincham, Esquire, and Mr. James Nimmo attended and were examined.

Mr. Nimmo made statutory declaration as to his evidence.

Correspondence between Mr. Nimmo and the Public Works Department was put in by Hon. Minister for Lands.

The Committee adjourned till 10 o'clock to-morrow.

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No. 14.

THURSDAY SEPTEMBER 23, 1880.

The Committee met at 10 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Cox, Mr. Lamb, Hon. Minister of Lands.

Messrs. Wm. Hawkins, James Fincham, and John Helmer attended and were examined.

The Committee adjourned till to-morrow, at 10 A.M.

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No. 15.

TUESDAY, SEPTEMBER 28, 1880.

The Committee met at 10.30 A.M.

*Present.*—Mr. Braddon (Chairman), Mr. Cox, Hon. N. J. Brown.

J. M. Dooley, Esq., M.H.A., and James Fincham, Esq., attended and were further examined.

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No. 16.

WEDNESDAY, SEPTEMBER 29, 1880.

The Committee met at 2 P.M.

*Present.*—Mr. Braddon (Chairman), Mr. Cox, Hon. N. J. Brown, Hon. Minister of Lands.

The Chairman brought up Report, which was considered, and ordered to be laid before the House.

The Committee adjourned *sine die*.

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## R E P O R T.

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THE Committee have, after fifteen sittings, brought their enquiry to a close. They have patiently and exhaustively gone into all evidence that might be deemed accusatory as against the Public Works Department: they have sought out witnesses whose spoken or written words had impugned the character of the Department; and they have investigated, in as thorough a manner as the time at their disposal would permit, the system of the Department, as shown by its own records or explained by its own officials.

The result of this enquiry is, in one respect, eminently satisfactory, viz.—that in no instance has there been even a suggestion that the working of the Department was corrupt. It has been charged before us with technical errors, with inefficient or insufficient supervision, and with arbitrary and high-handed treatment of contractors; but none of these alleged errors or shortcomings have been attributed in any degree to dishonesty either of action or intention.

As to the technical errors brought under our notice, the evidence is, in many cases, conflicting, and for the most part only opens up points of disputed engineering which could only be conclusively decided upon by experts after personal examination of the works in question. But it may be said here that upon two counts the Department admits that its judgment was at fault. These are the counts which relate to the Lachlan Bridge wing-walls, and that portion of the road at Eagle Hawk Neck unnecessarily constructed in compliance with misleading local counsel.

The Committee now proceed to report *seriatim* upon the various works which, in the course of their enquiry, were constituted the examples of faulty administration.

*Lachlan Bridge.*—The Engineer-in-Chief is now of opinion that the wing-walls which have been carried away by the late flood were not of sufficient size; that it would have been wiser to face the bank with stone rather than employ wing-walls of the size of those which were constructed. As to this bridge, the Committee are of opinion (and the evidence of the Inspector in charge supports them) that it was unnecessarily imperilled by the contractor's action in excavating gravel from the river bank above the bridge and so causing an increased swirl and rush of water. The Inspector admits that the danger was slightly increased by the excavation (see paragraph 227); and, according to his own showing, he did not disapprove of this or refer it to the Engineer-in-Chief or District Engineer, both of whom "saw it done."

The Committee, in respect of this work, would suggest that it might have been found more effectual if the wing-walls had been cast in *empiser* on the bank (and clear of the water) and set in their places when dry, instead of being built up layer on layer *in situ*. The evidence shows that these walls broke off just above the foundation, *i.e.*, just at the layer that constant submersion prevented from drying.

*Russell's Falls Bridge.*—A pier of this work has been carried away by a recent flood, and the failure of this pier is attributed to the contractor's action in building it in indifferent lime-mortar instead of cement. This departure from the specifications was permitted by the sub-inspector without reference to the District Engineer, and (paragraph 339) was only discovered by the latter when he personally inspected the bridge after the accident. Even then it would seem that this evasion of the specifications was not reported by Mr. Helmer to the Engineer-in-Chief as a matter of course but as the reply to questions put to him.

It should be added that this bridge has not yet been taken over from the contractor, and that the sub-inspector who neglected his charge is no longer employed by the Department. Evidence before the Committee shows that this sub-inspector was appointed without sufficient knowledge of his qualifications.

*Castle Forbes Bay Road from Franklin to Shipwright's Point.*—As to this road which is the subject of the anonymous writer "Spikenail's" (otherwise Mr. Nimmo) charges against the Department, the enquiries of the Committee were conducted under three heads. 1. Worthless metal used upon one section. 2. The unnecessary diversion of another section round two small rises. 3. The action of the contractor in leaving logs lying parallel with the road on a steep slope in such a position that they formed part of the batter, when, the road being widened out, earth was taken from the upper slope and thrown down the lower over these logs.

With regard to No. 1 it is admitted by the Engineer-in-Chief (paragraph 483) that worthless mudstone was used instead of metal; but this work has not been taken over, and the contractor has been required to cover it with harder and better metal. There is conflicting testimony as to whether good material was readily procurable. Mr. Lloyd, Chairman of Road Trust, says (paragraph 282) that ironstone was available in the neighbourhood (see Mr. Hawkins, paragraph 754). The Engineer-in-Chief says good material was not procurable close at hand, and Mr. Nimmo corroborates this (paragraph 549), but Mr. Lloyd's evidence shows that the character of this so called mudstone was known in the neighbourhood, that it had been tried and found wanting and, therefore, that scientific knowledge was not required to condemn it. Specimens of this stone have been put before the Committee, and these certainly are not such as would be approved by any practical roadmaker.

As to No. 2 (the diversion of road through Heriot's land) there is a wide diversity of opinion; the departmental officials, adhering to their view that this was the preferable route, are supported by Mr. Lloyd (paragraph 283), while Mr. Hawkins (762) and Mr. Nimmo (542) urge that the road could have been better and more economically constructed over the rises. While it is impossible for the Committee to decide between these contradictory views, it is their duty to point out that the sound judgment of the Department in this matter would have stood out more clearly and prominently if the District Inspector had made closer enquiry into the merits of the alternative routes; had taken out quantities somewhat less roughly, and had placed accurate estimates upon record. The rough estimate given by Mr. Helmer in paragraph 816 is obviously and very seriously incorrect as to the cost of the road over the rises: the cuttings could not, on his own showing, have cost anything like £250; and it cannot be seen how the whole cost of the lower road (longer than the upper by some chains) should be £440, metalling included, while the cost of metalling alone the shorter is estimated at £360.

Allegation No. 3 is no way borne out by evidence. Mr. Nimmo's statement that logs have been made to form part of the road slope is contradicted by some witnesses and unconfirmed by others. His assertion that a portion of the road has lately been carried away by sinking of these logs is contradicted.

*Sorell Causeway.*—Recent repairs of this work came under the Committee's consideration. It is alleged that repairs worth not more than £10 were effected last year at a cost of £30, (see Mr. G. Marshall, jun., paragraphs 607, 608), and that this year breaches in the Causeway had been filled in with soft stone and sand (one-half to three parts sand) which could not possibly stand (see Mr. Marshall, paragraphs 609, 610, 657.) Evidence rebutting both came before the Committee.

The recent repairs were conducted under charge of Mr. Coram, Chairman of the Road Board, and he affirms that the repairs were effected with hard sandstone taken from the quarry whence the material for the Causeway was originally taken, while he denies that one-half or three-quarters of sand was used. Mr. Helmer, District Inspector, corroborates this; Mr. Gunn, M.H.A., and Mr. G. Marshall allege that the greater part of the material used was sand and the rest inferior stone. Mr. Marshall says (paragraph 610) that hard freestone could have been obtained at a distance of half a mile, while Mr. Coram says sandstone was used, and Mr. Helmer asserts that the only stone found in that locality is sandstone. These repairs are trivial, costing under £9, and the Committee, viewing the conflicting evidence before them, cannot satisfactorily decide the question whether there has been wasteful expenditure or mismanagement either as to the later or earlier repairs.

*Cambridge Road to Causeway.*—It is said by Mr. G. Marshall that the specifications in respect of metalling this road were avoided, but this witness has no personal knowledge what those specifications were or what depth of metalling was put on. He says (paragraph 633) "I cannot say if the depth was not such as was provided in the specifications." One point raised by Mr. Marshall is, that stones of a foot square were put in the pitching while they should not have been more than 9 inches, but the Engineer-in-Chief explains that large flat stones were used for pitching, but broken in place so that the metal might key in properly. The evidence upon this point is in favour of the Department.

*Cam Bridge.*—This work has involved a difference between the Department and the contractor. The contractor bases his case upon two main points, 1, change of plan after contract, and 2, extra work. But it is clearly shown that the contractor agreed to the change of plan before the work was commenced, and also to the value of the more important extra work. He claimed an allowance for a coffer-dam which was in specifications, but not in schedule of quantities, and £80 were allowed. He claimed £50 as extra cost of getting stone from Melbourne, and this was granted, although the Engineer-in-Chief's evidence is to the effect that he got this stone over from Victoria in ballast at a cost less than that of quarrying and carting it. He was also assisted by the District Inspector, who at a cost to Government of about £70 helped to get in the foundation of a pier for him. As to this dispute between him and the Government it would seem that he suffered mostly through his own *laches*, and unnecessarily imagined himself aggrieved because the Government did not pay him for the plant which was necessary for carrying out the work.

It may be here remarked that the manner in which the District Inspector took borings for the foundations cannot be considered satisfactory. He used an iron bar for this purpose instead of boring-rods, and with such an instrument it is not incredible that (as stated in paragraph 388) "the bar struck something hard which was taken to be sound bottom, but proved to be a log."

*Emu Bay Jetty.*—As to this work there is a wide difference of opinion between Mr. Townsend, C.E., and the Engineer-in-Chief, which is of a purely technical character, and it is hardly within the province of this Committee to decide which view is correct. But the evidence before the Committee is adequate to show that the work has been jeopardised by delay in construction. To secure the foundations it was necessary to push on as rapidly as possible with the superstructure, but two or three months elapsed before more than one course of superstructure was got in. That delay may be accepted as the primary cause of the first accident. Subsequently—i.e. in August last—damage was done to the jetty by storms; and it is admitted by the Engineer-in-Chief that the work was left in danger by the contractor, who had been to town to endeavour to get a further payment on account from the Government. It appears to the Committee from the Engineer-in-Chief's evidence (508 and 509) that the Department has been slow in taking such steps as would secure this work from further damage.

*Latrobe Bridge Approach.*—This has come before the Committee as another instance of varying technical opinion; Mr. Townsend representing that in the absence of water-way along the approach there is every probability of Latrobe being flooded by the dammed up waters until the flood shall have swept its way through the embankment and carried much of it away in its course; the Engineer-in-Chief showing how by allowing this water-way there will probably be such a diversion of the river channel as will leave the bridge clear of the river's course. The fact that the approach or causeway has stood so far is in favour of the Departmental view; but it might be well to consider the suggestion that the off bank should be stone-faced where the water pours in greatest volume over the approach.

*Eagle Hawk Neck Road.*—A section of this road is said to have been unnecessarily constructed, there being an admirable natural road parallel with it along the sea beach which is passable at all states of the tide. The Engineer-in-Chief admits that the work was not required, and explains that

the sub-inspector was misled by a statement that the beach road was rendered dangerous by a creek which empties itself into the sea at one point of it (paragraphs 614, 664, 812).

*Sheffield and Railton Road.*—Mr. Dooley, M.H.A., both in the House and before the Committee, spoke of a section of this road as a startling instance of faulty engineering. According to this witness the regulation length of grade had to be maintained regardless of the conformation of the country; and in this instance, with the view of carrying out this principle, the crown of a hill was raised eighteen inches while a depression upon the same length was deepened. Mr. Dooley before the Committee insisted that, if this grade had been continued beyond the crown of the hill instead of ending at it, a heavy piece of embankment would have been constructed to effect the Departmental purpose. There is improbability on the face of this statement, and the plans and sections of the work put in by the Department clearly refute it.

Having thus disposed of noticeable instances of particular works as to which enquiry has been made, the Committee pass on to consider the general administration of the Department.

*Survey and selection of Roads.*—In the opinion of the Committee there is reason to think that the choice of road routes has not always been judicious. Roads are made to follow road reserves which were marked out by surveyors when heavy timber and scrub make it impossible to judge what line should be followed, or, possibly, marked off upon the chart with no other surroundings than the walls of an office.

It is shown that in some instances it would be wiser to abandon these reserves and lay out the road anew, even though compensation and cost of fencing were added to the expenses of construction. This would be a more economical course in the long run, and this was the course adopted in the case of the diversion on the Franklin Road, where it was not so clearly an economical proceeding; but this was not the course followed in the case of the steep hill rising up out of the Gawler Valley, on the North Motton Road. Mr. Dooley speaks of similarly impracticable grades at Sunnyside and the branch Gawler Road.

*Construction.*—Mr. Dooley considers that all roads constructed under the present system are insufficiently drained, but can specify no particular example. He mentioned the Latrobe and Deloraine Road as failing in this particular, but being further questioned replied, "I have not observed; I have not had an opportunity of judging;" answers which do not carry any conviction to our minds. Mr. Townsend speaks of insufficient waterway in the instances of the Ballahoo bridge and burial ground. He also refers, in paragraph 429, to a case in which by order of the District Inspector an inferior gravel was put upon the road instead of a better material the contractor had at hand for the purpose, the inferior gravel having subsequently to be scraped off. But this is only hearsay evidence, and had the District Inspector acted as is here stated, the contractor would have scarcely submitted quietly to such a wrong. Mr. Townsend also mentions an instance of metal being blinded with clay when good material was available close by. Mr. Jonathan Graham asserts that there has been marked reform in the administration of the Department since Mr. Fincham's appointment as Engineer-in-Chief. In paragraph 438 he gives some glaring instances of what mismanagement existed in former times; but it is unnecessary to consider past errors for which the existing Department is not responsible, and of which the Department is now declared guiltless. The charges laid against the Department of to-day of inefficiency in this direction are, as far as the Committee's enquiry has gone, few.

The Lachlan Bridge affords the most prominent one: the only one it may be said that is not to be explained away or attributed to insufficiency of supervision. Instances coming under the latter category have been already cited, and none remains of such importance as to call for special comment.

*Plans and Estimates.*—The Committee cannot but regard these as insufficiently considered, or in many instances, it may be said, neglected. What the House might well look for is, that proper plans and estimates should be laid before it when the Minister of Lands and Works asks for votes for public works; but, in practice, it does not seem an invariable departmental practice, even after the money is voted, to have proper plans and carefully revised estimates by which to control expenditure. For example. The first estimate (a rough one) for the Lachlan Bridge was £1000. When a change of Ministry introduced a new Minister of Lands and Works into office, another rough estimate was made by which the cost of this work (slightly altered) was reduced to £600. In both instances the estimate was arbitrarily made, rather with a view of fitting the sum the Minister was disposed to give, than with the higher purpose of clearly showing what an effective structure would cost; and both estimates were wrong, as the work cost £896. In this matter it would seem that the Engineer-in-Chief somewhat surrendered his professional judgment to the lay suggestion of this, or that Minister, and to the detriment of a public work. It would appear also from the evidence that, in respect of bridges, sufficient consideration is not given beforehand to the highest flood levels; enquiry does not seem to be directed to this important point before bridges are designed; flood level is sometimes marked on the plan after it has passed, sometimes (in the instance of smaller bridges) not marked at all.



This is another instance of the objectionable departmental principle of letting deliberation follow decision.

*Specifications.*—It has been alleged before the Committee that specifications are so framed as to be barely intelligible, and sometimes not in harmony with the schedule of quantities. But these allegations are successfully rebutted by the evidence of departmental officers and records, as also by independent testimony. A very lax method was adopted in time past by Mr. Cheverton in respect of the contract entered into with Mr. Nimmo upon specifications which, in the first instance, were framed by the contractor; but there is nothing before the Committee to show that such an objectionable and unbusiness-like procedure now obtains.

*Contracts.*—In dealing with tenderers it is said by the Engineer-in-Chief to be the invariable practice where all tenders are refused, either to throw the Contract open again to public competition, or to address all the tenderers alike with the view of getting them to reduce their offers. The evidence of the Engineer-in-Chief upon this point (paragraphs 299 to 306, and 382) is unsatisfactory. There is contradiction on the face of it; for having commenced by asserting that there is this unexceptionable system, the Engineer-in-Chief has to admit that in an instance, known to the Committee, there was a departure from this practice. The Committee hold that the Department acts unwisely in even seeming to justify the imputation of favouritism. In respect of selection from many tenders it is said to be the rule to accept the lowest, save where the tender is obviously excessively low (the Engineer-in-Chief says 25 per cent. below paying rates). To secure reasonable tenders it is the practice to require the tenderer to furnish details of prices upon which his tender is based, and these are compared with details provided by the district Inspector. This system is, in the opinion of the Committee, satisfactory. But there is reason for objection to the unsystematic manner in which deposits are taken from tenderers. The amount of the deposit is not proportionate to the value of the contract, but bears a large per-centage upon the small contract and a small per-centage upon a large one. The practice adopted certainly does not confirm the statement of the Engineer-in-Chief that it is intended to encourage small contractors.

As to the question whether large or small contracts are preferable the evidence varies. The Northern District Inspector is in favour of the former, holding, reasonably enough, that a large contract is preferable because of the greater economy of labour and supervision and ampler means of organisation. He points out that, although sub-letting of contracts is prohibited, the contractor for any considerable work does practically afford full employment on piece-work, carting, &c., to the farmers of the neighbourhood to whom work of the sort is acceptable.

*Inspection.*—It is under this head that, in the opinion of the Committee, the Department's greatest weakness lies. It is to insufficient inspection that most of the Departmental deficiencies which have come under the Committee's notice are attributable. The evidence of facts and of witnesses confirms this view. The Inspecting Staff of the Department at present consists of one Engineer-in-Chief, two District Inspectors, and four Sub-Inspectors, and it may very well be questioned whether when ordinary works are in hand this is not very weak numerically; not that the Committee would recommend any present increase of staff without further evidence of its necessity. With increased works to undertake there must be an increased staff, but the additions made to the establishment should be carefully considered. It may be noticed here that, as to works carried on in the Huon district, one witness (paragraph 284) thinks too many sub-inspectors were employed. But the maximum of inspection is not obtained from the existing agency. The Engineer-in-Chief spends two-thirds of his time in office, the Southern District Inspector spent over 100 working days of last year in the office; and it is the opinion of the Committee that these officers should be almost constantly a-field.

It appears that the Engineer-in-Chief is tied down to office by his employment upon insignificant details which could very well be conducted by the Clerk of Works. He should be freed from such minor duties as inspecting the chimney-sweeping and petty repairs of Hobart Town public buildings, &c.

And were inspection by the head of the Department more frequent and more rigorous, that by subordinates would necessarily improve. Blunders or malpractices such as we see in the sub-inspection of the Russell's Falls Bridge would not so readily escape detection. The efficiency of all grades would be improved, the inefficient or dishonest subordinates more promptly dismissed.

There is no doubt that a thoroughly good subordinate staff can only be obtained where there is some degree of permanency in the appointments of those employed. Temporarily appointed men have not sufficient stimulus or motive for exerting or conducting themselves well. The past history of the Department shows a long list of failures that are in a great degree attributable to this cause. Good men from other colonies cannot be induced to come here for mere temporary employment; the best men of this colony will not be tempted from other walks of life to enter a Government department without any prospect of permanent employment.

The Committee consider that the district inspectors and sub-inspectors should be appointed for at least two years, and that, together with some hope of permanency, they should be encouraged by the prospect of promotion for marked efficiency.

The Committee notice that there is not sufficient record of, or check upon, the inspection done. The progress reports were said to show this, but, framed as they are, they give very little information in this direction. The Committee consider that these progress reports should show where and for what time the duties of inspection are conducted from day to day, and that, in addition to these, every district inspector and sub-inspector should submit a monthly diary showing briefly the country travelled upon inspecting tour. It should be required, also, that the progress reports should invariably bear the date upon which they are signed by the responsible officer. It is not sufficient that the heading says that they are for some particular month. It is desirable to know when the report for that particular period was made.

The Committee cannot but express an unfavourable opinion of Mr. Helmer as regards the appointment he holds. They cannot see in his past career any probability of his having received such training as is necessary to a District Inspector: they can see, in his evidence before them, something to warrant the assumption that he is unfitted for his post. It is impossible to compare Mr. Helmer to the Northern District Inspector, Mr. Cresswell, without considerable detriment to Mr. Helmer.

*Mr. Nimmo's dispute with the Public Works Department.*—The Committee went into this matter at considerable length, with the result that Mr. Nimmo appears to have been only a few degrees more wrong than the Department. Mr. Nimmo was called upon by Sub-Inspector Cheverton to frame specifications for himself. Mr. Nimmo tendered for certain work (8 chains of slabbing) on his own specifications, which were wholly incomplete, and the Department accepted his tender with a modification of the specifications, which still did not make them what they should have been. The specifications of both Nimmo and the Department omitted mention of grubbing that was necessary before the slabs were laid, and hence a difference of opinion when Nimmo claimed payment for the grubbing. The specifications of Nimmo contained no mention of the thickness of the slabs to be used; so when some were found under the width (4 inches) prescribed by the Departmental specifications, Nimmo refused to admit that he had failed to carry out the work as specified. In short, it is admitted by Mr. Nimmo that he purposely framed his specifications in such a manner that he might escape out of the obligations they were intended to lay down and force upon the Department the necessity of referring their dispute with him to arbitration. Mr. Nimmo objected to the arbitrament of an individual Sub-Inspector or District Inspector, because apparently he had pre-arranged such a line of conduct as would bring him into collision with the Department (paragraphs 728 and 729).

*Maintenance.*—With regard to maintenance of by-roads, Mr. Graham (paragraph 448) makes some excellent suggestions, which, in fact, anticipate the action of the Government. There is undoubtedly a necessity for making local Trusts responsible for the maintenance of metalled and properly constructed roads handed over to them by the Government, and there is necessity for legislation that shall empower local Trusts to check misuse of roads when made. The evidence before the Committee gives many instances of bad treatment of roads that might be met by legal enactment. Side drains are spoiled by dray-wheels being run in them to act as breaks going down hill: clay 3 or 4 inches in depth was put upon one road over the metal to save the bullocks' feet: the metalling is unduly tried by narrow gauge wheels.

The maintenance of main roads is yet upon its trial, and the Committee are not in a position to speak authoritatively upon the subject. Mr. Fincham's evidence upon this point should be considered, and that indicates want of proper supervision.

The Committee strongly recommend the employment of steam rollers on metalled roads. By using these the metal would be properly set before traffic went upon the roads, and the cost of maintenance would be very considerably reduced. At present, repairs have to be commenced immediately after the roads are opened for traffic, and have to be continually repeated until new metal is laid down.

*Telegraph.*—As to this branch of the Public Works Department the Committee would ask earnest consideration of all the evidence given by the Engineer-in-Chief and Superintendent of Telegraphs (paragraphs 569 to 604 and 678 to 703).

The Committee can only arrive at one conclusion upon this subject; viz., that, for want of practical and scientific inspection out of doors, the efficiency of the telegraph system is materially reduced and the safety of the lines imperilled.

The evidence clearly points to most disastrous consequences whose origin is in this primary defect. Lines have been put up by ignorant workmen subject to no practical supervision, only to

be pulled down again. Interruptions from faulty construction are so frequent in some parts as to be hardly exceptions. There has nowhere been thorough scientific management of the field works, and on some lines the simple handicraft, the mere work of the artisan, has been so rough as to make it weak in effect as in appearance. Neither the Superintendent of Telegraphs nor the Engineer-in-Chief is in a position to do this out-door work. Both of these officers have recommended the employment of a good and efficient inspector, and the Committee endorse that recommendation. The appointment will be justified by results: by more effective telegraphic communication, by greater economy of maintenance and construction, and by the saving of the Department's reputation.

The Committee would suggest that No. 8 wire be used for long circuits on land, and No. 6 for coast lines and lines through heavy timber; they would advise also that the iron-capped insulators be given up on coast lines. But they would prefer to leave all suggestions to a practical telegraphist of experience in the construction of telegraph lines, such as they hope to see appointed as Inspector.

*Clerical Work.*—The Committee will briefly note some changes which it would recommend in the system of record keeping and registers:—I. A serial number should be maintained for all letters. II. The docket and bundle system should be adopted, that is to say, all the correspondence relating to any one subject should be kept in a bundle together, the Departmental replies to letters received being drafted upon the back of these letters; and all shorter letters should be written in the docket form *i.e.*, on a quarter sheet of foolscap folded after the manner of the specimen attached. III. There should be a more effective practice in respect of registering deposits. A better and more complete system might be introduced by which labour would be economised. Instead of distributing the details of these deposits over several registers they should all be included in one. The present system does not give with sufficient clearness the history of each deposit up to the time of its being refunded, and the Committee would recommend the introduction of a register which would give in a tabular form every stage through which every deposit passes. (A form is appended.) IV. The register of tenders should be indexed as well as all other registers. V. It is advisable to have a register in which to show defaulting contractors, and such employés as are marked not to be again appointed. Every entry in such register to be attested by the Head of the Department.

*Board of Tenders.*—It should be considered whether this Board might not be otherwise constituted. It is said that difficulty is sometimes experienced in getting the present Board collected.

*Arbitration.*—The Committee think that a clause should be introduced into contracts providing for arbitration in the event of dispute; such clause to provide that the cost of arbitration shall be met by the party against whom the decision goes.

*Check by Local Road Boards.*—The Committee are of opinion that local agency should be more freely utilised in inspection and supervision of works. It is to the interest of local bodies that works should be properly constructed: it would be still more to their interest if they were to be held responsible for maintenance. The Committee recommend that progress reports, before being submitted by departmental officers, shall be countersigned by a member of a Local Trust or Board, who shall make such remarks thereupon as he shall think called for.

*Deposits on Contracts* should bear some fixed proportion to the value of the works, say 10 per cent., and bank deposit receipts should be accepted.

*Payment of Contractors' Labourers.*—The Committee recommend that provision be made in future contracts for securing payment of the labourers employed. It would be well if weekly payment in cash were insisted upon; but, at least, it should be made an invariable rule that no progress payment should be made to a contractor until he has qualified for it by producing a certificate, attested by a Justice of the Peace, that he has paid up his labourers to the end of the preceding week, or satisfied such Justice of the Peace of his intention to settle with them.

E. N. C. BRADDON, *Chairman.*

*Committee Room, 30th September, 1880.*

## EVIDENCE.

J. M. DOOLEY, *Esq., M.H.A., examined.*

1. The Chairman requested Mr. Dooley to state what he knew about faults in construction of roads by the Department. Mr. Dooley stated he did not remember any specific charges he had made, but would answer questions made by Hon. Members.

2. *By Mr. Brown.*—Do you know any work carried out under the Public Works Construction Act, 1877, faulty in construction? The principle of pitching with 5-inch metal and topping up with 3-inch fine metal I disapprove of, as being expensive, and would prefer using fine metal entirely without pitching.

3. *By Mr. Mitchell.*—Do you attribute injurious effects to roads to bad system of construction entirely, or bad weather? Principally to the system; the bad weather assisted to show defects of the system.

4. *By Mr. Cox.*—Do you know of any case of soil being dug out of valleys or hollows and carted on to the hills or rises in the construction of a road? I know of an instance in which it was partially done, but do not know where the soil was obtained; I know of soil being laid on the top of a rise in the formation of a road.

5. *By the Chairman.*—What was the particular instance? I remember an instance in a road made in the Town of Sheffield, near the watch-house.

6. *By Mr. Brown.*—Do you know the name of the contractor? Yes; there were two of them, Dorley and another.

7. *By Mr. Cox.*—You do not know where the soil came from? No; I saw the road after construction. The formation was about 18 inches higher than the rise.

8. Was the rise a considerable one? No.

9. Do you know of any depression in road being deepened before the metal was put on? Yes, if continuance of uniform grade required it.

10. *By the Minister of Lands.*—Was this section where the road on the rise was raised the termination of a contract? Yes, as well as I can remember.

11. Where this was done was there a junction with an already formed road? No; the road beyond was neither formed nor metalled. I believe it has been done since by the Road Trustees.

12. Was it necessary to raise the grade of the further extension of the road to keep the grade uniform? No.

13. In reducing the crown of the hill would you destroy any portion of a newly constructed road? No; the road beyond was in a state of nature.

14. *By Mr. Mitchell.*—Could the crown of the hill have been lowered at a small expense? Yes; it would merely have to be shovelled away.

15. *By Mr. Cox.*—I have tried to analyse the grade system wherever used, but always found it fail. If it came right it was only by accident.

16. *By Mr. Lamb.*—If the gradient had terminated one chain back from crown of the hill in the instance mentioned, instead of being carried on and the crown raised, would it have been an improvement to the road? Yes, and have entailed less expense.

17. *By Mr. Cox.*—Could you state any instance of depression being deepened? To a limited extent it occurs on the contract at Sheffield. According to the grade system it was, in my opinion, unnecessarily lowered,—sometimes 6 inches.

18. What were the reasons for this deepening? The Contractor stated it was deepened to keep grade uniform.

19. Was this in centre or at the termination of a piece of work? Near the termination.

20. Was much soil cut away before this depression was reached? No.

21. Then the road was not at a uniformly even grade? No, the roads never are under this system. [Mr. Dooley submitted rough plan of the Sheffield road. Appendix A.]

22. Then the length of grade in this instance has not been adapted to the ground? No; that is about as near a definition as I could give.

23. *By the Chairman.*—Do you know of any roads being spoiled through insufficient drainage or waterway? I consider all the roads I have seen constructed under this system insufficiently drained.

24. *By Mr. Brown.*—Do you know the Don Road leading to the Forth? Yes, I have seen the middle section, which is completed. The ends have had nothing done to them.

25. *By the Chairman.*—As regards drainage. Nothing whatever has been done to drain the ends by Public Works Department. The road was constructed by the Board of Works.

26. *By Mr. Riddoch.*—Had the Department expended money on this road? Yes, on the middle section, but not on the ends.

27. Was the defective drain part constructed by Department? No.

28. *By the Chairman.*—Can you specify any road constructed by Public Works Department spoiled by defective drainage? The road between Latrobe and Deloraine is insufficiently drained.

29. *By Mr. Cox.*—In what particular is the drainage defective? I have not observed any storm water drains, and the table drains are insufficient to carry off the storm water.

30. Does the storm water choke up the drains and lodge on road? I have not had an opportunity of judging.

31. Where the road is on a siding are the culverts sufficient to carry off the storm water? I have not observed, but if there are any they are the first I have ever heard of.

32. On a siding are there catch drains? I have observed very few instances. I believe there are a few.

33. *By the Chairman.*—What is the worst case you know of defective drainage? I cannot point out any special case.

34. *By Mr. Cox.*—What in your opinion is the effect of defective drainage? The wet collects on the road and soaks through and the metal sinks when traffic comes on it. In many instances the storm water could not be carried off by the drainage and would soak in as above stated.

35. *By the Minister of Lands.*—I am not aware that this road has as yet suffered on account of insufficient drainage. I have ridden over the road but had not leisure to observe whether any damage had been sustained. My observations on the system are based upon opinions formed during the construction of the road.

36. *By the Chairman.*—Do you know of any specific instance of any road other than this damaged by faulty drainage? No roads constructed under this Act as yet, but roads formerly constructed in Devon by Road Trustees. The present system is an improvement on the former system, but still insufficient.

37. *By Mr. Brown.*—Do you know of any bridge badly constructed by the Department? I have not seen any bridge constructed by the Department. There are none in my neighbourhood.

38. *By the Chairman.*—Do you think the work done under Boland's contract satisfactory? I have not seen the specifications, and cannot say whether or not they were carried out.

39. Was that contract expeditiously carried out? I cannot say, as I have not seen the specification.

40. *By Mr. Cox.*—Do you know how long the contractor took over the work? No.

41. *By Mr. Brown.*—Have you ever read the specifications of work carried out under "The Waste Lands Act?" No.

42. Have you seen the work performed under specifications? Yes; but, I don't consider the work satisfactorily done. The roads were badly laid out and the work defective. I visited the places and judged for myself.

43. Do you know of any particular road? Yes, one is a road leading off the Castra road, westward across the Gawler Creek; the other is the case at Sunnyside. In each case the grades were impracticable to work.

44. *By the Chairman.*—Was the West Castra Road laid out with the best regard to grade? No, it was not.

45. *By the Minister of Lands.*—Do you know how many years it is since the West Castra Road was opened? Fully 4 years, perhaps more.

46. *By the Chairman.*—Is there not a hill which might have been turned, and the grade thus reduced? I do not know the point referred to.

47. *By Mr. Brown.*—Is the error in the grade unavoidable? No, I think the road could have been better laid out. I think the Surveyor was Mr. Frith.

48. *By the Minister of Lands.*—Do you qualify your statement by allowing for the amount of money available for construction? No, the road would not have cost more if constructed differently.

49. *By Mr. Cox.*—In the road across Gawler Creek you say the grade was impracticable. Do you mean as to construction or to use? I mean for practical use, as it was too steep. When I saw it the road was cleared and laid out and a bridge constructed over the creek.

50. *By Mr. Mitchell.*—Do you consider Surveyors competent men to lay out roads? I think them the most competent men we have in the Colony.

51. *By the Minister of Lands.*—What was the grade of the road last referred to? From memory, I should say it was as much as 1 in 6.

52. *By Mr. Cox.*—Could that steep grade be avoided? Yes, if a Surveyor had been employed a better route could have been chosen.

53. *By Mr. Brown.*—Do you think that if the road was laid out before lots were taken up a better route could have been chosen? Yes, if the Surveyor is aware where the traffic is likely to flow, he could lay out a road so that each selector shall have easy access to it.

54. *By the Chairman.*—Do you know of any instance where the contract system has operated badly? I hardly comprehend the question. If you mean detrimental to the inhabitants, yes, as the contractor often went insolvent and left the place in debt. I hold that small contracts are advantageous to individuals and the Colony generally, as the farmers and selectors will unite and take up small contracts when they would refuse large ones. I do not know of any work being neglected or losses sustained by these small contractors.

55. *By Mr. Riddoch.*—Would not cost of supervision be increased by letting small contracts? No, the same supervisor could attend to half a dozen small contracts as well as he could to one large one.

JAMES FINCHAM, *Esq.*, examined.

56. Mr. Fincham, with regard to supervision and inspection of works carried on under Waste Lands Act, 1877, stated in reply to the Chairman:—In 1878 we had four District Inspectors, who had charge of surveys, preparation of contracts, measurements for certificates, and general supervision of works solely under Public Works Construction Act, 1877; and their districts extended over an area, roughly speaking, of one county each. Under them were employed a varying number of sub-inspectors, who had charge of about so much road-work as they could walk over in a day. These men were principally employed on works where much metalling was required. For works where less supervision was required and sub-inspection, local men with knowledge of road-making (as far as could be ascertained) were employed at a commission of  $2\frac{1}{2}$  per cent. on the several contract amounts. In addition to this there were clerks of works, who were as far as possible skilled mechanics, to superintend daily and hourly the construction of the large bridges, where skilled labour was employed. The supervision of the special work of 1877 was further assisted by the two permanent Inspectors of Roads, as far as their other duties would permit. The further supervision was assisted by the permanent Inspectors, who in travelling over the district were enabled to check the work of the temporary inspectors. Add to this my own personal inspection from time to time. I kept a check on the whole by progress reports, which they were required to furnish monthly.

57. *By Mr. Brown.*—These permanent inspectors had also duties to perform under the Waste Lands Act; also the supervision of all public buildings, repairs of telegraph lines, completion of works sanctioned under the Local Public Works Act, laying out roads under the Waste Lands Act, inspecting same during construction, and giving final certificates for same, as well as supervision of maintenance of roads from Hobart Town to Launceston, procuring information for preparing public works schemes; and latterly the Southern Inspector has been relieved of the charge of public buildings by appointment of a Clerk of Works. He has to assist as far as possible in looking after the general maintenance of the main roads of the Colony; and they have been assisted both in the supervision of buildings and of works prepared and carried out under the Waste Lands Act by inspectors and supervisors, paid by commission of  $2\frac{1}{2}$  per cent., as before stated.

58. *By the Chairman.*—Two men were totally unequal to perform, unaided, the duties required, principally, I think, on account of the great loss of time incurred in travelling very long journeys at a necessarily slow rate of speed. I am quite satisfied that either there must be an addition to the permanent staff until the arrears are got over, or else men must be employed temporarily as at present; I mean with regard to work under the Waste Lands Act, supervision of main roads maintenance, inspection of school buildings for Board of Education, and other public buildings, such as police stations, post and telegraph offices throughout the Colony. The cost of such temporary employment to be charged to the several votes under which temporary staff is required. I do not consider the temporary employment of officers satisfactory, as the class of men obtainable is inferior, and under any new scheme would not advise employment of temporary inspectors, as if they were appointed permanently the work would be better performed on account of the men taking more interest in their work if they could depend upon permanent employment for 2 or 3 years. I have no doubt that in the carrying out of any future public works scheme it would be advisable to employ a permanent staff, as there are many good men in the other Colonies who would accept employment if some degree of permanency were guaranteed, while the actual cost to the Colony would be about the same.

59. *By Mr. Brown.*—Upon whose recommendation were the 4 District Inspectors appointed? They were appointed by the Minister upon my own recommendation, and were supposed to have had special knowledge of road-making, preparation of specifications of contracts, &c.

60. By what were you guided in making recommendations? By testimonials, and enquiries as to competency.

61. Have these 4 Inspectors proved themselves competent? No, I cannot say they have. Two have proved competent, but only one retained, as the work does not require more.

62. As to those who proved incompetent, were others appointed? The work was shared between the remaining Inspectors assisted by local Sub-Inspectors.

63. Was there any reason to complain of incompetency or want of attention on the part of Sub-Inspectors? Yes; but I don't expect to find them as competent as the permanent Inspectors.

64. Have any been dismissed for above reasons? Yes, several.

65. *By the Chairman.*—The local Sub-Inspectors were employed when the works were not of sufficient importance to make the special appointment of Inspector advisable?

66. *By Mr. Cox.*—Has technical efficiency and good conduct been the guide to employment of Sub-Inspectors? Yes, invariably.

67. When the Inspectors were procuring information for Public Works schemes, were they instructed to make enquiries as to cost of specified work, or to find out where work was necessary? They were simply told to ascertain cost of certain specified work on specified localities.

68. *By the Chairman.*—Do the permanent Inspectors or District Inspectors submit any diaries or returns to show in what district they were inspecting from time to time? Nothing beyond the monthly progress reports of the works completed.

69. *By Mr. Mitchell.*—Do you find any difficulties in keeping contractors to the strict letter of their contracts, or of misunderstanding the specifications? I can't say that I have found contractors complain of not understanding the specifications, but have found the greatest difficulty in some cases in making contractors fully perform their contracts according to the specifications, and have had to send Inspectors, in some cases at great expense, to insist on the completion of work according to the terms of the specifications. The officers of the Public Works Department are always ready to give the fullest information to

tenderers and contractors. I have found contractors ready to take advantage of any loophole in the specifications, and think that the Department should be protected as much as possible.

70. *By Mr. Brown.*—Are you satisfied with the way in which the whole of the works under Public Works Act, 1877, have been carried out? If I speak of them as a whole, yes; but there are several portions I am dissatisfied with.

71. Do you think the Lachlan Bridge at New Norfolk satisfactory? No; but the contractor was not at fault, as the wings gave way on account of the mass of shingle brought down by the late flood, which became deposited in front of the opening of the bridge, thus dividing the river into two arms, which scoured the earth directly away from the back of the wings. Timber brought down by the flood also assisted the work of demolition, and turned the wings over in large masses into the river.

72. Have you no reason to suppose the lime or cement used was defective? No. I examined the fallen concrete blocks and found them composed of excellent lime concrete and as hard and solid as could be wished. I attribute the falling partly to the lime concrete where exposed to the water just above foundation level not having properly set. The bridge itself is secure. I do not propose to recommend that the wings be renewed, but that the earthen slopes be faced with stone.

73. *By the Chairman.*—Do you consider the wings a mistake? Yes, I do so now, though at the time of construction I approved of them.

74. *By Mr. Lamb.*—How do you account for the collection of the shingle? By the fact of the bridge being built at the only wide part of the river, and the shingle being thus able to collect in the centre of the river and form a bank.

75. *By Mr. Brown.*—What do you mean by saying the wings were a mistake? The wings are useless if the slopes had been pitched with stone, but otherwise they were decidedly useful.

76. *By Mr. Cox.*—If the concrete were not set, was it not unadvisable to put it in? The wings were cast in one mass between boards and gradually brought up to the required height and gradually dried and set.

77. *By Mr. Brown.*—Are the foundations of the bridge safe? Yes. The bridge is perfectly safe as a whole, and has not suffered from the flood.

78. *By Mr. Riddoch.*—Was the Lachlan Bridge built according to your original plan, or was there more than one plan? I made no plan previous to the passing of the scheme. The first scheme was submitted in 1877, and the amount of estimate was £1000.

79. What was the design of the £1000 bridge? I did not make any special design, but when Mr. O'Reilly's scheme was proposed in 1877 I went through the New Norfolk District with him. He called my attention to the necessity for a new bridge over the Lachlan. I examined the site and gave an estimate for the work, as I then intended to do it at the sum set down in the scheme. That estimate included a more extensive deviation through the property of the late Sir Robert Officer than is now adopted. On the preparation of the Public Works Scheme under Mr. Brown, at the end of 1877, so large a sum as was put down in the former scheme for the bridge was objected to; and I then said that by lessening the extent of deviation and reducing the work somewhat, but still not so as to impair the efficiency, I thought we might contrive to get it done for £600. The actual cost as shown in the last Public Works Report has been £896 7s. 8d.

80. Did you call for tenders on plans for a different bridge to the one now constructed? Yes; but it was to be of the same shape, but the wings were to be a little longer. The whole bridge was to be in ashlar. I do not remember what the lowest tender was, but it was considered excessive.

81. You consider the present wing-walls sufficiently extended? Yes, with the stone facing at the foot of the bank.

82. Were you aware that shortly after the bridge was built, and when there was a fresh in the creek, that there was a stream of water percolating behind the wing-walls and abutments of the bridge? Yes; such naturally would be the case, as the whole of the back walls were of stone, and there were stone fillings behind the abutments, and the whole was set in a coarse shingle through which water would find its way easily. I still consider that the damage was first caused by the diversion of the river in consequence of the formation of a large bank of shingle in front of the opening of the bridge, and that the destruction of the wings was completed by shocks from the timber brought down by the flood, and I think it very possible that the timber would lodge behind the wings or in the earth near the wings and form heavy levers, which would be acted on by the flood waters.

83. *By Mr. Brown.*—You said no reasonable extension of the wing-walls up the river would have prevented the destruction of wings? No.

84. *By Mr. Riddoch.*—You are aware that the creek has been higher during the last few years than it was during the late flood? I am not aware from my own knowledge. I had information as to the highest flood-level on the old bridge. As I considered the old bridge too low I raised the level of the new one. I had this information with reference to the flood-level before I proceeded with the construction of the new bridge.

85. Do you consider the foundations of the piers are injured? No; the corner of one pier was injured by the wrenching out of the brickwork of the wing when it was carried away; but the foundations are safe.

86. Was the modification of the plan the cause of the bridge not being so strongly built? No; I changed the bridge from a stone one into a brick and concrete one, because the price asked for stonework was excessive. The work was good and substantial throughout.

87. *By Mr. Cox.*—In altering the plan of the bridge, you feel satisfied that you did not so reduce the wing-walls as to weaken their efficiency? No; the wing-walls were thickened and consequently strengthened.

M. CRESSWELL, *Esq., C.E., examined.*

88. *By the Chairman.*—I have a general supervision of the whole of the works on the northern side of the Island. I have to inspect the works through the five northern counties, from Montague to George's Bay, including the whole of the Public Works Act, 1877, and Waste Lands Act Works. I have at present two sub-inspectors.

89. How many roads have you under your control? I have had at one time as many as 18 different contracts for roads and bridges to supervise, chiefly roads. Five were on the main road under different contractors; the others were on branch roads.

90. Where were the sub-inspectors at that time? One was at Emu Bay, one between Leven and Forth, one at Latrobe and Torquay, and one on the main road between Latrobe and the Forth. At the time I had these four sub-inspectors I had not the full charge I have now. Mr. Frith had charge of the eastern part, while I had charge of the western part. I was then a supernumerary. I have since been permanently appointed.

91. What were the qualifications of the sub-inspectors? I had two good men; the others I had to teach their work. Two I failed to make inspectors of, and they were ultimately dispensed with.

92. Were the best men available? I presume so. I had not the appointment of sub-inspectors.

93. Is there any departmental check upon the inspection done? I have weekly progress reports of all works; the length done, and the weekly expense of same, &c. on each contract. (Progress reports submitted.) I inspected them each once a week, sometimes oftener. I sent bi-monthly reports to the Engineer-in-Chief, with my report upon these progress reports. (Bi-monthly reports submitted.) I kept a diary. I can show where I was and what works I inspected on every and any day during the year. I have kept this during the 2½ years I have been in the service. With regard to the road from Latrobe to the Leven, I had great difficulty in getting the work completed. We had at last to retain £140 from the contractor and let him go, as there was no possibility of getting the work done, or even the bad work he had done removed.

94. Do you consider contract work satisfactory? Generally—yes; but with two exceptions. The Kindred Plains road and the road between the Forth and Scott's mill, on both of which I had a not very stringent sub-inspector.

95. You attribute the failure to inefficient inspection? Not so much as to the bankruptcy of the contractor and to his persistent attempts to scamp his work. In this case also the workmen asked me to guarantee their pay, but I always refused to do so. The contractor finally left largely in debt. Even had the Sub-Inspector been stricter he might not have been able to get the work done, but he did not keep me sufficiently informed of the progress of the contract. Contractor Ryan did his work very satisfactorily, though he was slow at it. I have had no complaints about him except on account of his slowness.

96. Does not failure arise from contractors having insufficient funds? I have known a contractor to borrow money to pay the deposit on his tender, and have to rely upon local storekeepers for his supplies and tools to enable him to carry on the work.

97. *By Mr. Brown.*—In passing work did you rely on report of Sub-Inspectors? Never. I have sometimes ordered a piece of work to be done over again, and passed it on the Sub-Inspector's report. I never passed a piece of metalling without personal inspection.

98. *By Mr. Mitchell.*—Do Sub-Inspectors always get a copy of specifications of contract work to be performed? Yes; I have even supplied them with my own copy if they had not one.

99. *By Mr. Brown.*—Do you experience any difficulty in explaining the specifications to contractors? No; the difficulty lies in getting them to stick to a line of work, but they generally understand the terms of contract.

100. *By Mr. Cox.*—Do the contractors ever complain of misunderstanding the specifications before commencing work? No, as in nearly every contract tenderers used to call upon me and have the specifications explained to them. Some men have tendered without having been on the spot to find out where stone and other necessities, &c. were to be had.

101. *By Mr. Mitchell.*—Do you approve of local farmers, &c. contracting for small contracts? Yes; I always prefer to get men in the neighbourhood; but as a rule the best men are not able to take contracts on account of want of funds.

102. Are contracts on a large or small scale best? I prefer men who have been accustomed to contracts, as they have an interest in getting their work well done; I mean men who know how to organise and economise their labour—skilled contractors.

103. You consider it better to let large contracts? Certainly. I should certainly object, if possible, letting 5 or 6 contracts for a length of road which could be let in one—as the expense of supervision would be larger; and there is also the chance of some of the contractors not being efficient men.

104. *By Mr. Cox.*—Don't you think the local contractor would do safer work by taking a small contract than a large one? Yes, and that is what is generally done, as the local man takes up piecework. Such a man would take a team and work at so much a load and work at his farm as well. We do not allow the sub-letting of contracts for sections of the roads; the sub-letting of contracts is provided against in specifications.



105. *By Mr. Brown.*—How many miles of road have been constructed under the Public Works Acts 1877, under your supervision? About 28 miles. And I am justified in stating that out of all these contracts, only two was I dissatisfied with; one of these embraced  $1\frac{1}{2}$  miles and the other 3 miles of road. These I had a great deal of trouble with; and with reference to one of them we had to turn off the contractors and retain the money due to them to finish the work ourselves. They placed a mixture of clay and gravel on the metal, and when ordered to take it off stated they could not do so as they could not obtain labourers to work for them. We accordingly retained £143, and will have the work done ourselves. On the Kindred Plains Road the work is not in a satisfactory state now, as the Road Trust, on statements being made by the selectors that the metal hurt their bullocks' feet, put about 3 inches of blinding on the road, and this has now worked up into a very muddy state; of course the contractor is not to blame for this.

106. *By the Minister of Lands.*—The Inspector of Kindred Plains Road was first reduced, and then his services were dispensed with. He said he had been in a mechanical engineer's office in England. I have heard that he was a fair clerk and draughtsman, but he had no head for supervising out-door work in my opinion.

107. Are you aware he made a claim for compensation? I believe that had reference to the Scottsdale work under Mr. Cunningham. I believe he claimed to be paid for some time he lost between his removal from Scottsdale and employment under my charge. I had a letter from him stating he had not received fair play from the Department, and asked me to give him a fair trial. I did so, but he had to be dispensed with. I would not have put him on work of an important nature.

108. *By Mr. Cox.*—Had you at that time sufficient Sub-Inspectors? No, I wanted another, as there was none at Kentishbury, though I never applied for one. There was no possibility of anything going wrong, as I never allowed work to be covered up until I had personally inspected it. I never made the contractors wait my convenience before the work was inspected, but arranged beforehand, so that their work would be ready for me to inspect at a certain time.

109. *By Mr. Brown.*—Were there any bridges constructed under your supervision? Yes, the Latrobe Bridge approach, the Cam Bridge, the bridge over the Seabrook, and one at Parson's Creek; also a bridge over the Don at Kentishbury. These are all completed.

110. Have you heard any complaints of the way in which these bridges were constructed? No, with the exception of the bridge over the Don at Kentishbury, where the selectors thought the bridge was too low. It has, however, hitherto carried off the flood water.

111. *By the Chairman.*—Was there enough waterway left at the Latrobe Bridge? Yes, though part of the approach was washed away, but this was not for want of sufficient waterway, as the water was running over the approach for a considerable time. (Mr. Cresswell explained construction of Sheffield Road, and filed plan of same, Appendix B.)

112. *By Mr. Brown.*—If it was stated that, in the construction of the road at Sheffield, soil was carted on to a rise, and the crown of the hill raised 18 inches, is that correct? No, it is not, the hill was cut away 12 inches.

113. If it was stated that a depression in the ground was deepened to continue the grade, is that correct? No, it is incorrect. My custom is to fix the grade before work is commenced. (Plan of grades, showing excavation, &c., submitted.) The minimum grade on a main road is 5 chains, on bye-roads 3 chains.

114. *By Mr. Cox.*—If it was stated that the length of grade is not adapted to the ground on the Sheffield Road is that correct? No, as the grade was set out in this case to suit the ground. The grade is fixed for certain lengths to prevent multiplicity of small grades.

115. If the nature of the ground will not allow of the 3 or 5 chain grade is any other grade substituted? As a general rule I adhere to the grade, even if a deep cutting is necessary, though this rule is not absolute. I would not spoil the appearance of a road for the sake of avoiding a cutting. I consider the grades above mentioned the shortest that should be allowed on roadway.

116. *By the Chairman.*—Was there not an unnecessary diversion of the Pine Road, Penguin Creek? No; the old road was impracticable, being up the bed of Fiddler's Creek, so the road was continued through Stone's property so as to join Mr. Hall's survey. The land was given to the Government by Mr. Stone, and no compensation paid.

117. Do you think the best roads are uniformly followed? We have to follow surveyed reserved roads many of which are impracticable. If we had to deviate the whole of the money available for construction would be absorbed in fencing and compensation, and so we have to make the bad roads as easy as possible.

118. Would it not be cheaper sometimes to deviate from the surveyed road? Wherever it is cheaper we do so. (The North Motton Road would have been better if carried round the hill instead of over it. The road was constructed before I joined the department.)

119. *By Mr. Cox.*—Do you know of any other such instances? There are some in which I would have modified the road. The zigzag road near Sulphur Creek for instance, on which I refused to spend money. I do nothing, however, without consulting the Engineer-in-Chief. I do not commence work unless I can see my way clear to complete it. I take the opinions of settlers, and report accordingly. I state if I think the vote is insufficient, and apply for an increased amount.

120. In making deviations are your recommendations invariably followed? Not invariably, as often the settlers demur, and I have to meet them and consult. I try as far as possible to accommodate people. I am not compelled to adhere to any plan, if I refuse to become responsible for the proper completion of the work.

121. *By the Chairman.*—Is there sufficient drainage and waterway allowed on roads constructed under your control? I have not had any culverts carried away this winter. With reference to side drains I find that carters always in going down hill run one wheel in the drain and use it as a break.

122. *By Mr. Brown.*—Could that be prevented? Only by a law enabling us to prosecute the drivers.

123. *By Mr. Riddoch.*—Is the drainage on Deloraine and Latrobe road sufficient? On Boland's contract, the only one I have had anything to do with, it is sufficient, as we put in twelve extra culverts beyond what were specified in the plans, and enlarged others.

124. Are the table and catch-drains sufficient? Yes; they are now, but were not on the original specification.

125. *By the Chairman.*—Would it not be better to have steam-rollers either attached to or detached from the steam stone-crushers? Yes; it would be a saving of both metal and labour, as it would keep the metalling more compact until set.

126. *By Mr. Cox.*—Do you make contractors maintain the road after completion? Yes; we do now for a period of three months, which I consider sufficient.

127. *By the Chairman.*—Is there any other suggestion you can make for the improvement of plant used? I have suggested the necessity of steam-rollers. We considered wheels under the stone-crushers, but found there would be a difficulty in drawing the crushers when so fitted, and have abandoned the idea. We are now considering the advisability of having rollers under the traction engines.

#### MR. JOHN HELMER *examined.*

128. *By the Chairman.*—What is your position with respect to the Public Works Department, and where have you been employed? I have been Inspector of Roads on the permanent staff since 1877. Previous to that I was contracting. I held a Government appointment as supervisor of works at Table Cape for 12 months in 1868-9. Since that I constructed the Sorell Causeway. Prior to 1868 I was engaged as a builder and road-constructor at Ringarooma. I made the road to Scottsdale. I have not served my articles as a civil engineer or served out of the Colony.

129. What is the extent of your charge? The southern side of the Island, as far as Southport on the coast, and up as far as New Norfolk; all the main lines of road in the southern part of the Colony.

130. How many miles of road have you to inspect? About 500 miles.

131. *By Mr. Mitchell.*—To what do you attribute the washing away of the wings of the Lachlan bridge? Dr. Moore's bridge above was washed away, and the timber from it was brought down and struck against the wing-walls. The deposit of gravel also in the middle of the river caused two streams to be formed, which swept away the abutments. The foundation of the bridge is uninjured. The part carried away fell over in a solid mass, having given way at the water level. The plan of having the wing-walls of concrete was a new experiment.

132. *By the Chairman.*—What pressure was put upon the concrete blocks in constructing the wing-walls? None. The concrete was put down in 6-inch layers and rammed, but not pressed down.

133. *By Mr. Mitchell.*—Has the concrete been affected? No; it tumbled over in a body into the stream.

134. Did you inspect the material before it was used? Yes, I inspected it, and there was a sub-inspector constantly employed.

135. Was the concrete properly dry? It should have been, as the bridge had been built 12 months. This is the first bridge built upon this system.

136. What will be the cost of repairing the bridge? £40 or £50 will put it in good order. It was thus built for the sake of cheapness. The first scheme was for stone wing-walls, but the tenders were so high that a reduced scheme had to be acted upon.

137. *By the Chairman.*—Are you aware of any faults in the system of constructing roads, bridges, &c. which might be remedied? I think the metalled roads constructed under the last Act were hardly substantial enough for heavy traffic. The rubble, I think, should not be less than 8 inches thick, and the top metal 5 inches, making 13 inches altogether.

138. *By Mr. Mitchell.*—Do you know the road that Spikenail complains of? Yes, it is under my inspection.

139. How is it that this road has been constructed so as to go over the hills instead of round them? The old road was so constructed, but the new road has been taken round the hills, and the grade thus made easier.

140. What is the difference in the distance between the route you adopted and the route Spikenail suggests? The distance is nine chains greater than it would be if the road were made as Spikenail suggests.

141. Do you account for this road being in a bad state on account of insufficient metalling? The road is not in a bad state excepting a piece of about eight or nine chains in length under a hill, and exposed to the soakage from the rising ground. This is cut up into ruts.

142. *By the Chairman.*—Would it be an improvement in your opinion if there were steam-rollers for these roads? Yes, no doubt it would. I have spoken to the Engineer-in-Chief about having all new roads rolled either by steam or horse rollers.

143. Do you keep a diary? Yes, when I am out in the bush. It shows each day's travelling, and what work I am inspecting. I take particulars of work completed.

144. Do you submit any copy of your diary with your travelling bills? I submit details of dates and localities, but not distances.

145. Can you say to what extent you have inspected works during the last twelve months? I spent generally close upon twenty days a month out of doors, leaving six or seven days spent in the office in writing out reports, specifications, &c.

146. Is not the main road from Hobart Town to Launceston in a bad state? No, except at the Corners, where the steam-crusher is at work, and repairs are going on.

147. Are there no culverts with holes in them on the road? The culverts are now getting old, having been built 20 or 30 years, and keep breaking in. They are repaired as required.

148. Do you know that £500 was spent on the Ridgeway Road? This was not expended under my charge.

149. How have you found the contracts for Public Works carried out? I have had a good deal of trouble with some of the contractors, as several of them were new to the work; others I had no trouble with.

150. Have many contractors given you much trouble? Yes, a good many.

151. Have any been remarkable in this respect? Only one or two, but they were not very large contracts; chiefly down the Huon way. The contractors for these works carried out their contracts, but gave me a good deal of trouble in getting the work properly completed.

152. Has there been any delay or scamping of work? Scarcely any have completed their work exactly within the contract time. They would scamp their work if allowed to do so.

153. Have you found the large or small contracts succeed best? The large contracts as a general rule.

154. Do you know of any other instance where work has failed after construction besides the Lachlan Bridge? Yes, the Russell's Falls Bridge, which has been damaged by timber brought down by the floods. This I attribute partly to faulty construction.

155. Were any precautions taken with the Lachlan Bridge to obtain highest flood level? I had nothing to do with the commencement of the bridge, but I believe such precautions were taken.

156. What were the faults of construction in the Russell's Falls Bridge? The piers should have been built in cement, but were only built in lime. This bridge has not yet been taken over by the government, but is still in the contractor's hands,—the specifications not having been complied with as to cement being used in construction.

157. Have you met with any other instance of faulty construction? No, not that I am aware of.

158. Have you any Sub-Inspectors under you? No, not at present. I have had some.

159. What check had you on their inspection? They furnished fortnightly progress reports of work completed, but nothing showing where they were from day to day. They generally were stationed on one line of road at a time. Some of these Sub-Inspectors were good men, others were not to be depended upon.

160. Were they always, as far as could be ascertained, the best men that could be got? That would be a difficult matter to decide. The best men available were not bad as a rule, as there is only one man who led me astray, and whom I have to complain of. I think the others all tried to do their work as well as possible, though some had to learn their work, not having been accustomed to inspect road-making. One man deceived me with reference to the Russell's Falls Bridge, as he allowed lime to be used instead of cement.

161. *By the Chairman.*—In the instances of the men who failed, were there better men to be had? Perhaps there were better men to be had. I am not prepared to say so. We had to take the best men we could get.

162. *By Mr. Mitchell.*—Had the Sub-Inspectors a copy of the specifications and plans? Yes.

163. *By the Chairman.*—Could they all understand the specifications? Yes; but if any difficulty arose they referred it to me for explanation.

164. *By the Minister of Lands.*—What is your estimate of the cost of repairing the Russell's Falls Bridge? About £60 I reckon it.

165. Is there a portion of the Main Road to the Huon that is very much cut up which was not constructed under your supervision? Yes.

166. How long has that road been constructed? About 2 years. It was constructed under Mr. Randall's supervision.

167. Was anything done to maintain this road during that period? Nothing whatever.

168. Where is the part of the road referred to? Going into Castle Forbes Bay.

169. *By the Chairman.*—Do you know of any instances where roads have followed the old Surveyor's track over the hills instead of going round them? No, I do not know of any such instances.

170. *By the Minister of Lands.*—With regard to the remaining portion of the road from the Franklin to Honeywood, how has it been constructed? Very well.

171. Have all the contracts been taken over by the Government? No, there is one portion still in the contractor's hands.

MR. JOHN THURLEY *examined.*

172. *By Mr. Brown.*—Were you the contractor for the Lachlan Bridge? Yes.

173. Do you know that a portion of the bridge has been washed away by the late flood? Yes.

174. What portion of the bridge was washed away? Both wing-walls.

175. To what cause do you attribute the damage? One of the wing-walls was struck by a log brought down by the flood; I saw where the log struck it and noticed it was cracked. A mass of gravel collected in front of the opening of the bridge and threw the water in two streams on to the wing-walls.

176. Of what did the foundations consist? Of concrete.

177. Had the shortness of the wing-walls anything to do with their destruction? No, I believe if the watercourse had kept clear the wing-walls would be there now.

178. Do you attribute the washing away of the wing-walls solely to the accumulation of gravel in the river? Yes, and to the effect of the timber brought down by the flood striking against them.

179. What effect has the destruction of the wing-walls had upon the piers of the bridge? It affected them a little. As the wall fell it brought out some of the bricks at the corner of one of the piers. This has since been made good. I have seen the bridge since the walls were washed away and I consider the piers quite safe. In the event of a flood I am afraid the foundations would not be safe without wing-walls.

180. During the construction of the bridge was there any dispute between you and the Department? No, there was no objection taken to or fault found with any of the materials used with the exception of the two top rails, which were condemned and had to be replaced by others. My work was approved of by the Inspector, and passed by the Engineer-in-Chief. The final examination was made by Mr. Helmer, who certified to the work being done according to the specifications.

181. *By the Chairman.*—How were the wing-walls constructed? In one mass of 9 inch layers. No pressure beyond their own weight was put upon them.

182. What were the foundations composed of? Of concrete built down 5 or 6 feet below the level of the river bed. The water was very low when they were put in.

183. Were you informed of the highest previous flood level before the bridge was built? I was aware of the highest previous flood level. I have seen higher floods than that which damaged the bridge.

184. *By Mr. Riddoch.*—What was the amount of your tender for the bridge? I believe £759.

185. You tendered for another bridge on the same site? That was merely for the piers and forcing without the platform, as the plans were not then finished. The piers in this case were to be built of stone, and also I believe the wing-walls.

186. Were the wing-walls longer in the first plan? I could not say as I have forgotten.

187. You are aware that the water got behind the wing-walls when there was only a moderate fresh in the river? That was a soakage through the forcing. I know it got behind the piers and wing-walls. The forcing was gravel and the water would naturally soak through. The wing-walls would have to be carried a long way to stop the soakage, a distance perhaps of 40 feet further.

188. *By the Chairman.*—Have you had much experience in constructing works for the Department? I have not as regards bridges, but have done a lot in stone and brick work, but not under the Department. This is the only contract I have had in bridges under the Department. In buildings I have had one at the Asylum. Also a sub-contract at the New Norfolk Bridge. I have had no contracts on roads.

189. *By Mr. Brown.*—Did you hear anyone say the wing-walls in the Lachlan Bridge were not carried far enough? Not that I am aware of.

190. *By Mr. Cox.*—Have you ever done this kind of concrete work before? No, this is the first time.

191. Was the concrete set when the flood came? The longer concrete stands the harder it gets. It had stood 18 months before the flood.

192. *By Mr. Riddoch.*—When was the bridge taken off your hands? 12 months ago last August.

193. *By Mr. Cox.*—Then actually these wing-walls were finished 18 months before they were carried away? As far as I can tell.

194. Do you think the freshness of the concrete caused it to give way? No, I believe it was the weight of water that forced it out. The concrete seemed to have thoroughly set.

195. Was it chipped away by timber, or did it fall in one mass? It fell in one mass.

196. *By Mr. Lamb.*—Would that be caused by faulty foundation? No, the foundation was of the same material. The wall broke off about the foundation.

197. *By Mr. Mitchell.*—What in your opinion was the cause of the wall falling? The weight of the water. It is hard to say whether the result would not have been the same if the walls had been built of stone. The foundation was not affected.

198. *By Mr. Cox.*—Is what is left of the wall cracked? There is none left. The foundation remains but is all covered up with soil and stones.

199. *By the Chairman.*—When the flood came was the concrete set? I think that concrete is hardly ever done setting, as the longer it stands the closer it grows together. It was not owing to the freshness of the concrete that the walls were carried away.

200. *By Mr. Lamb.*—Do you consider the opening of the bridge sufficient? Yes, if it could have been kept clear.

201. *By Mr. Brown.*—What material was used in the forcing? Gravel and clay from the bank of the river.

202. How much was taken out of the bank? Perhaps 500 cubic yards.

203. Had the removal of the gravel anything to do with altering the course of the river? Not that I know of. It widened the stream but did not alter the set of the current.

204. *By Mr. Cox.*—Would it form a sort of eddying stream? The current caused the deposit of gravel just above the bridge, but the gravel was brought from some distance further up the stream than the excavation.

205. *By Mr. Riddoch.*—Did the widening of the stream by the excavation cause a swirl and assist the deposit of gravel? It is possible.

206. You said the forcing behind the wing-walls was composed of stone mixed with gravel, &c. from the river bank? Yes.

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MR. GEORGE TODD *examined.*

207. *By the Chairman.*—Are you an Inspector of Works under the Public Works Department? I have been.

208. What charge had you? I had charge of the bridge over the Plenty, the Lachlan Bridge, and the Derwent Bridge at New Norfolk.

209. What was your previous experience? I have been employed all my life on similar works. I was apprenticed to a joiner. I have been on public works such as road and bridge making. I have been employed by contractors in England; also on railways.

210. You were Inspector of the Lachlan Bridge? Yes.

211. To what do you attribute the carrying away of the wing-walls? To the deposit of gravel in the centre of the river. Not to any fault in construction. Even after the destruction of the wing-walls I could see no fault. These were of concrete, which was properly set, as there have been two floods over them since they fell, and they are still quite firm and solid.

212. Do you think the walls were long enough? I think it would have been better if they had been longer.

213. Was the backing sufficient? Yes.

214. Would it have been better if there had been no wing-walls but the bank faced with stone? Had this been done it would be virtually a wing-wall. A dry stone wall would never have stood.

215. *By Mr. Brown.*—What effect has the destruction of the wing-walls had on the piers? In one pier it tore out some of the brickwork, but I do not think it has otherwise injured them.

216. Has the gravel frequently accumulated near the side of the bridge as in this case? I do not know, but I have been told that the deposit was much larger this time than ever before.

217. *By Mr. Riddoch.*—Do you think the widening of the creek above the bridge, in obtaining the material for the forcing, had a tendency to increase the accumulation of gravel? No doubt it had, but the material was taken out from a point about 18 yards above the bridge to a point 70 yards up stream.

218. *By Mr. Cox.*—How much material was taken out? From 300 to 400 yards. I think this excavation would have a tendency to form a swirl in the stream.

219. *By the Chairman.*—Before the bridge was built was any enquiry as to the highest previous flood-level made? I could not say.

220. *By Mr. Riddoch.*—Is it within your knowledge that the river has ever been higher than when the bridge was injured? No.

221. Have you examined the foundations of the bridge? Yes. I do not think they are injured.

222. *By Mr. Cox.*—Have you examined the foundations of the concrete walls? No; I could not do so, as they are covered over with large stones which have been thrown down to form a temporary break-water since the wing-walls were carried away.

223. Are you of opinion that the concrete was thoroughly set? Yes.

224. *By Mr. Riddoch.*—Do you think the present provision to throw the water off the piers sufficient? No; it is only temporary.

225. What would be the cost of stone piers? That would depend on the kind of stone used. If the cheapest were used it would cost £170.

226. *By Mr. Brown.*—Would stone walls be necessary to protect the bridge in future? No; I think it would be better to use timber in future,—that is, to have the wing-walls piled and planked. This could be done cheaper.

227. Would there have been less damage to the bridge if this material had not been excavated from the bank of the river above the bridge? The danger was slightly increased by the excavation. I did not disapprove of the contractor's action in taking the material from the river bank, but did not refer it to the Engineer-in-Chief or Mr. Helmer, though both gentlemen saw it done and did not make any objection.

228. *By the Chairman.*—Could the material have been obtained from any point below the bridge? Not so conveniently.

229. *By Mr. Riddoch.*—Did any one call your attention to the possibility of the excavation endangering the bridge? I do not remember.

230. *By the Chairman.*—Have you been employed by the Department in constructing roads? Yes.

231. Have you seen any faults in the drainage, metalling, &c. on these roads? No; I think they have all been constructed as carefully as possible. I do not know of any faults in the system at present pursued.

232. *By Mr. Lamb.*—What in your opinion caused the water to get behind the forcing of the Lachlan bridge? A log brought down by the flood struck the wing-wall and cracked it, and allowed the water to work in.

233. Was it caused by any fault in the formation? No.

234. *By the Chairman.*—Were any directions given about the construction of the wing-walls beyond those contained in the specifications? No.

234.\* *By Mr. Riddoch.*—Did you call the Engineer-in-Chief's attention to the fact that when there was only a very moderate fresh in the river the water found its way behind the wing-walls? Yes; either his or Mr. Helmer's attention was called to the fact; and whoever it was that was spoken to said the wing-walls were so well backed in with stones that there was no danger.

235. Do you think the percolation of water for a length of time would injure the bridge? No.

236. Did the old bridge still standing by the new one suffer any damage? No; as the new one protected it by sending the timber down the river end on.

237. *By the Chairman.*—Has your connection with the Department ceased? Yes. When the New Norfolk bridge was finished there was no further employment for me.

238. *By Mr. Riddoch.*—Was the other wing-wall injured by the timber? It might have been, but I could not say. The fact of one wing-wall falling would necessarily weaken the other.

#### MR. B. R. DYER examined.

239. *By Mr. Brown.*—Were you the contractor for the Russell's Falls bridge? Yes.

240. When was the bridge finished? It has been open for traffic four or five months.

241. Are you aware in what state the bridge now is? A fortnight since I found the piers had been carried away, so I took steps to have temporary support put under the bridge to prevent further damage.

242. To what cause do you attribute the washing away of the piers? To the severe floods, by which a large log was brought down, and which struck the piers.

243. How were the piers built? Of large stones, some of which were 4 ft.  $\times$  3 ft. and 16 inches thick. They were built with ordinary mortar and cement, being bedded in cement and backed with lime mortar, and afterwards pointed with cement.

244. Are you aware that the stones should have been bedded in cement according to the specifications? Yes.

245. Had you to find all the materials? Yes.

246. What quantity of cement did you purchase? Two casks from Moir, but only  $1\frac{1}{2}$  were used.

247. How many feet of building are there in the two stone piers? About 26 to 30 cubic yards.

248. Do you know that according to the specifications all the stones should have been bedded in cement? Yes; and I was responsible for the carrying out of the work according to the specifications, and I believe it was so done with the exception of the backing, for which lime mortar was used. This was done with the consent of the Sub-Inspector, Mr. Edwards, who inspected the stone-work from the commencement until its completion.

249. Do you state positively that Mr. Edwards authorised the use of lime mortar instead of cement? He sanctioned it.

250. Was the question as to whether lime mortar should be substituted referred to the Engineer-in-Chief, or to Mr. Helmer? Not that I am aware of, I had no conversation with the latter on the subject.

251. From your experience of buildings generally, do you think that stone work which has to be exposed to the action of water would stand if it were not bedded in cement? Yes, if it were differently built—as, for instance if it were plugged and feathered.

252. Why did you wish to be relieved of the condition of the specifications relating to the stone to be used? Not for the sake of economy, as I had to get cubed stone prepared for the purpose. The alteration from rubble stone to cube stone was made, in our opinion, for the sake of better construction. I had given up the charge of the bridge when the damage occurred, but was not relieved of the responsibility of maintenance as I had to maintain the bridge for 3 months from the date of completion.

253. Had you any conversation with Mr. Helmer or the Engineer-in-Chief with regard to the piers? The Engineer-in-Chief inspected the work on one occasion before the bridge was completed, and expressed himself satisfied with the manner in which it was constructed.

254. Have you been called upon by the Department to make good the damage to the bridge? Not beyond the temporary repairs which Mr. Helmer required me to do.

255. Were logs brought down by the flood and dashed against the piers? Yes.

256. Were you on the spot at the time of the flood? No; but I received information to that effect from Mr. John Ransley, junr., and from Mr. Shoobridge's miller, who stood on the bridge and saw the timber strike the piers.

257. *By the Chairman.*—What lime did you use? Bridgewater lime.

258. What were the foundations set in? They were composed of large rubble stones, taken from the bed of the river.

259. Previous to the construction of the bridge, had there been any enquiries made as to the height of the highest previous flood level? I believe Mr. Fincham had ascertained it. It was about level with the top of the stone-work of the piers. The foundation of the piers went down about 3 feet below the river bed—in fact we got on to the bed rock.

260. Did you observe any defect in the specifications? I did drop across some defects, but had them remedied. I accepted the plans and specifications.

261. How often did Mr. Edwards inspect the work? Every day, with a few exceptions. I should say he was qualified to judge that the work was being properly carried out, as he had the plans and specifications to guide him.

262. Did he seem to understand the specifications? Yes, though we differed once on a reading of the specifications. I had to give way however. One case in which we differed was about the headers on the abutments, which were according to the specifications to be at every 4 feet. We differed as to whether the distance was to be measured from the inside or outside. I maintained the former, but the Inspector differed, and I had to give way.

263. Was there any other instance? Not of any consequence that I can call to mind, except that he complained of the sand I used for the mortar, but it was the best available.

264. If more waterway had been allowed would there have been less danger to the piers? More waterway could not have been allowed without additional expense.

265. *By Mr. Cox.*—Had the bridge rested on piles would not that have increased the waterway? Yes, but piles could not be driven in the river.

266. Could you have fastened piles on to bed stones? Not without forming a dam above to keep the water back while the work was proceeding, and that would have been very costly, as on account of the pressure of water a very strong dam would have been required.

267. *By Mr. Brown.*—Did the Engineer-in-Chief complain of the amount of the river bank taken away to increase the waterway not being sufficient? I had no conversation with the Engineer-in-Chief on the subject.

268. *By the Chairman.*—How often did he inspect the work? Twice, and Mr. Helmer inspected it about six or seven times.

269. Have you had experience in constructing other bridges or roads for the Department? I constructed the platform of the Dunrobin Bridge, but only about 18 or 19 chains of road.

270. Have you often had to complain of the specifications? They are very strict, and I do not feel inclined to tender for Public Works again unless I can get one clause removed, otherwise the specifications are fairly workable by any honest man. The clause referred to is Clause 7, where it is stated that any damage sustained by the works or materials from the inclemency of the season during the progress of the works, or at any time within three months after completion, shall be made good by the contractor at his own expense. This is the first time it has been necessary to take action under the clause.

271. *By Mr. Cox.*—When you arranged to substitute cubed stone for rubble stone, why did you not continue to use cement bedding? In some cases the interstices between the stone courses were so narrow that cement bedding was not needed. All the joints of the stone-work were raked out after their completion and cemented. The cubed stone was merely used as a casing, and filled in with rubble and lime mortar. I am not sure that in this case cement could have set in time to resist the water.

272. Would not the least disturbance of these stones admit the water? Yes, but it would take great force to disturb the stones.

273. Were you not bound to use cement with the interior rubble as well as in the casing wall? Yes, but I was guided by the opinion of the Inspector. Had he insisted on it I should have used cement. I thought it was for the better at the time to use lime mortar.

274. Do you know if this change was ever reported to the Engineer-in-Chief or to the Inspector? I do not know.

275. Do you know if Mr. Helmer was aware of the change when he gave you your certificate? He was not unless Mr. Edwards told him.

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MR. JOHN LLOYD *examined.*

276. *By Mr. Brown.*—Do you reside at the Huon? Yes.

277. What is your occupation? Farmer and fruit grower.

278. Have you had any experience in the construction of roads? I have been connected with the Huon Road Trust for many years, both as Chairman and General Manager.

279. Had you general supervision of works on this Road Trust? Yes.

280. Do you know anything of the works carried out in your district under the Public Works Department? Yes. I have seen that portion of the road recently made by the Department, extending from the lower part of Franklin to Shipwright's Point.

281. How has this work been carried out? On the whole the work has been well constructed, and is a benefit to the district, though there are portions of the road in a very indifferent state.

282. In how many different sections has the road been constructed? I do not know, but the portions I referred to as being in a bad state were constructed by Brennan and Byrne, also a part by Brennan alone, besides other parts. The principal objection I have to Brennan and Byrne's work is the softness of the metal used. This is a mud stone which on being exposed to the weather dissolves. There was ironstone available in the neighbourhood.

283. *By Mr. Riddoch.*—Do you know if this stone used was in accordance with the specifications? I never saw the specifications. I would mention that on one portion of this road the route had been diverted from the surveyed line, the road going round the rises instead of over them, but this I approved of. I have frequently endeavoured to have the road constructed by my road trust in the same way but was always out-voted.

284. *By Mr. Brown.*—Do you know who inspected the work? The Government Inspectors, I believe, but I can't say which portion of the road each inspected. I think an unnecessary number of Sub-Inspectors were employed.

285. Is the metal used the only thing you object to in this road, or is the drainage defective? I think the road sufficiently drained. The chief objection is with regard to the soft metal, as the wheels of passing vehicles go through it down to the forcing.

286. Have any bridges been constructed in your District by the Department? The bridge at Castle Forbes Bay. This was too narrow in my opinion, but strongly built, and with sufficient waterway.

287. *By Mr. Riddoch.*—Was the attention of the Inspector called to the bad metal used? I am not able to say.

288. Has the bridge you speak of suffered by the floods? No.

289. *By the Chairman.*—Did you see the letters signed "Spikenail" and "Sledgehammer"? Yes; but I cannot say that I agree to the former's objection to the road going round the hills instead of over them. I cannot recall to mind all the points mentioned in the letters, but I believe that "Spikenail" was right in condemning the metal previously referred to. The Inspector used to be frequently down but I have not seen him lately. The stone appeared to be a sort of bluestone, but was dissolved on exposure to the weather. I would not have allowed the use of this stone on roads in my road trust.

290. Was the Engineer-in-Chief down while the work was going on? I never saw him there.

291. In your opinion was the work properly inspected? I thought there were more Sub-Inspectors than necessary, but whether the work was properly inspected by the Head Officer, I doubt. I could not say whether the Sub-Inspectors were inefficient, but consider they ought not to have passed the metal used.

292. *By Mr. Lamb.*—Was the road ever macadamised before? Yes, with ironstone.

293. Had this blue metal you refer to ever been used before? Yes, on my road trust on a bye-road.

294. *By Mr. Riddoch.*—Was it used for any length of road? For about half a mile.

295. Was it stone likely to deceive any one not possessed of scientific knowledge? Yes.

296. *By Mr. Lamb.*—Did it crop out of the ground where found? Yes, and the part exposed to the weather would crumble away.

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MR. FINCHAM *further examined.*

297. *By the Chairman.*—Do you keep any register of tenders? Yes.

298. In the case of contracts is it the practice of the office to accept the lowest? As a rule; except either on the tenderer being from my own personal knowledge or previous experience unfit for the work and incapable of carrying it out in a satisfactory manner, or because the tendered price is palpably too low for the proper and honest performance of the works. There are very few instances in which the lowest tender has not been accepted.

299. Where all the tenders have proved too high is it the practice of the office to call upon all the tenderers to reconsider their tenders? As a rule fresh tenders are invited by public advertisement, but in cases of urgency the competition has been confined to all the men tendering under the original advertisement.

300. This is without exception? Yes, as far as I am aware.

301. What was the case with the Barrington and Hamilton piece of road; was one of the tenderers addressed and not the others? No, the work is now being re-advertised publicly. I called upon Mr. Coventry, as the lowest tenderer, to reconsider his tender as his was far above the departmental estimates. The other tenderers being so much higher were not asked to reconsider their tenders. I recommended that Mr. Coventry should be called upon. I do not go beyond recommendation.

302. Then as to your reply to the last question how do you explain your answer "No"? I had in my mind a man who had tendered privately about the time that the tenders came in.



303. Did you ask that man to reconsider his tender? No, he was informed that no reply to his private tender could be given until the matter was decided as far as the original tenderers were concerned.

304. In the register of tenders are there entries of these subsequent communications? I can't say; but communications to parties tendering are, I think, invariably noted upon the schedules of tenders prepared for submission to the Minister with my recommendation.

305. *By Mr. Cox.*—Did you ask all the other tenderers, in the above case, to reconsider their tenders or only Mr. Coventry? Only Mr. Coventry.

306. What is the usual course adopted? To ask all the tenderers to reconsider their tenders, but when the lowest tender is above official estimates the tenderer is asked to reconsider his tender. This is practically as a reward to the lowest tenderer; and I speak most decidedly when I say that no modification is made in the original specifications where fresh tenders are considered necessary without a reference to the whole of the tenderers, in that case fresh public tenders are not invited.

307. I suppose you always have a deposit with the tender? I may say invariably, as I only recollect one exception, and that exception was made to induce working men, who might have a difficulty in finding the necessary deposit, to compete for small amounts of work.

308. *By the Chairman.*—Was any security taken when you took no deposit? No, the contracts were not of sufficient importance.

309. *By Mr. Riddoch.*—Was this contract accepted? Yes.

310. *By Mr. Cox.*—If the tenderer has paid his deposit he makes the tender at his own risk? Yes.

311. Then why not accept his tender even if it is too low or make him forfeit his deposit? Because in almost all cases that would be to invite the failure of the contractor, and would entail much additional cost to the Government in the end. No tenders are invited until careful detailed estimates of the cost of the works have been prepared by the Department, and by these estimates the tenders are checked as they come in.

312. What do you consider obviously too low? The cases in which I would have to recommend the rejection of the lowest tender on account of its lowness are so very exceptional indeed that I am unable to fix what percentage I have adopted, but I should say generally that I would not set a tender on one side if it were within about 25 per cent. of the Departmental estimate, unless I were satisfied after enquiry that the tenderer could really afford to carry out the contract even at a loss.

313. *By the Chairman.*—Have any contractors recently gone bankrupt while carrying out contracts? Yes, in one or two cases, not more.

314. Did the contractor on the Deloraine and Latrobe road break down? Yes, also Messrs. Dooley and Sweeney, I believe, though I do not know if they were bankrupt. They failed to complete their contract satisfactorily, and a sum of money was retained from them to make good the bad work. They have also on two or three occasions refused to carry out works after their tenders had been accepted, and have thus put the Department to considerable expense and trouble.

315. *By Mr. Cox.*—Would you reject the lowest tender simply on account of its lowness? I should reject it if it were palpably too low for the value of the work, but I would point out to the Committee the precautions I take in the forms of tender for the protection both of the Government and of the contractor, by requiring the latter to furnish the details of prices upon which his tender is based, and these prices are occasionally so utterly absurd as to show that the tenderer has jumped at a lump sum without any reference to the real value of the work. The bulk of our contractors on the smaller road works have as a rule nothing to lose, and the Government would consequently be the sufferers if a hard and fast rule were laid down that the lowest tender should in all cases be accepted.

316. *By the Chairman.*—Are these estimated prices arrived at after inspection of the work? They are furnished by the inspectors from notes taken or observations made as they lay out the roads and prepare particulars for the several contracts.

317. *By Mr. Cox.*—318. If the lowest tenderer claimed that his tender should be accepted, would you reject it if he was not otherwise than from the lowness of his tender an unfit tenderer? I cannot say, but as being responsible for the proper execution of the work tendered for I should certainly decline to recommend him if his tender were very much below what I considered the value of the work. I can only remember two cases in which the lowest tender was not accepted. Of course the deposits are intended to secure the *bona fides* of the tenderer.

318. *By the Chairman.*—What were the two cases you remember? The tender for the Swansea jetty was one. This was tendered for at £1400, and the other I do not remember, but can look up.

319. *By Mr. Cox.*—Do you require a preliminary deposit and have the full amount afterwards made up? No, the full amount of deposit is put in with the tender. The amount varies from £2 to £3 on small contracts, and from £5 to £10 and upwards on larger and more important work. In one case, as in that of Mr. Clark, on the Elizabeth Town road, the deposit was, I think, £50.

320. *By the Chairman.*—Does the deposit bear any proportion to the value of the work? Not generally. As a rule my object has been to keep the deposits as low as I possibly could, in order not to debar poor contractors from competing for the several works.

321. *By Mr. Cox.*—Then the practice is not that of demanding a preliminary deposit and the payment of the full amount of a certain per-centage on the signing of the tender? No, but in numberless cases I believe the contractors had a difficulty in raising the preliminary deposit, and a larger deposit, if required on acceptance of their contract, would be the means of keeping many a good working man out of these small contracts.

322. *By the Chairman.*—Is it your object to encourage small contractors? Yes.

323. But does not this practice have the reverse effect, inasmuch as the deposit on a small contract is a large percentage on the amount of the contract, while the deposit in a large contract is a small percentage? Practically it does not discourage small contractors.

324. *By Mr. Cox.*—Does not this encourage speculative contracts for large works? No, as the deposit is not in any way a security for the completion of the work.

325. *By the Chairman.*—What is the system of payment for works as the contractors complete the work? They are paid as soon as they have done a certain amount of work. No work is accepted as completed till the contract is taken off the contractor's hands.

326. Are payments made before the completion of the work? Yes, by instalments.

327. Is that an old and invariable rule as far as the department is concerned? Yes, at least since I have been in the department, excepting in cases of very small contracts or those which take very little time. These payments are made upon the certificate of the Inspectors of Works, which are checked in the office against contract amounts and former instalments paid, and are afterwards examined and initialed by myself prior to the Minister's approving the payment.

328. Do you know of any instance in which refusal of payment has been made until the completion of the whole work? I do not remember any, and I do not think it could have occurred, except in the case of the small contracts before referred to where the payment by instalments as the works progress is not provided for.

329. *By Mr. Cox.*—In your paying instalments do you pay a fixed percentage on the amount of the work completed? Yes, 80 per cent. on contracts for roads, and 75 per cent. on contracts for bridges and buildings.

330. Do you ever accept Savings or other Bank receipts as deposits instead of money? I do not know, as I have nothing to do with the opening of tenders. This is done by the Board of Tenders, with the Chief Clerk, who takes care of the deposits. I have never seen anything but cheques or bank notes deposited.

331. *By the Chairman.*—Who constitute the Board? Mr. Watt the Collector of Customs, and Mr. Barnard the Government Printer. Their work is of a purely formal nature, however.

332. *By Mr. Cox.*—Is there any provision for calling in arbitrators between the Department and the contractors? I do not think there is.

333. Do you think that a provision to that effect would give contractors greater confidence in tendering? I do not think it necessary, and I am quite sure that every grievance or complaint would have full and fair consideration at the hands of the Minister, as well as myself. I speak personally of the Ministers I have known.

334. Have you ever known of such a provision being inserted in contracts? I do not remember ever to have seen it, but such a provision may have been inserted in large railway contracts with which I have been connected in England.

335. *By Mr. Brown.*—With reference to the Russell's Falls Bridge, in what position is the contractor at present; is he liable to repair any damage caused by the flood? He is liable for the security of the works for three months after the final completion of his contract. By final completion we generally mean the date of the final certificate being given by the Inspector. I do not think that time has yet expired.

336. Is it the practice of the Public Works Department to adhere rigidly to that rule? Yes, as far as I am aware. In this case I believe that the final certificate was withheld for a time because of the non-completion of the road approaches in a proper manner, although more than three months has, I believe, elapsed since the completion of the bridge itself.

337. Is it within your knowledge that there has been any departure from the original specifications with regard to the stone piers in this bridge? Not till the other day was I aware that there had been any departure, and I took what may be called double the usual precautions to ensure the class of work I required.

338. What was the departure from the original specifications you allude to? Instead of the piers being built in cement, as described in the specifications and specially marked on the plans, they were only built in indifferent lime mortar and pointed outside in cement.

339. Was no mention of this departure made in the Sub-Inspector's report? No, I knew nothing of the alteration until within the last few days, when I obtained the information from Mr. Shoobridge, who first informed me that there had been no proper mortar, if, indeed, mortar at all, used in the piers. On referring to the specifications and plans I found that I had specified that the work should be built in cement, and on questioning the Inspector of Works (Mr. Helmer), who had been sent specially down to the bridge immediately after the accident, he informed me that he had discovered that lime mortar had been used, but that the piers had been pointed outside in cement. He stated that he was not aware of the departure from the original specifications, and blamed the Sub-Inspector, Mr. Edwards, who was daily in attendance to watch the works for the Government.

340. How long was Mr. Edwards employed as Sub-Inspector of this bridge? About three or four months, while the more important, namely, the mason work in the foundations and piers was in hand. Mr. Edwards is not now in the employ of the Department. His services were dispensed with, there being no further work for him.

341. Had you no reason to doubt his honesty or competency? No.

342. Did Mr. Helmer inspect the works during the four months the masonry was in course of construction? I believe that he inspected the foundations of the piers in question, and which, I think, now remain, but I do not believe that he was able to be there during the erection of the piers themselves. The quantity of work in them being small they would be run up in a short time, perhaps between his visits.

343. Do you consider the sub-inspector should have mentioned in his progress reports any alteration made in the work? Certainly. No sub-inspector is allowed to make any departure from a contract specification; and even the district inspector would require to get authority from myself for any such departure.

344. Was this alteration made with or without the knowledge of the sub-inspector? Either with his knowledge wilfully, or in omitting to notice it he was guilty of gross carelessness. It would be as well to take official notice of the fact, to prevent Mr. Edwards being again employed.

345. *By Mr. Cox.*—Is it the practice of the Department to take an official record of defaulting contractors or negligent inspectors? Not as yet, though it would be desirable.

346. Have you ever authorised any contractor to make any departure from the original specifications? Most decidedly not. If any sub-inspector allowed such a course of action I would deem it my duty to recommend his dismissal.

347. *By the Chairman.*—Have you seen the Russell's Falls Bridge since its completion? It was very nearly finished the last time I saw it. I saw it several times during its erection, but before and after the piers in question had been built.

348. *By the Chairman.*—Do any of the progress reports submitted in this case contain any reference to lime mortar being used instead of cement? No, or I should have found out the fact of the departure from the specifications.

349. Do you think these progress reports, as now sent in, are a sufficient check? They were sufficient for the purpose I had in view when I introduced them, which was to show principally the quantities of work executed. I would not trust to these reports absolutely, I should prefer to have the report of a district inspector.

350. During 1878-9, when there were 350 miles of road under construction under the Public Works and Waste Lands Acts, can you say how many days you spent out of doors in inspection? Not off-hand: I could find out.

MR. WM. SMITH, *Chief Clerk Public Works Department, examined.*

351. *By the Chairman.*—Have you the keeping of the registers in the Public Works Department? Yes.

352. What is the practice adopted in registering tenders? Tenders are invited by advertisement, and about three weeks are allowed for them to come in. They are then opened by a Board, or such members of it as are able to attend. They are scheduled in my office, and signed by the members of the Board opening them. They are then placed before the Engineer-in-Chief for his recommendation, and forwarded to the Minister for approval. The tenders are entered in the tender register after the Minister has decided upon them, and the one accepted is notified as quickly as possible, and the contract documents forwarded to the tenderer for signature. They are then returned and retained in the office.

353. Are all tenders entered in this register? Yes.

354. If no tender is accepted is the contract publicly re-advertised? Yes. When a contract is accepted it is notified in the *Gazette*. All tenders are entered in the register after approval.

355. *By Mr. Cox.*—If all the tenders were rejected would they be entered in the register? Yes. This register is kept for the purpose of enabling me to furnish a return of all tenders if it should be required. These tenders are submitted to the Minister, and when decided on are entered in the register.

356. If you have not advertised the tenders do you enter them in the register? The Department invariably invite competition for tenders by advertisement.

357. *By the Chairman.*—Do you include in this register the tenders under "The Waste Lands Act?" Yes. Mr. Smith stated that he would like to bring under the notice of the Committee the difficulty that sometimes arises in getting the Board to sit for the purpose of opening tenders. Either the Collector of Customs, Mr. Watt, or the Government Printer, Mr. Barnard, has always attended, but it is found difficult sometimes to get the Board together (owing to their other duties detaining the members) to open tenders. He considered it would be a better arrangement if the head of the Department were to open the tenders and refer them to the Engineer-in-Chief. The members of the Board have hitherto merely opened and initialed the tenders, but have nothing to do with their acceptance or otherwise. He considered it desirable to have a Board, as a good deal of money accompanies the tenders; and as mistakes sometimes occur in the amounts sent it is necessary that the errors should be taken note of.

358. Can you give an instance where all the tenders were declined? Not without reference to the register.

359. Does the record lapse when all the tenders are declined? Reference is made in the register to where they are re-advertised.

360. *By Mr. Cox.*—Is the register paged and indexed? It is paged but not indexed.

361. *By the Chairman.*—If the register were indexed would it not show whether the tenders had been accepted or not? It would show whether they had been entered more than once, but otherwise would not show whether they had been accepted or not.

362. What register of payments to contractors do you keep? A bill-book is kept in which payments to contractors are entered, and the amounts are then posted in a ledger.

363. Do you keep a deposit register? Yes, a register of all deposits on accepted tenders paid into the Treasury. The tender register shows the amount of the deposits accompanying tenders. Deposits on rejected tenders are sent to the postal address of the tenderer, while the amount of deposits on accepted tenders is paid into the Treasury.

364. In the case of a tenderer omitting to give his postal address, would you be able to return the deposit? We have had one or two such cases, but have always managed to return the money.

365. You do not keep separate registers of deposits? No. I should require another officer to do it, as it would multiply the work.

366. *By the Chairman.*—Do you copy your letters? Yes, with a copying-press.

367. Do you keep your correspondence in files,—each subject having a separate file? No, but pigeon-holes are kept for the correspondence relating to each work. I do not keep rough drafts of replies.

368. Are all your letters written fair at once? Almost invariably they are rough drafted.

369. *By Mr. Cox.*—Do you keep a register of letters? No, our staff has been too limited.

370. *By the Chairman.*—Would it add to the work of your office if you managed your correspondence by writing a rough draft of the reply on the back of original letters—on the docket or bundle system? That could not be done, as the replies have to be signed by the Minister before being sent, and he might make alterations.

371. What number of letters do you send out during the year? I could not say from memory. I could get the information.

372. Do you carry on one serial number throughout the year? I have not adopted the system of numbering letters. I could not divide them into subjects. A current letter-book must be kept, and as perhaps one letter may refer to several subjects it would be impossible to classify the letters.

373. Have you any division of the departmental work? None. The whole staff is under my direction.

374. You say you do not employ the docket system with regard to the correspondence? No, but I would approve of its introduction.

375. With reference to retained deposits, how do you dispose of the amount? The Treasury refuse to receive cheques unless marked; and, as the Banks have lately declined to mark cheques, we send the cheques to the Bank on which they are drawn, and obtain a draft to transmit to the Treasury. In the case of deposits in cash, the amount is at once paid into the Treasury. The introduction of a register showing the manner in which deposits were dealt with from their receipt until their return to tenderers or payment into the Treasury would be advantageous.

376. Have you any merely formal letters sent out? We have some which have recently been printed, such as acknowledgments of receipt of letters, &c.

377. *By Mr. Riddoch.*—How do you fix the amount of the departmental charges in each work? We apportion them as fairly as possible between the different works carried on by the Department. In the last Chief Engineer's report the per-centage on the amount of the vote charged as departmental charges is shown. This includes everything except the Minister's salary.

378. *By the Chairman.*—What is your office staff? I have one assistant at £120 per annum, one junior at £90, one at £50, and one draughtsman at £200; this is the fixed staff.

379. What temporary staff have you? Two junior draughtsmen, one temporary clerk, one junior, and one volunteer.

380. In repairs to public buildings do you separate the various items of repairs which constitute the estimated expenditure under each vote? Yes. The items are all considered in detail by the inspectors before estimates of necessary votes are submitted to Parliament, but they are not classified in detail. This information is obtained and exists in the office, but is not submitted to the Treasurer with the annual estimates.

381. What are your office hours? From 10 till 4.

382. With reference to the rejected contract on the Barrington and Hamilton road, was one tenderer addressed and not the others? Yes; as this man's tender was the most eligible, and he was afforded an opportunity of reconsidering it. This was an exceptional case.

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THOMAS TOWNSEND, *Esq., C.E., examined.*

383. *By the Chairman.*—Are you a surveyor? I am a Civil Engineer.

384. Have you been employed by the Department? No; I have been employed by the Bischoff and Don Companies in laying out their tramways. I am working at present under the Latrobe and Don Road Trusts. I constructed a tramway and breakwater for the Australasia Slate Company.

385. Is it within your experience that there are errors of construction in public works? Yes; I have at present the management of a dispute between the Department and Mr. Gerrand about the Cam Bridge. I measured the work for him. There was a good deal of waste of labour in construction caused by bad planning.

386. Will you specify what the waste was? The contractor had to get the foundation of a pier in according to the plan I submit. The work was commenced on this plan, but as a difficulty was experienced in getting the foundations in, the plan was altered after the contract was taken. A more complicated plan was adopted and an increased amount was to be paid for the construction of this work, but it was found impossible to complete it. I submit second plan.

387. Was any work done to the pier on the original plan? No. The position of the central pier was altered on the plan before any work was done to a spot nearer the western bank of the river. The Engineer-in-Chief thought the foundation of the plan could be got in without difficulty. The first plan was to put in as caissons or wells headless casks, and to sink the foundations through them, but the foundations could not be constructed in that way. Then a coffer-dam was constructed, and the water pumped out, and the excavation commenced. The water forced its way in through the bottom, and this plan was abandoned. Then the resident engineer, Mr. Cresswell, ordered some clay puddle which had been put in to be taken out so that the sand at the bottom might be scooped out 8 ft. lower, and any drift logs which might be come across were to be cut through. This was done, the men working in the water. This difficulty arose from the nature of the bed of the river, which was loose sand. The dam was then again filled in with loose clay, but the experiment proved useless, the water coming in at the bottom as before. Then the Inspector thought by driving the piles required it would tighten the sand and prevent the passage of the water. The piles were accordingly driven, but made matters worse, as the water boiled up alongside of each pile. The Inspector then ordered some planks to be put across to divide the dam into three portions, and had the end portions filled with clay and the centre one pumped out. When this was done the outside pressure ejected the clay and everything was as before. He then recommended the contractor to apply to the Government for a centrifugal pump. He did so, and the Department agreed. The Inspector arranged with the contractor to pump it out for him, but failed, and then cut off the piles level with the ground, but not 2 ft. below the surface of the ground at its lowest point as provided in the specifications, and so failed to do what he had required the contractor to do. He put in some bags of concrete when the clay failed. (All this was done at the contractor's expense.) As the tide flowed the cement milked out and was useless. The pile-heads were ultimately cut off and planked over.

388. Were borings taken? I believe there were borings taken by Mr. Frith with a bar, not with boring rods. This was on the original site of the pier. The bar struck something hard which was taken to be sound bottom, but proved to be a log.

389. Is there any section showing the borings taken? I have not heard of any.

390. What are the errors of construction or faults in the plans you noticed with respect to this bridge? The braces ought to abut in a different way so as to allow shrinkage of the wood. They are fastened with iron straps top and bottom, and the bolts intended to brace them cannot be used owing to the absence of margin for shrinkage.

391. What unnecessary expense was the contractor put to in your opinion? About £108 in the construction of the foundation of the central pier only. Mr. Fincham allowed a sum of money as follows:—A coffer-dam was named in the specifications but was not included in the schedule of quantities, and the contractor omitted it from his estimate of the cost.

392. *By Mr. Brown.*—What course did the contractor adopt when he discovered his error? He wrote to the Engineer-in-Chief and explained the error he had made, whereupon Mr. Fincham replied that if he could show by his detailed estimate that it was omitted he would recommend an allowance of £85, and this was accordingly done.

393. Was this accepted by the contractor as sufficient? Yes.

394. *By the Chairman.*—Was this before the pier was put in? Yes, before the contractor commenced work.

395. *By Mr. Brown.*—Then the contractor agreed to all the alterations in the plan and to the allowance made for the coffer-dam? Yes.

396. Then what complaint has the contractor against the Department? That he has not been paid for the extra work.

397. What reason is given by the Department for non-payment? No reason is given, but payment is refused. The Department offers £1218 in full, but the actual cost of construction came to £1800.

398. *The Chairman.*—How do you reconcile the difference between this large loss and the £108 previously mentioned? There are other items besides the coffer-dam. These were necessary items, but were not taken into consideration by the Department. They were not in the specifications, which state that stone would be found on the ground; but the contractor had to get it from Melbourne as there was none on the spot.

399. What stone was used? Bluestone. The work put in was of a kind superior to that on which the contract was taken, and for that he claims payment. He was required to do this work by the Inspector. According to specifications he had to put in sneaked rubble in 18-inch courses, but he was required by the Inspector to put in rock-faced hammer-dressed beds and joints at a cost of £193.

400. *By Mr. Brown.*—By whom was he ordered to make this alteration? By the Inspector.

401. Had he written authority? No.

402. When the contractor found he had to go so far for stone did he make any complaint to the Department? Yes; and they allowed £50 towards the expense.

403. *By the Chairman.*—Was the contractor acquainted with the country? No.

404. *By Mr. Brown.*—Have you any letter showing the consent of the Department to the extra payment for the stone? Only a letter from Mr. Fincham (copy appended) telling the contractor to ascertain the extra cost per cubic yard of the work if the stone were brought from a distance, and also the cost of using bricks.

405. *By the Chairman.*—Was this extra cost per cubic yard allowed? No, nothing beyond the £50.

406. Was this letter answered? I do not know.

407. *By Mr. Brown.*—Seeing that the contractor agreed to the altered plans to the amount referred to for extra labour for the coffer-dam and to carry out the extra work according to the schedule of prices named in the contract, how has any difference arisen between him and the Department as to payment for the work? Mr. Fincham's agreement as regarded the coffer-dam was that the sum of £85 should be paid, and to this the contractor agreed, but he was afterwards put to expense in other extra works which the Inspector required him to do. These were never measured until I did it, and the contractor did not know how much extra work he had done until I measured it. The contractor failed, and I was engaged by the trustee in his estate to measure the work. He would have failed sooner had the state of his affairs been enquired into and the work examined month by month and an account made. This may have been done, but I have never heard that it was.

408. *By the Minister of Lands.*—Did not the Inspector examine the work month by month? I think if it had been so examined the contractor's affairs would not have got into such a state of confusion.

409. Was there a Clerk of Works on the spot? Yes.

410. Are you aware that on all works an examination is made before payment? In this case the contractor did not draw any regular payments.

411. *By the Chairman.*—Have you any further remarks to make with reference to the Cam Bridge? An amount of forcing costing £35 was rendered necessary by the alteration of the plans, the east abutment and the east pier being made into one abutment without any saving in masonry but entailing an increased amount of forcing, though the Inspector stated to the contractor that it would be a saving to him. In the original plan of the pier the contract mentioned 15 piles, but the contractor had to put in 40 by order of the Inspector. For this extra work an amount of £68 is claimed. These piles were longer than those specified in the contract.

412. *By the Minister of Lands.*—Were these alterations made with the approval of the contractor? He was ordered to make them by the Inspector.

413. Did he carry out his work under protest? That I do not know.

414. You stated no allowance was made for shrinkage of the timber. What timber was used? Blackwood.

415. Does that timber shrink? Yes, I know of no colonial timber, except the celery-topped pine, that does not shrink. The blackwood timber used in the bridge was steamed.

416. *By Mr. Brown.*—Do you know of any other works carried out under the Public Works Department which in your opinion are defective in construction? The Emu Bay Jetty I consider faulty in construction on account of the foundations resting on small stones which were merely heaped on the bottom, and which I think, on account of the steepness of the slope and the action of the sea, will work down and crumble away. The stones were such as a man could lift. Bags of concrete were used in the same way as at the Cam Bridge, and with the same result; viz., that the cement milked out and left the bags full of stones and sand. In the superstructure concrete blocks were built in, but they were too small in my opinion. I should say they were 3 feet long, 3 feet deep, and 18 inches high. A continuous layer of concrete was afterwards laid down and planked, and this I consider a better job, though the defect in the foundation still remains. Had they adopted the second plan, and had the stone first laid been taken out, the work would have been better. As the concrete blocks are built upon the small stones they will not remain after the stones are carried away. The jetty is faulty in design, being too narrow and too small for the purpose for which it was built. There is not room for a protecting wave-screen. It might do as a mole or breakwater, but not for a jetty with a tramway on it.

417. *By the Chairman.*—Do you know the Latrobe Causeway? Yes; if a flood comes it will all go. In the last fresh the bank gave way or the water would have flooded the Town of Latrobe a foot higher than it did; more waterway should have been left.

418. Do you know of any other cases of deficient or ill-contrived drainage or waterway? In roads going across a hill the culverts are placed directly across the road at right angles with it instead of dipping with the hill. The culverts at the Ballahoo Bridge and burial ground require more pipes.

419. *By the Minister of Lands.*—As to the progress of the works at the Cam Bridge, do you speak from personal observation or from information? From information received from the contractor.

420. What other improvements could you suggest with reference to works carried out by the Department? With reference to letting contracts, cases have occurred within my knowledge where the specifications and schedules of quantities do not correspond. This was the case in the Cam Bridge contract, and also in a contract let to Mr. Fenton, on the Forth and Don Road. In the latter case the specifications stated that timber likely to fall on the road was to be felled, but this was not stated in the schedule of quantities. Some of the tenderers included this work in their tenders, but Mr. Fenton did not, and he omitted to do the work. I made an estimate for the Don Company and asked Mr. Cresswell if it was to be done, and he said it was.

421. *By Mr. Brown.*—What was the difference between Mr. Fenton's tender and the others? Mr. Fenton's tender was for £3400; Mr. Henry's and two others between £5000 and £6000. The omission of this work did not affect the letting of the contract. The tender was sent in by telegraph on the day of opening.

422. *By the Chairman.*—Do you know of any other instance where the specifications and schedule of quantities do not agree? No.

423. Are the specifications generally intelligible? No, they are not clear.

424. Has that ever been pointed out to the Department? I cannot say.

425. Have you seen any ill effects arising from contracts being let in too small sections? No; the only difficulty with regard to small contracts lies in getting progress payments.

426. Are payments regularly made on works as they progress? I cannot say.

427. Have you any other objections to the specifications? The clause requiring the contractors to maintain the works for three months after completion is not fair, and prevents small contractors from tendering, as it does not pay them to wait about during the three months maintenance. I have known an instance where the contractor tried to maintain a road by refusing to allow it to be used for three months after completion.

428. *By Mr. Brown.*—What is your opinion as to letting work in small or large contracts? I should prefer the contracts being let in large amounts to men who have means and ample plant as well as efficient supervision.

429. What do you know of the system of supervision of Public Works generally? Is it sufficient or not? I hardly know. Some parts of Public Works have not been properly inspected. For instance, on part of the Forth and Don road near Scott's mill I am informed that inferior gravel was put on by the Inspector's orders, and when it was found that it would not set clay was put on. This is now being scraped off and proper metal put on. £150 was retained by the Department to make the work good, though I do not know if it is being applied to that purpose. If this amount should prove insufficient the Department will have to finish the work. I rode over this portion of the road while the work was in progress, and my attention was called by the contractor's overseer to the gravel then being put on. That gravel was good, being white loam gravel, but Mr. Cresswell objected to it, and an inferior gravel was put on the road by his order.

430. What has been the result? The road is very bad, being cut through, and worse than it was before any repairs were done to it. On some parts of the road the heavy metal has been covered with gravel, and this has been cut through by the traffic and blows away in dust.

431. Was the road supposed to be completed when the clay was put on? I cannot say, but should think it was completed as the money mentioned was detained. On the road from the Don to Formby the metal was blinded with clay when there was good material in a paddock close by.

432. *By Mr. Brown.*—Who was the contractor for this work? Mr. Alexander.

433. Was this done under Mr. Cresswell's inspection? I think so.

434. How many miles of road are covered with clay? About a mile.

435. *By the Chairman.*—Have you any other suggestions to make? I think some sort of Board should be appointed to decide in cases of disputes between contractors and the Department. At present the Inspector's report is sent in and the Engineer-in-Chief makes his remarks upon it, and the matter is settled, as there is no appeal from his decision.

436. *By the Minister of Lands.*—Is Mr. Gerrard taking legal proceedings? I believe he intends to do so unless the matter can be settled otherwise. I believe he has no objection to refer it to arbitration.

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MR. JONATHAN GRAHAM *examined.*

437. *By the Chairman.*—Are you Chairman of East Mersey Road Trust? Yes.

438. Have you any particular evidence to offer with regard to the way in which Public Works are carried out otherwise than efficiently? Yes. I have been connected with road trusts for 25 years, first as contractor and as chairman at present. I would like to make a distinction between Mr. Fincham's improved style of constructing works and the previous style under Mr. Frith. With respect to the opening of the main line of road from Latrobe to Elizabeth Town I may state that it was opened about 12 or 13 years ago under Mr. Frith. That work has been done shamefully. The line of road has deviated in all directions to escape grubbing trees; the result of grubbing the road having often obliterated the survey marks, and from absence of inspection the deviation occurred. This has very much injured the road, as it makes it more hilly and more crooked, and consequently longer, and has caused great expense in straightening it. On the same road, when under Mr. Frith, I have had considerable correspondence with the Department in connection with the way in which money was wasted under Mr. Frith in making drains which in a few months had to be filled up again—the drains and culverts being constructed anywhere. These were altered when the road was straightened at the contractor's expense, and he included the expense of alteration in his tenders. These errors in drainage occurred through neglect in inspection while the road was being constructed. This money was expended under "The Waste Lands Act." You will at the same time find on the same road near the junction 80 or 90 chains of metal, done under Mr. Frith with money from "The Waste Lands Act," and it has been done in a shameful manner. There were no inspectors on the road when it was done. This work was done shortly before the Public Works Scheme passed—perhaps in 1876. Swamps on either end of the metalled piece of road were left untouched, while the part referred to was metalled unnecessarily. On these swamps there were one or two pieces badly constructed before the present staff was in existence, and the present staff are getting the blame.

439. *By Mr. Brown.*—Do you know of any other work said to be defective for which the present staff of the department is not responsible? Yes; a piece of gravelling or metalling at Brady's Plains, done under Mr. Frith, is even worse; also a piece up the Gawler Road—12 feet road—impracticable to teams from the great height of the crown of the road. Another piece on the old road to the Finger Post, where too large rubble was used.

440. *By the Chairman.*—Do you know the section of road from Sheffield to Railton, referred to by Mr. Dooley? I have not been on the road for some years.



441. Do you consider the approach to the Latrobe Causeway deficient in waterway? That is a question of disputed engineering, but I think that if waterways are opened through the Causeway the floods will come through, and eventually leave the bridge high and dry. The Causeway is on an alluvial deposit on a gravel formation, and yearly the river is working westward. Since I have known the river it has worked several chains westward, consequently I think the best policy is, if possible, to confine the river to the present course under the bridge. If waterway is opened in the Causeway a scour will take place, and the river will eventually follow and leave the bridge high and dry. At present, in time of flood, water will come over the Causeway, especially when the river is backed up by the tide. I think if the rampart being constructed by Mr. Fincham is brought out so as to receive the water when it falls, there will be no danger to the Causeway. I think it would be unwise to make any further waterway in the Causeway. With respect to the other parts of the main road on Sections 2 and 3, I must positively state that they have been done even better than contracted for. I am prepared to affirm that such is the case. The contractors are Messrs. Laycock & Naylor and Mr. Bennett. The section done by Boland is done up to contract, but not beyond. The road at present as done by Boland is very much cut up.

442. *By Mr. Brown.*—Is this due to faults in inspection or specifications? Not to either. This road was opened for traffic in the autumn, and naturally cut up into ruts. We want a steam-roller for the roads on the north-west coast. The road at Sassafra cost 2s. 6d. a chain for maintenance—surface-dressing the road in the summer after completion; and this would have been saved by the use of a steam-roller when the road was completed.

443. *By the Chairman.*—Do you know of any instance of insufficient drainage or waterway? On the main road from the Don to the Forth a culvert was made at the 17-mile creek, under Boland's contract, where the waterway was insufficient. Near Latrobe a culvert has burst. It was put in by Mr. Frith. I told him the pipes he was putting in would not carry the water; but he persisted, and the result is as above stated. On the Green's Creek road the work done by the Public Works Department has been done excellently. There are places along the road where ponds of water will stand, but could be attended to by a man in charge. One thing calls for special attention,—the clause regulating the traffic on wheels, as there is nothing to regulate the weight on tires. As soon as the roads are made I have seen carters using the road with 2½ tons on wheels with 2½ to 3 inch tires, and the result is that roads of from 12 to 15 feet in width are reduced to 8 feet, the drains are filled up by running one wheel in them, and the Department is blamed for damage caused to the roads by the very people using them. The officers of the Department have to fight against contractors being allowed to do their work as they pleased, as previous to the appointment of inspectors a lax manner of fulfilling the contracts prevailed; and since the inspectors insist on the work being done according to specifications, great enmity prevails against them among the contractors generally. The original contractors for the Latrobe Causeway took their contracts too low, hoping that the old system of careless construction would be allowed, and when they were kept to the specifications they failed. On the whole I consider the Government have got the worth of their money in works completed.

444. *By Mr. Brown.*—What is your opinion with regard to letting large or small contracts? With respect to work it is better to divide it into sections and sub-sections as small as convenient; then call for tenders for the whole, with the understanding that one or more sections can be let.

445. *By the Chairman.*—Does not letting in small contracts increase cost of supervision and maintenance? I don't think it makes any difference; but I would let either large or small contracts, whichever was the cheapest, provided the men contracting were honest.

446. *By Mr. Brown.*—Have you seen the specifications for any work carried out by the Department? Yes; I don't think they are more complicated than necessary. Some contractors will take advantage of the least omission in specifications. I do not think it would be wise to make them less complicated, and though I have found fault with them I have since altered my opinion. For instance, with regard to Boland's contract, I believe the contractor was bound to cover the road with 5 inches of rubble, but the overseer had a great deal of trouble in keeping him from putting on large flagstones 5 inches thick if he chose instead of broken rubble. With regard to maintenance of the roads there is trouble with regard to overloading drays. I think the Committee should recommend that if the police could be induced to attend to this it would be an advantage. The Departmental officers on the coast, as far as I know them, are faithful, energetic, and resolute, and the inspection efficient. If larger public works are entered upon the staff will have to be increased. Inspectors should be supplied with a horse, as a good man could thus inspect a large amount of ground better than an inferior man could inspect a small district.

447. *By the Chairman.*—Have you any objection to the system of the payment of contractors? Laycock and Co. were not paid for 4 months after completion of their contract. There was a considerable sum of money owing to them on which they were paying interest. The delay occurred through Mr. Frith's death, and as the contractors were unable to get the final certificates payment was delayed. I have not met with any other cases.

448. Have you any other improvements to suggest? With regard to the maintenance of bye roads, I think the road trustees should be compelled to look after them after construction. The Green's Creek Road was well constructed with gravel, but now requires attention as it is injured by the winter traffic, and the road trust decline to look after it; it is consequently in danger of spoiling. The principle of holding back the subsidy to local bodies should prevail, and the roads maintained with it in cases where the road trusts neglect the bye roads. I would confine that suggestion to macadamised portions of bye roads constructed by the Government, and to drainage and culverts on unmetalled roads. For instance, there is a culvert on the Green's Creek Road where the pipes were not large enough, and the consequence is that the earth has been washed off and the pipes laid bare. I consider the trustees should have to mend this. On Boland's contract there are one or two places which are bad. As money was getting short, my Road Trust wrote to the Department asking that the road should be completed with only 4 inches of metal; and this was accordingly done. This amount of metal has, however, proved insufficient. This is one instance



within my knowledge where the Department has been blamed for allowing a departure from the original contract. The local Road Trustees are responsible for this alteration.

449. *By the Minister of Lands.*—Was this suggested through the insufficiency of funds to complete the extension of the road according to contract? Yes. Local bodies are much to blame in our district for not paying more attention to roads when constructed by the Government.

450. Have any works been carried out by the Latrobe Road Trust on the Main Road? Yes: and they are simply disgraceful to the township and those who designed them. On the streets where there were hard dry gravel banks, which would have borne the traffic for the next 20 years, these have been cut away, exposing the yellow clay, and then six inches of metal put on. The clay is carted off to another part of the road and metal put on top of it. The roads are in a worse state now than they have ever been. The work was commenced in the winter.

451. Have you any idea of the amount expended? No. The drainage of the township street has been destroyed.

452. Did the Road Trust employ any professional assistance? Yes: I believe Mr. Townsend was their engineer.

453. With reference to the maintenance of the main road from Elizabeth Town to Latrobe; a portion of which is under your Board, do you experience any difficulty in carrying out the provisions of the Act? No.

454. Could you suggest any amendments which you think necessary? No: I don't know of any which I could suggest yet. I think it would be better to get the Act fairly to work, and try it on its merits.

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JAS. FINCHAM, *Esq.*, further examined.

455. *By Mr. Brown.*—With regard to the Cam Bridge: It was stated to the Committee that the contractor omitted from his estimate of the work the construction of a coffer-dam, and for which the Department afterwards made him an offer. Did he accept that offer? It is not usual for engineers to supply intending contractors with quantities in schedule for coffer-dams, staging, or any other temporary work necessary to the execution of their contracts. In this case the contractor, about the time that acceptance of his tender was notified, pointed out by letter that he had omitted to allow for the cost of his coffer-dam for founding the centre pier. On investigation I ascertained the statement to be correct; and as his price was low, and very much below the next highest tender, I recommended the then Minister of Lands, Mr. Brown, to favourably consider the case, and to allow the estimated cost of the coffer-dam, which, if I remember rightly, was £80; and the contractor agreed to accept this amount.

456. Was the contractor's tender much below your estimate of the cost of the work? No, not much.

457. Was the plan of the bridge changed subsequent to this arrangement? Yes.

458. Did the change of plan involve more work? No more material and very little labour.

459. What arrangement was made as to increase or decrease of work? The alteration was originally made at the contractor's suggestion.

460. How was the increase or decrease to be calculated? He offered, while I was on the works, to erect one large 90-feet span instead of the two 60-feet spans shown upon the plans, and to make up the length with the small end spans if I allowed him payment by measurement at his contract schedule of rates, and in addition a small allowance for the extra trouble in building the arch of proposed large span.

460.\* Have you the contractor's consent in writing to this change of plan? Yes.

461. *By the Chairman.*—Was the alteration of the central pier made with reference to the foundation? Yes, it was found I believe that the pier would come upon a sloping rock and in great depth of water. To avoid the difficulties that the contractor dreaded he made the proposal above referred to.

462. Were soundings and borings taken, before the plans were made out? I believe the ground was tested by Mr. Cresswell with an iron bar.

463. It is said that in taking these borings a log was touched; and that was considered hard bottom—is that so? I know nothing of that.

464. Were any sections made? Yes, sections of the river bed; and borings taken. These are now in the office.

465. Was the new site chosen for the central pier better as to foundations than the other? Yes, decidedly; but there is always difficulty in sinking masonry for a pier through the alluvial deposits at the mouth of a river like the Cam.

466. Is it true or untrue that in the first place headless casks were used as cassoons or wells to sink the foundations? Certainly not. I designed an arrangement for sinking the centre pier on the first plan by means of timbering and sinking in something like the fashion in which iron cylinders are sunk for bridges; but when the contractor started to build the pier in the altered position he preferred the ordinary coffer-dam, and he was not in any way compelled to do this.

467. Did the coffer dam fail? The contractor had a difficulty with it, but I believe it was solely owing to his inexperience; and when he handed the matter over temporarily to Mr. Cresswell, that officer gave him a dry foundation to start upon in a very short time.

468. Did Mr. Cresswell order some clay puddle to be taken out and then order it to be filled in again? I never heard so; but I did hear that Mr. Cresswell stopped the leak by throwing in and ramming some bags of clay in one corner.

469. Did he order piles to be driven to prevent leakage? He would order piles to be driven to obtain a foundation, not to prevent leakage. This would be instead of carrying the coffer-dam to a still greater depth, as I believe old logs imbedded in the ground prevented this.

470. Did the pile-driving fail? Certainly not; the pier is resting on piles to this day.

471. Did the Inspector order the dam to be divided into three portions—the end portions being filled with clay and the centre one pumped out—as stated to the Committee? I do not know.

472. Do you know of bags of concrete being thrown in when the clay failed? I only know of the bags of clay being rammed in, and that was a perfectly justifiable proceeding.

473. Did Mr. Cresswell eventually leave a dry foundation? He did, and the contractor then resumed work and completed the pier without difficulty.

474. Were the braces so made as to allow of no shrinkage of the wood? I don't think it is the case. I have used the same plan with other bridges and found no difficulty. In rough bridge work there is enough play in the holes and straps to allow of shrinkage.

475. Is it true that the specifications provided for sneaked rubble in 18-inch courses, but that the Inspector required rock-faced hammer-dressed beds and joints? The specifications provided for sneaked rubble, and nothing better was ever demanded from the contractor; but the work in the pier is not the high class of work that it looks and as represented by the trustees in the contractor's estate, for the stones are principally what masons term "shiners," that is they have but little depth on the bed, and the Inspector in reporting this said that he had allowed it because of the nicer finish it gave to the pier, but at the same time he assured me that he had seen an ample allowance of good headers built in to bond with the rubble hearting of which the pier is built, and I approved on those conditions.

476. Was it rock-faced and hammer-dressed? It was what I term squared on face and roughly hammer-dressed.

477. Was the contractor led to believe that stone for this bridge would be found on the spot? I believe he was informed in some way that stone was to be found near, and as a matter of fact he did use a quantity of the local stone for the inside work and for which it was quite suitable, though it would not do for face work.

478. What allowance was made him for bringing stone from a distance? I do not remember, but he asked a very small sum. I am aware he got stone from Melbourne cheaper than he could have quarried and carted it in the neighbourhood. It was bluestone, very hard, and better for use than bricks. He got it from vessels which brought it over from Victoria as ballast. Having written to the contractor asking him to name an amount for extra cost *re* stone, I received a letter stating the terms upon which imported stone could be supplied, and those terms as regarded headers only were accepted. I believe that the total estimated allowance on account of the Melbourne stone was quite £50, and this was taken into account in preparing the final offer made by the Department to settle the matter. As to the statement made to the Committee about the large extra expense to which the contractor was put, Mr. Fincham read the filed report of Mr. Cresswell, the District Inspector, and stated, on 10th June, 1878, the contractor wrote that he perfectly understood that the new design should be paid for by measurement at his contract prices, but that some allowance should be made for the arched rib, and this was agreed to. The contractor not only had about £80 allowed on account of the coffer-dam, but the Government spent a sum of about £70 in founding the pier after he confessed himself quite unable to do so. In addition a sum of £50 was agreed to be paid to him on account of the bluestone headers from Melbourne. Excluding the bluestone headers and the labour in arched rib there is an actual balance in favour of the new design of £67 13s. 2½d., and this balance was not even deducted from the contractor in consideration of his difficulties and the originally low price, which was some £250 below the next highest tender. The contractor gave up work two or three times on account of the difficulties of getting in the foundations of the pier. These difficulties arose to a large extent from the contractor refusing to be guided by the Inspector. I quote progress reports in support of my statement. With reference to the statement that the contractor was put to expense on account of extra forcing required by alteration of abutment, the contractor was a gainer, and there is no large extent of forcing executed as shown by Mr. Townsend's plan, there being but a very small quantity to back up the abutment. Mr. Townsend included in his estimate every pole and nail used in the scaffolding, some of which the contractor afterwards actually sold. The contractor repeatedly offered to accept the sum of £1274 in full of all demands, making the offer to Mr. Cresswell, who states "he did so the last time I saw him; he said Mr. Gerrard had urged him not to do anything so foolish, when there was a good chance of getting more."

479. *By the Chairman.*—Do you consider the pumping and other work done for the contractor by the Department as a set-off against his larger claim? No, the pumping was not charged against him.

480. Did the specifications for the Don Road include falling trees which were likely to come down on the road, while the schedule of works omitted that item? It is often the case that we specify that all leaning trees which the officer in charge may think likely to fall across the road shall be cut down by the contractor; but it certainly is not necessary that these should be specified in the schedule of quantities, and I have never heard of any complaint that such was not done. If a contractor goes fairly over the proposed work before he tenders he would naturally make a small allowance for cutting down such leaning trees as he saw.

481. *By Mr. Brown.*—Is it not a fact that the successful tenderer for the contract on this road refused to cut down these trees because they were not included in the schedule of quantities? I have no knowledge of any such refusal.

482. Do you know if the other tenderers included this item and Mr. Fenton did not? No.

483. *By the Chairman.*—Is it a fact that soft mudstone metal was put on the road from Franklin to Shipwright's Point? Yes; particularly on Brennan's contract, and I found fault with it; but the contract is not yet out of the contractor's hands, and he has been required to cover it with harder and better stuff.

484. *By Mr. Brown.*—Had the Contractor the approval of the District Inspector for the use of this stone? Not that I am aware of. It was no easy matter to get really good metal within a reasonable distance for one or two of these Huon contracts.

485. Had you any reason to complain of incompetency or want of attention on the part of Sub-Inspectors employed in the Huon district? Yes, on one occasion, in the case of Mr. Andersen; but the complaint was not in reference to any metalling, but in reference to a glaring departure from the specifications in the case of a large culvert. He was severely reprimanded, but was not dismissed, as I believed him on the whole to be a trustworthy man.

486. Was this the only case? This was the only specific complaint. I have pointed out generally, at different times, that metal was not sufficiently broken, or drains kept in proper line.

487. Speaking generally, are you satisfied or otherwise with the Sub-Inspectors in the Huon District? Speaking generally from my own observation of the work I think they did fairly well.

488. What number of Sub-Inspectors were employed? Two while the works were in full operation.

489. How many miles of road had they to supervise? About 12 miles; one being stationed on each side of the River Huon. They gave occasional assistance to small contracts under the Waste Lands Act, and Anderson superintended; also the Port Cygnet Police Buildings, and the Jetty at the same place. As soon as the exigencies of the work would allow of it I reduced the number to one Sub-Inspector, who was allowed expenses of ferry at Franklin so that he might look after remaining contracts on both sides of the river, and not lose too much time in mere walking. At no time was there more provision for inspection than these two Sub-inspectors and Mr. Helmer, and before him Mr. Randall.

490. *By the Chairman.*—Are there good sub-inspectors now available for employment should increased public works require them? I know of very few men in the Colony of the required stamp, and prefer men who have had experience on larger contracts than are generally made by the Road Trusts or other local bodies in the Colony.

491. Could you say how many days in the year have you been able to inspect works? In the last two years, 1878-9, I have been out about 150 days, and including railway work about 200 days. I have had to make up more than the time employed in inspection by overtime work.

492. Do you think it wise that you should be so tied to the office? I should prefer having more time for out-door work, but under present arrangements I don't see how it could be.

493. *By Mr. Brown.*—What arrangement other than that now existing would be necessary to enable you to spend more time in out-door inspection? One way in which I could be freed from so much office work would be for the Director of Public Works to deal with all matters that did not require professional skill, and allowing the Chief Clerk to take his share of the responsibility as before the appointment of an Engineer-in-Chief.

494. Could not this alteration be effected by the Director of Public Works acting through and by the advice of such an officer as the present Clerk of Works with regard to small ordinary repairs? Yes; as my services would always be available if specially required on any technical details with which the Minister would not be expected to be acquainted; but at the same time I consider that the Clerk of Works should clearly understand that he was not exempted from the supervision which I now give generally to his work.

495. Of what description of work would such an arrangement relieve you? Of all the detailed work relating to labour and materials for petty repairs, checking small accounts for such matters as cleaning rooms, window cleaning, chimney sweeping, &c.

496. *By the Chairman.*—Are you in favour of introducing steam rollers? Yes, if the works are of sufficient extent; and I think that the Government traction-engines might very well be made available for the purpose. The only reason that I have not before suggested this to the Government has been on account of the loss of time in employing them upon such scattered contracts, and also on account of the commonly rotten state of the culverts and bridges they would have to travel over.

497. Have you noticed any other deficiency in plant such as pumps, &c.? I necessarily have not experienced any such difficulty, as all work is let by contract, and the contractors would have to provide such appliances.

498. Is it true that in order to preserve the grade for a certain number of chains the crown of a hill was raised 18 inches on the Sheffield and Railton road? I do not think it likely unless it was to fill some small hole. I do not remember hearing any complaints to that effect. I consider such a course would justify the dismissal of an inspector. On referring to the specifications I find that in two instances the crown of a rise has to be cut down on that section of road.

499. You spoke of payment being deferred in one case on account of the vote being expended? It was not deferred payment as the matter was never settled. What I meant to convey was that if we had had a few more more pounds available I would have recommended the Minister to settle the long-standing dispute by a small payment to compromise the difference, as the district Inspector informed me that he considers the work done, and the manner of doing it, would justify a small additional payment.

500. Has it happened that payment has been deferred on account of the vote being exceeded? Never.

501. *By the Chairman.*—With regard to the foundation of the Emu Bay Jetty, is it true that small stones were used as a foundation on which to build concrete blocks? As the natural bottom was uneven basaltic rocks, small stones were thrown in to fill up the hollows and procure an even surface, and upon this the foundation was built. I saw the foundation work on several occasions during the progress of filling in, and had a very good opportunity of seeing the foundation after it had been damaged by the storms about last April, and I found that the stones were of large size and well packed in the heart of the work. Stones of somewhat smaller size were thrown down outside the work, but these will be covered with larger stones so as to form a slope of 3 to 1. The amount of the vote being so small it was not

proposed to make the jetty more than a breakwater at which passengers could be landed from boats, and goods from lighters in shelter, and that in quiet weather the steamer could come to the head of the jetty. There was a displacement of the foundation when there was only one course of superstructure to keep it down, but there is now no danger as the weight is sufficient to keep it secure. As the work gets up to high-water level the courses are cast in one mass, weighing in some cases as much as 40 tons. The concrete bags employed in the foundations have answered their purpose, and set as firm as the hardest rock. Before the concrete set some loss occurred through the bags breaking, but that has been remedied.

502. Do you consider the top of the jetty too narrow? The width is the same as that of the present jetty, about which I have heard no complaints and upon which there is a tramway. The wave-screen occupies only four inches of the actual top, being constructed of timber bolted to iron knees on the outside, with an inner planking; and, moreover, the plans of the work were submitted for consideration of the local authorities before tenders were invited, and were generally approved.

503. *By Mr. Mitchell.*—What is the cost of the preparing the legal documents in connection with contracts for public works? They are prepared at the Crown Solicitor's office, and the contractor pays for nothing but the 5s. stamp.

504. Who draws up the contract? The articles of agreement are generally drawn up in the office.

505. *By the Chairman.*—Were the piles in the Cam bridge increased in number from 15 to 40, and also increased in length? The number and size were increased, but the contractor was allowed payment for any extra piles he put in, and they also saved him vastly more expense in sinking masonry to the level shown on the drawing.

506. How long elapsed between the commencement of the Emu Bay Jetty and the accident that happened when only one course of superstructure had been built? Speaking from memory I should say between two and three months, the work being very slow indeed at first, in fact unnecessarily slow. After the contractor obtained the contract he allowed the whole of one winter season to go by without making any efforts worth speaking of. As a rule, I am informed by the residents of the Bay, that the winter season is most favourable for construction of such sea works at that place owing to the absence of easterly gales which blow more or less all through the summer months, and the work suffers less from the N. W. gales than from the E. gales referred to.

506.\**By Mr. Brown.*—Have you seen in the *Mercury* of this morning that some fresh damage has occurred to the Emu Bay Jetty? The statement in the *Mercury* refers to the previous damage sustained at the end of August, which carried away the contractor's flimsy staging, to which were attached the piles that he was using for founding the deep water section; and I am confirmed in this view by the fact that the writer states that the solid mason work which I pointed out in the drawing as having been undisturbed was really so. One corner was a little shaken by portion of the iron work attached to it that was carried away.

507. Is it within your own knowledge that no damage beyond that which occurred in August has occurred? Yes; but the work has been left in danger by the contractor, who has been to town to endeavour to get a further payment on account from the Government. I was not able to recommend this without jeopardising the contract, but I submitted the contractor's request to the Government, and suggested that they should supply him with cement for a certain time, and so relieve him of the cost of the cement, to be afterwards deducted from payments on account of properly completed work. I am informed since that the contractor is still away from the work, and that the men whom he left in charge have refused to do anything even to secure the work already done.

508. *By the Chairman.*—Has Mr. Cresswell been down since the contractor left the jetty in this critical position? No, but he is going down in a few days, and wrote me that he had told the contractor he would do so, and that if he would return to his work he would remeasure all that was done and see if it were possible to justify some further small payment on account. He also informed me that the contractor had declined the assistance offered by the Government in the supply of cement for his work.

509. Does the Department intend taking any immediate action to secure the jetty? Yes, if the reply which I am expecting from the contractor within the next few days to the letter sent containing the Government offers of assistance is not satisfactory, it will be my duty to consider whether the contract should not be at once cancelled; and I have sent orders through Mr. Cresswell to take his own precautions now to save any injury to the work irrespective of the contract and until the contractor returns.

510. Will that entail additional cost? It will form probably part of the permanent work, and part will be extra cost, in so far as concerns clearing out the piles and stones from the boat channel.

511. On whom will that extra cost fall? Clearly on the contractor, because both myself and Mr. Cresswell have over and over again pointed out to him the apathy he exhibited in the matter of taking ordinary precautions for carrying out his work properly, and the folly of trusting to chance, as he often said he preferred to do.

512. Was this contractor recommended by anything except the lowness of his tender? He had executed the bridge over the Meander at Deloraine in a satisfactory manner, and I knew of creditable work being done by him in many other cases, and at the commencement I had every confidence in his being able satisfactorily to carry out the work, as he was the only mason among all the tenderers, and consequently best suited for the work. He also informed me that in his youth he had worked upon concrete breakwaters in the West of Ireland.

513. *By Mr. Lamb.*—Do you consider the foundations of the bridges constructed on the main road between Kangaroo Point and Richmond secure? The Dulcot Bridge had the foundation built with indifferent masonry, but I have since required the contractors to alter and repair this. I am not aware of any other defect in the three small bridges on the road referred to.

514. Do you consider the contractor able to make his work at all substantial? Sufficiently so.

515. Was it built under supervision of anyone connected with the Department? There was no sub-inspector, but the work generally was under the supervision of Mr. A. Hull.

516. *By Mr. Brown.*—Had Mr. Helmer anything to do with those bridges? Not at that time.
517. *By the Chairman.*—Was it in the specification that the foundations were to be in dry stone? I don't think so. They were to be in lime mortar.
518. Were the specifications fulfilled? I was not aware that there had been any departure from the specifications. They were small bridges and the walls would not take many days in putting in.
519. *By Mr. Lamb.*—Were the foundations carried down to the required depth? I believe they were carried down to the depth I had decided on.
520. After the work was completed was it inspected by anyone from the Department? It was passed by Mr. Hull.
521. *By the Chairman.*—Was it inspected while the foundations were being built? Not that I am aware of; the foundations were dug out and the work rushed up.
522. *By Mr. Brown.*—What was the cost of the bridges? They were small bridges, 5 feet high and 15 to 20 feet span. They cost about £100 each on an average, and that would include approaches.
523. *By Mr. Lamb.*—Have you seen the bridge since its completion? I have ridden over it.
524. Do you not think that in the event of a flood the water would get in behind the walls and carry away the bridge? No, it never occurred to me, because in constructing the new bridge I had provided more than double the waterway existing in the old bridge.
525. Do you know the second bridge on this road? Yes.
526. Has your attention been called to the bad state of the bridge by the Chairman of the Richmond Road Board? No.
527. Were you aware that the water has been running through the foundations of the bridge the full length of the walls? That would be from it having washed out the lime mortar. Lime mortar was used. I saw the foundations of that bridge. I think it is perfectly possible for water in a creek with a shingle bed to get into the foundation of a work or wall before the lime mortar has properly set and to gradually clear it away; but if the stones are a fair size and roughly well bonded, I see no great danger in such a circumstance.
528. I am informed that both this bridge and the third on the road are too low by 18 inches in the walls; is that a fact? They are higher than the old bridges, which I took as my guide. These were constructed out of the remnant of a vote, and we were very much pinched for money; otherwise we would have made approaches.
529. *By the Chairman.*—Was enquiry made as to the highest flood-level? I think the surveyor made enquiries. The floods this year have not reached the bridge. The flood-levels are not marked on the plans.
530. Have you heard any complaint of bad metal being put on the Pine Road under Mr. Cresswell's supervision? I know Mr. Cresswell made the contractor go over his work two or three times before he was satisfied. I do not believe the Department has put the metal referred to on the road.

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J. A. GUNN, *Esq.*, *M.H.A.*, *examined.*

531. *By the Chairman.*—What faults in construction have you noticed with regard to the Sorell Causeway? It was not completed according to the specifications of the contract.
532. Did the Government take it over as completed? No; they retained a sum of £700 or £800 from the Contractors to expend on the work.
533. Did the Government complete the work? No; but a great deal of money was wasted by putting too much clay blinding on the metal, hundreds of loads of which had to be afterwards carted off. This was done under the inspection of Mr. W. H. Glover, who was then employed as Clerk of Works.
534. Is there any other fault in the works which you consider chargeable to the Contractors or to the Government? On the Causeway, where damaged by the late storms, quantities of sand and small stones (just as quarried from the cutting at the end of the Causeway) have been carted down and shovelled into the holes, some of which were washed into the Causeway 3 feet inside the fence. I spoke to Mr. O'Reilly about it, and he informed me that he had telegraphed to Mr. Coram giving instructions for the execution of the necessary repairs, as Mr. Helmer, the District Inspector, was at Oatlands.
535. What followed? Mr. Coram set 2 carts and 3 men to work. I saw the latter quarrying and filling in the stones and sand, and I spoke to them about the material they were using and asked them what was the use of filling such stuff in.
536. Did they continue? I cannot tell. I spoke to Mr. Coram, who said that Mr. Helmer had come down and had taken the matter out of his hands.
537. Was the Clerk of Works in attendance when these repairs were being effected? No; there has not been a Clerk of Works there for 5 or 6 years. I do not think that Mr. Helmer inspected the repairs frequently. It was just after he had been down that I saw the sand and rubble being carted in. This is all I have noticed about the Causeway, but with regard to other Public Works I consider that a great deal of work has been badly constructed for want of proper supervision. The Road from Nine Mile Springs has been formed and I suppose completed, but it is so bad that I had to travel in the bush along the track to avoid the road in many places. It was better as a bush track before formation. The ground is moist and boggy and of a peaty formation though gravelly in places. Traffic cuts it up and makes it very bad as there is no crown to the road in places, there being merely ditches on either side to carry off the water. I travelled over it in June about 5 years ago and there was not so much traffic on it as at present, but the road was in a much better state then though it was only a bush track and not formed in any way.
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MR. JAMES NIMMO *examined.*

538. *By the Chairman.*—Did you write some letters to the *Mercury* under the name of “Spikenail?”  
Yes.

539. Did you point out what you considered defects in the construction of Public Works? Yes.

540. Will you mention what defects you have observed? There are places where the money was not expended to the best advantage and the works not properly completed.

541. What particular instances can you mention? One is a road at Castle Forbes Bay which has not been either laid out or finished economically, nor is it a public benefit.

542. In what lies the defect in construction? I think the road could have been made better and more convenient to the public for little more than half the money the new one has cost. (The witness submitted a rough sketch of the road.) The road instead of going round the back of the two hills as shown in the sketch should have been constructed by cutting along the hills, and the material excavated filled in between them. The cuttings would have extended 10 chains on one hill, and 6 chains on the other, and the material should have been distributed over the hollow between the hills and the slopes on the side of the hills. This would have made a uniform grade and have made the road easier. The road as constructed by Mr. Helmer is about 68 chains long; the road as laid out by Mr. Randall was shorter, and the route I propose shorter still. There is a difference of from 15 to 20 chains between my route and that taken by Mr. Helmer.

543. *By Mr. Mitchell.*—Are you a Contractor? I take contracts sometimes.

544. Have you had a dispute with Mr. Helmer? Yes; about a contract I had 3 years ago.

545. Have you been paid for that contract? No; and I do not think I am likely to be unless I prosecute the Government.

546. *By Mr. Cox.*—Was it pointed out to Mr. Helmer and the Department that this shorter and better route could be obtained? I do not know, but a complete survey was made of the locality and the best route should have been chosen. The metal used is also very bad being completely rotted away by the action of the weather. This road will never be any use until a coating of good metal is laid on it. (Witness exhibited specimens of the metal used.)

547. What was the nature of the soil? Quite half the road is constructed through boggy ground, while all the route I propose is over good ground with solid bottom obtainable. There would have been less forcing if any were required in Mr. Randall's road, and it would have been even lower or more level than Mr. Helmer's, as a cone rises in the middle of the latter road over which the road had to be carried. The tops of the hills where I suggest the cuttings were red clay loam with boulders, and I don't suppose any rock would be come to at a less depth than 20 feet. Mr. Helmer's road forms one contract, and the continuation of the road forms part of another contract, where the road comes round the corner of a hill against which the tide beats, and the bend round the hill is sharper and steeper than necessary. The slope from the road to the water's edge is 20 or 30 feet, and is formed of forcing thrown down. This material was thrown down on top of a number of logs which were lying on the slope of the hill, and banked up, and thus the road in places overhangs the water. The other day a log was washed out and about six yards of the side of the road came down. These logs should have been rolled down but were left lying there, and were merely supported by pegs driven in and the forcing was then thrown down on them.

548. *By Mr. Cox.*—Do you know whether in letting the contract for the work a certain amount of embankment should have been formed in which these logs are improperly included? I do not know; but whether the embankment was in the estimate or not, a survey was made, and the clearance away of the logs should have been provided for. These logs formed part of the embankment on the lower part of the road. They are on the slope lying broadside on and form part of the slope. Had these logs been rolled down to the bottom of the slope, they would have protected it from the ravages of the tide, and have formed a basement for the filling up. The road on account of the softness of the metal is worn a foot deep in places, and as the water cannot get away it is slowly soaking in and softening the whole road.

549. *By the Chairman.*—Was there good metal obtainable? Not close at hand, but I cannot understand why the soft metal was put on sections of the road, as it had been tried on O'Beirne's contract adjoining a year before and proved unfit.

550. At what distance is good metal obtainable for this particular piece of road? Not above a mile from either extremity. The east end of Brennan's contract is done with hard metal and this is good and solid, but as soon as this part is passed vehicles sink into the mud.

551. Do you know of any other instance of faulty construction of Public Works? No.

552. Had you a dispute with the Department? Yes; about 3 or 4 years ago. It was as follows:—A contract was let in two parts, one of which was completed satisfactorily, but in the other the Contractor failed, and I was asked to complete the work. Mr. Cheverton told me to make out my own specifications, and having done so I commenced upon the contract as specified, but a change of Government having supervened, I was told by the Public Works Department that I was to do the work in another way whereby twice as much work would be required of me. I finished the work according to specifications and asked to have it inspected. Mr. Helmer came down but did not inspect the work; he left word, however, that I was expected in Hobart Town immediately and he would settle with me there. When I saw him in town he told me that the work did not satisfy him, but I could get no explanation why. I have always been told the work did not please him but nothing further, and I have not been paid to this day.

553. Have you ever taken a contract since? It is no use doing so, as while Mr. Helmer is Inspector he can let the contracts to whom he pleases and pass or reject the work. There is no chance of fair competition, nor of arbitration in case of dispute.

554. *By the Minister of Lands.*—Have you been employed in the construction of roads? Yes, both as workman and overseer in Edinburgh, but never in the Colony.

555. You allege that a portion of the road at Castle Forbes Bay is in a bad state? Yes; through bad management and the use of bad material.

556. Who were the contractors for the road? First O'Beirne, and then Brennan went into partnership with him, and afterwards Brennan completed it alone, they having dissolved partnership.

557. Who supervised the construction? I think Mr. Anderson was overseer during O'Beirne's contract, and Mr. Nicholls during Brennan's, but the latter was discharged after a time and Mr. Anderson took charge. Mr. Helmer was inspector at the time.

558. Had Mr. Randall charge of this road? I believe he was employed both as surveyor and inspector, but I do not know if he had regular charge of the work.

559. Was the work you complain of carried out under Mr. Randall or Mr. Helmer? Under Mr. Helmer. Mr. Randall left before the work was done.

560. That is O'Beirne's and Brennan's contract? Yes.

561. How long has the road been constructed? O'Beirne's section nearly 2 years, Brennan's about 18 months.

562. Has Brennan done any repairs to the road? Not in the way of maintenance under his contract. He cut up the road carting metal and was compelled by Mr. Helmer to mend it, but beyond that I think no maintenance has been applied to the road.

563. You state that you had a contract for the Government for which you have not been paid? Yes.

564. On what grounds was payment withheld? The Government has never explained what was wrong. No fault was found with the work done, but more work was stated to be required, but what work or where it was required was never stated.

565. Was it because you were told the work was not done according to contract? No; Mr. Helmer after inspection left word with a neighbour that I could get the money when I came to town.

566. Do you state distinctly that you were never told your work was not done according to contract? I do, and that the Government have never told me what was wrong with the work.

567. Did you appeal to the Minister of Lands? Yes.

568. What was the amount you claimed as due to you? I cannot exactly say, but I sent in a claim. I think the amount was about £15 or £16. A fire took place at my house and destroyed all my papers.

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ROBERT HENRY, *Esq.*, *Superintendent of Telegraphs*, examined.

569. *By the Chairman.*—What is your position? I am Superintendent of the Telegraph Office and have charge of the lines, but not of their construction and maintenance.

570. Is there any official head responsible for the maintenance and construction? The Minister of Lands.

571. *By Mr. Cox.*—To whom do you apply when repairs, &c. are required? To the Engineer-in-Chief, who attends to anything that may go wrong with the lines.

572. Is the construction satisfactory to you? No; I cannot say it is.

573. *By the Chairman.*—What is the size of the wire used? No. 10.

574. Is that large enough? In most cases; but on coast lines a larger size is desirable.

575. Is No. 10 used in the other Colonies or in England? Yes, but not for long circuits. It suits very well where the country is not heavily timbered.

576. Would it be better if on the main lines No. 8 were used and on the coast and heavily timbered lines No. 6? We find no difficulty in using No. 10 in open country.

577. Do you find that on the main lines the wires have often been so loosely stretched that they hang on each other and break the current? Yes; but not lately, as we have had that remedied to a great extent.

578. Would not a larger gauge of wire resist the fall of branches which would break No. 10? Yes. I would recommend the use of No. 8 for coast lines and those running through heavily timbered country. This would add to the cost of construction, but I think it would be a saving in maintenance.

579. Is it a fact that No. 8 retains its conductivity if resting on the ground while No. 10 does not? The mere fact of the wire touching the ground destroys the current, no matter what size the wire is, at least in most cases.

580. Would you think it necessary to recommend the use of No. 8 for inland and No. 6 for coast lines throughout the Colony? No. 10 acts very well when there is no obstruction, as on the main line, where the country is clear; but I would think it advisable to use No. 8 on coast lines or where running through timbered country.

581. Do you approve of the iron-capped insulators in use? Yes: they are not the best insulators, but the others are so liable to damage that I consider the iron-capped the most suitable.

582. Have you read the remarks of Mr. Sievwright, of the London Post Office, on iron-capped insulators? Yes; and I agree with him as to the collection of salt on these insulators on coast lines and the consequent loss of complete insulation; but we find that we cannot preserve the porcelain insulators from damage. I have not seen insulators perforated so as to allow the rain to get through and wash the salt off the wire.



583. Is it a fact that the poles are cut square off at the top and clumsily trimmed with an axe to admit an iron hoop, which is stuck on the outside edge instead of being neatly fixed some inches below? Yes; as far as I know the poles appear to be cut off square and an iron hoop bound round the top.

584. Ought not the tops to be rounded off and have a iron hood? I think that an arrangement for throwing off the rain should be adopted, such as trimming the edge of the poles so as to form a ridge.

585. Has there been such supervision as would ensure perfect construction and maintenance? I cannot say, except that I do not think the supervision has been sufficiently scientific, and I think the people employed have not had sufficient experience.

586. Have portions of the line been pulled down in consequence of bad construction? I am not aware of such.

587. Have any portions left standing been open to honest criticism as being badly constructed? I cannot say. I do not know the line referred to, and I have not personally seen any lines in the state above mentioned.

588. What inspection is there? None beyond what I do myself in the office. There is no proper inspection, and I would urge the appointment of a practical Inspector.

589. Is it a fact that owing to the want of practical inspection the construction of the line has been let by contract and the work passed by officials ignorant of practical telegraph work? Undoubtedly.

590. Are you aware of any line being passed and found unworkable immediately afterwards? No.

591. Have you found it necessary to have lines repaired immediately after they had been passed? No, but if such a thing occurred it might not come within my knowledge.

592. Do you know whether tenders have been accepted without anything being taken into consideration beyond the fact that it was the lowest tender? As far as I know tenders have been accepted on account of their being the lowest, and because the successful tenderers were considered as fit to undertake the work as the others unless the highest tender were accepted. The difference between tenders has been great. For instance, we are getting work done on the main line for 35s. per mile which formerly cost £3; on the N. W. Coast it was £2 10s. and is now 25s., while on the Huon line the cost is now about one-half what it has been, and the work is just as efficiently performed.

593. Do you know any instance where after the line was declared completed it was found that the wire was carried to the post nearest the office instead of to the office itself? Yes, as in some cases the line has been constructed before it was settled where the office was to be erected.

594. Is it true that in 1879 when a break occurred the Chief Operator had to engage any one he could get to repair the line? This is not true, as at that time a contractor had charge of all repairs.

595. Can you give any idea of the number of interruptions which have occurred on the main and coast lines during the last year or two? Not from memory. On the main line they have been very infrequent, but reverse has been the case on the coast lines. This, I think, is due not only to falling timber but also to the posts rotting. I would recommend that the coast line be reconstructed. This is owing to the want of an officer to go over the lines and effect any necessary repairs.

596. Are the sums voted sufficient in your estimation? The present provision is £2000, and taking into consideration the length of the lines, I think that to keep the lines in thorough order the vote should be increased. If a new system were entered on next year, and all the lines thoroughly repaired, the expense would be great, but then of course the cost of maintenance would be lessened. Supervision is not provided for by the present vote, and of course would be an extra charge.

597. Have you had any cause to complain of the instruments in use? None whatever, the instruments are all first class.

598. *By Mr. Cox.*—Do the Public Works Department consult you as to the specifications of the contracts? They have not done so until lately, when calling for tenders for maintenance.

599. Did they submit the specifications to you, or merely ask you for suggestions? I merely had a conversation with the Engineer-in-Chief.

600. Do you feel satisfied that one man can properly supervise the construction and maintenance of the lines as well as the office work, having what assistance he found necessary? I see no reason why one man should not have the sole management. It is so in South Australia and New South Wales.

601. Are you in favour of the contracts for maintenance being let in short sections? Yes, on account of the length of time occupied in reaching the locality of an interruption when it occurs if the contractor has a large section to maintain.

602. Do you think you are likely to get more competent men to contract if the maintenance were let in large sections? No, as the large contractors sub-let in small sections.

603. What instruments do you use? The Morse.

604. Could out-stations be more cheaply worked if simpler instruments were used? No, as there is only one instrument simpler than the Morse, and that is the Wheatstone, but there is a great objection to this instrument being used, as if it gets out of order it cannot be repaired in the colony.



GEORGE MARSHALL, JR., *Esq., Sorell, examined.*

605. *By the Chairman.*—Have you any connection with public works? Yes. I have acted as Chairman of the Local Road Trust for many years past.

606. Have any faults in the construction of the public works come under your notice? Yes, some with regard to the Causeway road, and also with regard to the recent repairs to the Causeway itself.

607. Will you specify the faults you noticed? A contract was let for repairs 12 months since at £30, and the work done was not worth £10.

608. Do you mean that the work was overpaid, or that the contractor did not do the work according to the specification? I did not read the specification, but the work done was not worth the amount paid for it.

609. Have the recent repairs to the Causeway been effected satisfactorily? I believe they were only temporary. The material used is sand and soft stone, three parts sand, and is now washing away.

610. Is better material available? Yes; but as the repairs were required immediately the material as stated was used. Better material could have been obtained at a distance of half a mile, freestone, which would have been better than the sandstone used.

611. Was the work of construction completed by the original contractors? No, the Causeway Commissioners took the work out of their hands. This was before the Public Works Department was instituted 6 or 7 years ago. About £700 was deducted to meet expense of repairing faulty work. This work was condemned at the time of construction, and has not been since repaired.

612. Has the money been since applied in repairs? No repairs have been effected beyond the £30 spoken of as being expended 12 months since.

613. Has the Causeway been practicable all the time? Yes. The fault in construction is the slope which does not extend far enough to break the wash of the sea.

614. Is there any other instance you know of faulty construction of public works? Yes; in the case of a road near East Bay Neck, where the road was constructed parallel to a hard beach, which in itself was a better road than that constructed, and was practicable even at high tide. The road was not needed, as there is not likely to be much traffic there for the next 30 or 40 years, and the money could have been much better expended elsewhere, as there are miles of road in the district in a very bad state. This road has been constructed more than a year, but people use the beach in preference to the road, as traffic is not interfered with even at high tide.

615. *By Mr. Riddoch.*—When was the amount voted for this work? I don't know, but it has been expended about 12 months.

616. *By Mr. Cox.*—At whose instigation was the road made? I do not know, but most of the people in the district condemned the expenditure.

617. *By Mr. Lamb.*—Was the money expended on this road part of the vote for the construction of roads between Sorell and East Bay Neck? No, for roads between Carlton and Eagle Hawk Neck.

618. *By the Chairman.*—Does the only objection you have to this road lie in the fact that the money might have been better spent further on? Yes, as the road through Forrestier's Peninsula to Port Arthur is in a deplorable state.

619. *By Mr. Cox.*—Is this piece of road a benefit to any person or property in particular? No; it is part of the main road—compensation was paid for the land used.

620. Was this compensation excessive? No.

621. *By the Chairman.*—Do you know of any other instance of defects in construction of Public Works? With reference to the Causeway road, complaints were made frequently that it was not constructed according to contract, the depth of the metal not being sufficient, as it wore through in places within 12 months. The size of the stones in the foundation was not according to the specifications, as it exceeded the dimensions specified.

622. When was this road constructed? About two years ago.

623. Under whose supervision? That of the present Department. Mr. Fincham was down; but I do not consider the supervision was sufficient. The clerk of works was a labouring man, with small pay, and I should say he was not above temptation. He was crippled, and unable to work, but said that he had practical knowledge.

624. Was the District Inspector there at that time? I suppose he would make periodical visits.

625. Was the attention of the Department called to the failure of the contractor to comply with the specifications while the work was in progress? Yes.

626. *By Mr. Cox.*—Verbally or in writing? There was a newspaper correspondence about it and the Department was communicated with.

627. *By the Chairman.*—Was any action taken? It was inspected by the Engineer-in-Chief, who approved of it, and the amount was paid.

628. Was the contractor called upon to reconstruct his work? No.

629. Was an investigation held? I believe the Engineer-in-Chief was called on for a report, and stated that he was satisfied with the work.

630. *By Mr. Cox.*—Did any expert examine the work besides the Engineer-in-Chief? Practical men in the neighbourhood examined it, but I do not think there was an engineer among them, though they were practically acquainted with road-making.

631. *By Mr. Riddoch.*—What is the state of the road now? Very fair for light traffic. Portions of the road have given way and have been re-metalled.

632. Has there been any large expenditure on it since? No.

633. *By Mr. Cox.*—What depth of metal was provided for in the specifications? I do not know, but the depth put on was slight. I cannot say if the depth was not such as was provided in the specifications, but it was cut through in 12 months. I saw it being put on, but never measured the depth.

634. From memory, what would you say was the average depth? I should say not more than 4 inches from what I saw while it was being spread.

635. *By Mr. Lamb.*—Are the foundations faulty? They were not constructed of stones of the specified size. It was considered that the stones should not exceed 9 inches, but stones a foot square were used.

636. Had there been heavy traffic would the road have stood? Not without great expenditure.

637. *By the Minister of Lands.*—Was there any heavy traffic on the road after its completion? No. The contractor did not cart his metal over his work but at one side of the road.

638. Have you read the specifications for this work? No.

639. You say the foundations were not constructed according to specifications—what do you mean? If I remember rightly it was said that the specifications provided that stones not beyond a certain size should be used, but larger stones were put in.

640. Did you personally examine the work during construction? No, though I travelled over it.

641. Then I infer from your not having read the specifications or personally examined the work that you are not in a position to state whether the work was done according to specifications or not? No, I am not.

642. You state that the road is good now? Yes, portions of the road have been raked in and the soft places re-metalled.

643. Has the road been maintained since its completion? Yes, by the Local Road Trust. I do not exactly know how much has been expended on it, but I think about £60 last year, and less this year. The length of the road is about 4 miles.

644. Then viewing the amount expended in maintenance do you consider it excessive? No, I consider it moderate.

645. If the road had been very defective in construction, do you think it would require a larger amount for maintenance? Yes, for heavy traffic, but £15 per mile would maintain the road for light traffic.

646. *By Mr. Cox.*—Has the traffic over the road been sufficient to prove whether it is well made or not? The light traffic has shown it is not well constructed, by cutting through the metal.

647. *By Mr. Lamb.*—Was it provided in the specifications that the contractors should cart over the road as it was made? I do not know, but it would have solidified the road had that been done. They carted at one side and had a fearful road. Their own work would not have stood it, as the road was made in wet weather.

648. *By the Chairman.*—Were you aware what sized metal should have been put on the road? I heard two inch broken metal was the contract, and I do not think there was any objection to that size being used.

649. *By Mr. Lamb.*—If one half the produce of Sorell had been carted over the road since its completion would £25 a mile have maintained the road? No, all the heavy produce is conveyed by water.

650. *By the Chairman.*—Would the plan of local bodies certifying to progress of works answer? I think they ought to be consulted on the expenditure of money.

651. If they endorse the progress reports of the District Inspector with any remarks they had to make would it be a good plan? I think so.

652. *By Mr. Riddoch.*—Do you think the present system of main roads maintenance an improvement on the Road Trusts? With the engineering skill available in the Public Works Department it should be, but the amount allowed for maintenance is not sufficient.

653. Do you think the money will go as far under the departmental management as it does under the Local Board? If judiciously expended it should go further under the department.

654. *By the Minister of Lands.*—With reference to the repairs to the Causeway, you stated that the stone used was inferior, did you not? Yes, the recent repairs were effected with sand and soft stone.

655. Were these repairs effected under the Road Board? Yes, Mr. Helmer was down and inspected. Immediate repairs were required and the material most easily obtained was used.

656. Was the material obtained from the quarry from which the stone used in the construction of the Causeway was obtained? No, the repairs are already fretting away.

657. You stated that superior material could be obtained half a mile distant? Yes, from a quarry on Mr. Lewis's land, from whence the stone used in the construction of the Causeway was obtained. It is hard freestone, and is not affected by the action of the water.

658. You stated that the Clerk of Works was not above temptation. Had you personal knowledge of his character? I knew he was given to drinking, and when I asked him where he obtained his knowledge of road-making, he said at Port Arthur.

JOHN T. CORAM, *Esq., Sorell, examined.*

659. *By the Chairman.*—Have you had any connection with Public Works? I am Chairman of the Road Board.

660. Have any faults in construction come under your notice? No.

661. Do you think the repairs recently effected to the Sorell Causeway properly done? Yes, all that could be done was done. Other portions of the Causeway are giving way owing to yesterday's gale, but the repairs still stand. It would require £500 to put the Causeway in proper order, or it will all go to ruin.

662. Is it the case that the recent temporary repairs were effected with from one-half to three-quarters sand and soft stone that would give way? No, the repairs were effected with hard sandstone from the Bluff from which the stone was taken for the Causeway and blinded with sand. In proof of which the repairs stand after yesterday's gale, while other portions of the Causeway are giving way.

663. Do you regard the repairs as temporary? The batter having been washed into holes, it was necessary to fill these up to prevent the sea washing right through. A sum of £8 10s. was expended, and all the holes filled up.

664. Do you know the road between Carlton and Eagle Hawk Neck, parallel with the beach? A road from Eagle Hawk Neck to Bream Creek is made along the beach, but should have been made on the land high and dry, as at present the teams have to travel through the water. With reference to the road referred to in the question, I have not seen it where it is mentioned as running parallel with the beach. It goes down a very steep hill to Eagle Hawk Neck, but I do not know any place where it runs parallel with a beach which could be used as a road.

665. Do you know the Causeway Road from Cambridge to the Causeway? Yes.

666. Was it constructed according to the specifications? I believe so; it is a very good road.

667. Was there any discussion at the time of construction about the non-fulfilment of specifications? I believe there was at the time a dispute between the Cambridge people and the contractor about his non-fulfilment of specifications.

668. Do you know under whose supervision the road was made? I fancy under Mr. Cheverton's, but I do not remember whether it was under him or Mr. Helmer.

669. Do you think the supervision of Public Works is effective and sufficient? No; I think it impossible for one man to supervise so many different works in one district. Mr. Helmer had to be telegraphed for to come from Oatlands and inspect the repairs to the Causeway.

670. Have you any fault to find with the character of the inspection? None whatever, except that it is insufficient. With reference to the Causeway repairs, I supervise them myself.

671. Do you think it would be a wise measure that Local Road Boards should certify to the Inspector's progress reports of works? Yes.

672. If they endorsed them with any remarks they had to make would it be a good plan? Yes.

673. Do you think the votes for Public Works have been economically expended? As far as I am aware. I only speak of my own district.

674. Is there anything you can point out as a departmental failure in this respect? No.

675. Was the £30 expended last year by the Government unnecessarily expended? No; and the repairs then effected have withstood the effects of the gales ever since. The work was good and substantial, and was good value for the money expended.

676. Did the Cambridge and Sorell road cut up very much after it was opened for traffic? No, not more than could be expected from a new road.

677. Was there any heavy traffic on it? No; but it would bear any traffic now. It is in excellent repair.

JAMES FINCHAM, *Esq., examined.*

678. *By the Chairman.*—Who has charge of the construction and maintenance of telegraph lines? The Public Works Department, the Minister of Lands being the responsible head.

679. Is there any superintendence or inspection by an expert in telegraphy? No, but I have several times recommended that there should be. I think it doubly essential that an expert in telegraphy should be appointed as inspector of different lines and offices subordinate to the Inspector of Telegraphs. Apart from that, it is simply impossible for the small staff to do more than see that the lines are erected properly. We cannot find the men or time to look closely after the maintenance. The accounts for the maintenance pass through our office, and the only test we can have is a reference to the Superintendent of Telegraphs, as to the general working of the several sections of line during the period for which payment for maintenance is claimed.

680. Has it been always the practice to consult the Superintendent of Telegraphs with regard to outdoor maintenance and construction? Yes; I think it has always been the case since the present Superintendent was appointed. It was not invariably the case before then.

681. When was the present Superintendent appointed? About a year ago.

682. Is it the case that in some instances the line has been so faultily constructed that after it has been passed it has been necessary to reconstruct it? There was one line that gave some trouble immediately after it was passed (I think the Longford and Cressy line), but unfortunately the specifications were not properly filed. I think also that there was some little difficulty with the Carrick and Bishopsbourne line from the same cause.

683. Do you attribute this to the want of practical inspection? No; in those cases the departure ought to have been seen by any man not acquainted with telegraphy.

684. Have any difficulties arisen in consequence of the absence of practical inspection? I have no doubt that stoppages very often occur through the mere ignorance of the contractors, which would be prevented by a little instruction from a practical telegraph inspector. I have always strongly felt the urgent necessity that existed for the employment of some such officer, and brought it under the notice of the Government some 2 years since. It is of more consequence now as the lines are considerably extended since then, and the older lines have more nearly reached their limit of wear.

685. Is it the fact that in construction the poles are cut square off at the top and then roughly dressed with an axe so as to allow an iron hoop to be put on, instead of being neatly trimmed? In all the new specifications provision is made for neatly trimming the tops of poles by shaping.

686. Are iron hoods used? No; this embellishment is all very well for a line through the settled districts, but is not wanted in the bush, and certainly makes no difference to the working of the line; and contractors naturally charge a little more in their tenders for this work.

687. Has the sagging of the wire on the main line ever caused a cross? Yes, I think so, on several occasions.

688. To what do you attribute that? Owing to the repairs having been done by the road-men, who know very little about the work, and because there is not the supervision of a skilled telegraph inspector.

689. Are you of opinion that the gauge of the wire used is the right one? Three sizes of wire are used. Nos. 6, 8, and 10, but the last orders were for No. 10, on the recommendation of the late Superintendent of Telegraphs after he had made enquiry as to the sizes they were using in the other colonies; but I should prefer now to have nothing less than No. 8.

690. Where are the No. 6 and 8 wires employed now? No. 6 on the main road to Launceston, and also I think the Nos. 8 and 10 on the same line.

691. There is a break of gauge then? Yes, in places, owing to the supply of No. 6 not having been kept up.

692. What sized wire is used on the coast lines? I believe that is No. 6.

693. And in lines through heavily timbered country? All the recent lines through open or heavily timbered country are No. 10, as no other size has been ordered.

694. Should these lines have a larger or smaller gauge? I think a larger.

695. Do you think the insulators used are those that best effect their purpose? A great many different patterns have been used, but the iron-capped ones are now adopted. I do not believe that they are so good for insulation as the porcelain insulators, but we are compelled to use them on account of the wilful injury so often done to the insulators where only of porcelain by boys, and this is especially the case on the North West Coast Line.

696. Is there any special objection to the use of capped insulators on the coast lines? I think the porcelain ones would be preferable, but the iron caps of the insulators now in use are galvanised.

697. In practice do not the wires under those caps get encrusted with salt on the coast lines and lose their conductivity? The contractor for the North West Coast Line complained several times that such was the case, but the line following the East Coast has never been complained of.

698. Has it ever been found difficult to get people to go out and repair the line? In some parts, but not I think speaking generally.

699. Have the interruptions on the coast line been very frequent? Not so frequent of late. The reports of interruptions are generally forwarded to me by the superintendent, and by a reference to his books lately he showed me that there were fewer interruptions during the past few months, since the line has been divided into smaller sections, than when Mr. Reid had to travel all the way from Deloraine to Circular Head while maintaining the line.

700. Are you in favour of having the maintenance conducted in small sections? Decidedly, in sections of from 30 to 40 miles; and with a very little teaching from a competent inspector the contractors would soon be able to maintain the different sections thoroughly well.

701. Are you aware complaints have been made of insufficient supervision? Yes, there is practically no supervision.

702. Are tenders let invariably to the lowest tenderer without reference to other considerations? They have been as far as my knowledge goes.

703. Are you in a position to say whether in any instance it would have been preferable to accept a higher rather than the lowest tender? Yes; I should always prefer paying a higher price to a man skilled in the work than a low price to a novice.

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MR. JAMES NIMMO *further examined.*

704. *The Minister of Lands.*—Will you give an opinion as to tendering. Do you think a tenderer ought to prepare his tender in such a way that the Government can understand what work he intends to carry out for the sum he proposes to charge under his tender, and so that he should not leave a loophole to escape from his responsibilities under the specifications? He should simply tender on the specifications, and bind himself to abide by them, and unless there were a loophole in the specifications he would not be able to leave himself a loophole to escape from his responsibilities.

705. Referring to your claim against the Government, was that work entered on from a private proposal of yours to construct the work, and not on a public tender? Yes.

706. Did you take a contract to carry out 8 chains of slabbing, in which the slabs were to be 10 feet long, and the work was to be done in a substantial and tradesmanlike manner, and in which two culverts with catch-drains were to be constructed? Yes, that was my tender.

707. I presume that tender was written by you in such a way that you thought there could be no misunderstanding as to the work to be constructed? Yes, I was directed to make a good strong rough job, and spread the money over as much ground as possible. The former contractor, Fitzpatrick, should have grubbed up roots and stumps, but he did not; and I was informed by Mr. Cheverton that if I did the grubbing I should be paid out of money withheld from Fitzpatrick.

708. Did you draw out your tender with a view of the Government ascertaining from it what work you intended to perform under your contract? Most certainly.

709. You did not draw it out with the intention of reserving a loophole for escape? No.

710. You tendered to do a certain amount of specified work in your tender? Yes.

711. Did you inspect the work before tendering? Yes.

712. Did you send in an account to the Government as a charge for that work? Yes.

713. Did you make any charge beyond the amount of your tender? Yes, for cutting and widening a drain down the side of the road. There was nothing else.

714. Did you send in a claim for slabbing certain chains of roadway and forming culverts? Yes.

715. Then beyond that did you send in a claim for grubbing and slabbing certain feet of roadway at a certain price? Yes.

716. Why did you not tender for that at the time of your original tender? Because I could not see what work was required as dirt had been thrown over the top of where the road was to be, and all the stumps and roots covered up by the former contractor.

717. Then why did you tender for a work you could not carry out? I was told I would be paid for the grubbing out of money detained from Fitzpatrick's contract.

718. In tendering to construct works substantially what thickness of slabs would be required? That would depend on the nature of the ground. If the bottom were solid thin slabs would do, but thicker ones would be necessary in boggy ground. I have put in some places slabs 7 inches thick, and pieces below them lengthways.

719. Would 4 inch slabs be substantial work? No, not in ground of that nature.

720. Did you write to the Department in December, 1876, offering to perform the work? Yes.

721. Did you receive a reply? Not at that time. Mr. Helmer came down and thought the work was done; and when he saw it was not he told me to do it, and that was the first answer I got.

722. Had you a contract previous to that from the Government? Yes, I had one section and Fitzpatrick the other.

723. Did you get a reply from the Department stating that your tender had been accepted? I had commenced the work when I got that letter, and as I could not have done the work as in it specified at £2 5s. per chain I did not recognise that letter. Mr. Helmer on the two occasions he came down brought down the specifications I had prepared.

724. At whose request did you prepare these specifications? At the request of Mr. Cheverton, the former Inspector.

725. Was there any provision in your specification for the work for which you charge in your account; viz, grubbing 20 chains at 20s. per chain? No; that was to be paid out of Fitzpatrick's money. I pointed out to Mr. Helmer the work that had to be done under the specification, and he let the matter pass.

726. In a letter you wrote to the Minister of Lands in November, 1877, did you state that you did not bind yourself to furnish any particular quality of slabs except that they were to be 10 feet slabs? Yes.

727. Then you purposely worded your tender so as to leave a loophole to enable you to escape from your responsibilities? No.

728. Then what was your intention? To keep myself out of the power of a single individual inspection—whether Mr. Cheverton or Mr. Helmer.

729. By that you mean you worded your tender so that you could carry out your work as you thought proper? No, not at all. I took the absolute power out of the hands of the inspector, and left myself a chance of referring the matter to arbitration.

730. Do you think that your system of tendering would be a good one for the Government to adopt? Yes, provided that the work is subject to the word of any competent person.

731. Have you written to the Department complaining of Mr. Helmer in consequence of his not passing your work? No, not in consequence of his not passing the work at all. I complained that I did not get justice from him, and that he should have sent me word that he was coming to inspect the work.

732. After Mr. Helmer refused to certify to payment for the work did you write to the Department complaining of him? Yes; that he brought me up to Hobart Town with the expectation of getting my money, and when I got there payment was stopped.

733. Did you charge any improper motives to him for withholding his approval of the work? I think I did.

734. Was that in November 1877? I do not know, as all my duplicate letters were burnt.

735. Did you write and state that you could not ascertain from Mr. Helmer his reason for not passing the work, and that you believed it to be a spiteful dodge used for religious or political reasons? I believe I did.

736. Was that within a short time of your notifying to the Department that your contract was completed? I do not recollect.

737. Did Mr. Helmer ever tell you what was wrong with the work? No, he only said it did not please him.

738. Did he ever meet you on the works? Yes, once.

739. Did he point out anything wrong in your work or what was required to be done? I did not want his pointing out. I did not recognise him as Inspector. He came down and said he had come with the express purpose of telling me that he would take good care that I never got paid as I had written something concerning him to the Survey Department.

740. Were you aware that he objected to the slabs or found any defective? No, he found no defects whatever.

741. Did you state in a letter to Mr. Brown, the then Minister of Lands, that Mr. Helmer found a thin slab in the work? Yes.

742. How did you know that? Fitzpatrick told me that Helmer found fault, but he found no fault to me. He complained to the man with whom he left word that I was to come up and get my money that he had found fault with the slabs, but never to me personally.

743. Then you admit that there were thin slabs on the road? I admit some were thinner than others. Thick slabs were used in boggy ground, and thin ones where the ground was solidified.

744. Did you appeal to the Minister of Lands for redress? Yes.

745. What answer did you get? Simply that I was to do more work, but what work was wanted was not stated.

746. At a later period last year did you again appeal? Yes.

747. And not receiving a favourable reply did you write to the Minister on 19th July, 1880, alleging that he had entered into a conspiracy to defraud you, and that by such conspiracy you had sustained serious loss? Yes, I believe I did.

748. Was the Minister to whom you wrote that letter in office when you were refused payment at first? No.

749. At the same time were you writing letters to the papers signed "Spikenail"? Yes, about the same time I was.

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MR. WM. HAWKINS *examined.*

750. *By the Chairman.*—Have you had any connection with the Public Works Department? None with the exception of a contract on one occasion.

751. Have any instances of faulty construction, mismanagement, or extravagant expenditure come under your notice? The supervision has been faulty in my estimation. The works in my neighbourhood have some of them been not very satisfactorily carried out.

752. What works do you refer to? One section of a road in particular at Castle Forbes Bay, where a bad class of metal, a kind of mudstone, was used.

753. Is that the road referred to by "Spikenail"? I think it was.

754. Was proper metal available within a reasonable distance? Yes, within half a mile, but the mudstone was the nearest available.

755. Do you know of any other instance? The supervision seems to have been faulty, as a persistent contractor seems to have been able to get out of his liabilities under the specifications better than one who follows the instructions of the inspector. In some cases the contractor has evaded the specifications and got the best of the inspector because the latter seemed not to have sufficient power or did not exercise it if he had. The inspectors seemed to have been men of ability. In my district the first inspector seemed to be a painstaking and competent man. His name was Nicholls: His successor, Anderson, had to supervise all the works on both sides of the River Huon, but these works were divided when Nicholls was inspecting.

756. Will you mention any instances you know in which the contractor seemed to get the best of the inspector? In a contract taken by a man named Fitzpatrick the rubbing was put on of the requisite depth but was not broken down to the required size, though any amount of material was put on. I do not know if the contractor called his attention to it. This defect would apply to all the roads in the district but particularly to that constructed by Fitzpatrick.

757. Did the inspector protest? Yes, I believe to all the contractors.

758. Was the protest attended to? No, it was evaded. I think the intention of the specification was that the rubbing should be spalled, but this was not done in many instances.

759. Was the inspector on the works often enough to be aware of this? The second inspector had more work than he could attend to, and was not down often enough to see that the specifications were being evaded in this respect.

760. Have you noticed anything else? While Mr. Nicholls had charge of the works on the west side of the Huon River he had great opportunities of watching that metal was properly broken, and would not allow it to be removed until he had measured it and taken notes of the amount in his pocket-book; his object being, I presume, to ascertain when the contract was finished if the requisite number of yards of metal had been put on the road. When he was removed the inspector who followed having just double work to do could not attend to this.

761. Do you know the road at Castle Forbes Bay where it goes round two hills instead of over them as formerly? Yes.

762. Do you think it was a mistake to take the road by the route as carried out by Mr. Helmer, instead of over the hills, cutting through the crown of the rises? The cutting would have been the best plan, and taking into account the compensation that was paid on the present route it would not have been more expensive.

763. What compensation was paid? Mr. Heriot received £60, and I have heard that the compensation altogether came to about £100.

764. Would a cutting of 10 feet through the rises have given an easy grade? 10 feet of cutting and the same amount of filling between the rises would have given as easy a grade as the present road, though the rise would be longer.

765. Was that pointed out at the time the road was proposed? I do not know. I did not know which route had been adopted until the contract was accepted.

766. Is the road as constructed likely to prove a good one? If the road had been properly constructed people would use it in preference to the old road.

767. Is the road likely to give way on account of going over swampy ground? No, as the road is properly drained, though there are some weak places where the mudstone was used.

768. Have you noticed any instances of deficient drainage or waterway? No, except where a small landslip occurred and blocked up a drain, but that is now cleared away.

769. Have you always found the specifications clear and sufficient? Yes, exceedingly clear, in fact almost too elaborate.

770. *By Mr. Cox.*—Do you know a road where bogs have been left on the face of a bank and earth filled on them in forming a road? There is a cutting on the side of a hill on a road at Castle Forbes Bay where logs were rolled down the bank and earth filled in on them, but they are not likely to give way.

771. Were these logs rolled quite to the bottom? I think so, but I have not examined the spot.

772. Do you know of any instance of a log being pegged into its place on a slope and earth filled in on top of it? No.

773. Could you say whether that is the case or not on the road at Castle Forbes Bay? I do not know personally, and have never heard so.

774. *By the Chairman.*—Have any of these logs given way and taken the bank with them? I have travelled over the road and did not notice anything beyond a slight settlement of the road on the outside where the forcing was very deep.

775. Have you examined that work? No, I have never been down the incline.

776. Can you say positively that these logs have not given way? I cannot, but I think I should have noticed it had such been the case.

777. It is said the bank has been washed away and the road overhangs the water, is that true? No, I have been over the road frequently and would have noticed if such were the case. The road is bad at this bend round the hill as it happens to be at that particular spot the mudstone was used, and as there was a good deal of heavy traffic the road was cut up and there has been some settlement of the road since.

778. *By the Minister of Lands.*—Does the sun reach the road here? In the winter time for a couple of months it does not for more than a couple of hours a day.

779. *By Mr. Cox.*—Do the logs form part of the embankment on the lower side of the road? It is hardly correct to say that they do not, but they have simply been rolled down and found their own resting place, and the earth filled in on them.

780. Are they in the slope, lying broadside on and forming part of the slope? As far as I observed most of them, if not all, have gone to the bottom. There may have been a log or two in the slope, but I have not observed closely enough to state.

781. Does the slope support the road? Yes; it forms what is called the batter; but I do not think that any logs are in such a position that if they gave way the road would be damaged. The logs are chiefly at the bottom of the slope. There may be some in the batter and covered over, but I did not see any in such a position. The road is capable of improvement there, but I do not think it is likely to give way on account of the logs.

782. *By the Chairman.*—Who was the contractor? I think this was the first contract taken under the Public Works Scheme. The contractors were Brennan and O'Beirne.

783. *By the Minister of Lands.*—Had Mr. Randall charge of that work at any time? I believe he had for the first few months.

784. Was Mr. Nicholls overseer then? Yes; I think he was acting under Mr. Randall.

785. On the whole, do you observe much to complain of as to the manner in which the road from Franklin to Honeywood has been constructed? Speaking generally, I own there are faulty places, and mistakes have been made; but on the whole it is fairly constructed. I think the supervision was the weak point, the Inspector having more work than he could attend to.

JAMES FINCHAM, *Esq.*, examined.

786. *By the Chairman.*—Would it not have been better to have adopted the old road at Castle Forbes Bay than the deviation through Heriot's land? No, it would not have been better; it would have been a more expensive line, and owing to the extent of the earthworks it would have been necessary to pay compensation for the necessary land along portions of each side of the old road. I cannot specify what portions.

787. What is the width of the old road? I do not remember, but it was a narrow road on the Franklin side.

788. Do you know the width of the reserve? I do not.

789. Was it the usual chain reserve? The road was much less than a chain in width between the fences. The old road as fenced was less than a chain wide at the portion I referred to. I know it was too narrow to admit of cuttings or embankments within its width. I cannot say if rock would have been met with in 10 feet of cutting or merely boulders. I originally contemplated cutting down the road instead of making a deviation, but afterwards decided that on the whole the deviation would be best.

790. Can you say if the estimate of cost of cuttings as given by Mr. Nimmo is near the probable amount of cost? Not without measurement and proper calculations.

791. Did you take out any detailed quantities? No; but I was satisfied by an examination of the road that it would be an expensive job to cut it down to proper grade, and that I could get a cheaper and more level line by a deviation. By the deviation there was a saving of 40 feet in height, but not including the cutting the crown of the hill.

792. It is said that on a continuation of this road, where it overhangs the sea, logs were left in the batter to form part of the earthwork: is that a fact? There were logs about the foot of the bank that had been there before the bank was commenced, and I believe there were some fallen outside the bank, but I am not aware that they were used to support same. I should not consider logs lying outside the bank as any disadvantage.

793. Do you know of any portion of this bank which has come away on account of a log giving way? The damage has not been reported to me.

794. Have you inspected that road lately? No, not since the contract was finished, many months ago.

795. *By the Minister for Lands.*—Have you received any report from the Chairman of the Main Road Board at Franklin, to the effect that the road has given way? No, I have never heard either from our own officers or from the Road Board that any portion of the road has given way.

796. *By the Chairman.*—Have you seen the recent repairs to the Sorell Causeway? I have not seen the Causeway since the damage was done by the late gales.

797. Has any complaint reached you about the character of those repairs? Yes, Mr. Gunn called and stated that he had seen men carting sand for the purpose of filling up the gaps. On enquiry from Mr. Coram, the Chairman of the Road Board, I found that the sand was only to blind the stone filling that had been put in in order to make a smooth top for the roadway.

798. Was this work done under Mr. Coram's supervision? Yes, as Chairman of the Board.

799. Has Mr. Helmer inspected the repairs? Yes, he went down to give the Board any assistance they might require, and indeed he started the work for them.

800. Has he made any report of inefficient work? No; none whatever.

801. Was there any Clerk of Works in attendance when these repairs were being effected? No, and it was not necessary.

802. It is said that 12 months ago £30 were expended on the Causeway, and the work was not worth £10: is that a fact? Repairs to the extent of about £30 in value were effected about 12 months since, and the work was done under local tender. Considering the distance of cartage and the troublesome nature of the work, I think that the charge as to its value only being £10 is incorrect. Its value was about £30.

803. Are you aware what material was used in these recent repairs? I was informed by Mr. Helmer that it was the same sandstone that was used in the original construction of the work.

804. In the Causeway Road were the specifications avoided as to the size or depth of the metal used? Decidedly not. I gave more time to the inspection of that particular road than to any other. I inspected the formation, and also the pitching from time to time. I also opened out and measured the metalling at a great number of places when work was complete, and finally passed the work myself. The road has fully answered my expectations and stood more than 12 months traffic without repairs and without suffering. There was originally a great deal of complaint that round boulders were used for a foundation. They were used, but only in portions where their use was a decided advantage; viz.—in filling up large holes in the soft clay formation, in order to form a solid surface over which to pack the pitching.

805. Were some of those a foot square? Some might have been a foot in diameter, and I should have liked them all the better if they had been larger.

806. What was the average depth of the metal put on the road? The average depth of metal was 4 inches, spread on pitching 5 inches deep.

807. Did the specifications provide for stones not exceeding 9 inches for the pitching? Yes, the specifications would provide that the pitching should not consist of stones more than about 5 inches square.

808. Were the specifications then departed from? Large flat stones were put down, but I had them broken when in place so that the metal might key in well with the pitching. I saw, myself, that much of this was done, and gave strict orders to the sub-inspector to see that the whole was broken to size.



809. Was that work under a Clerk of Works? Under a sub-inspector.

810. Was he a labouring man who had been educated at Port Arthur? He came to me recommended by the Hon. Mr. Moore, and had been an overseer over the prisoners at Port Arthur, and had, I believe, constructed all the principal bridges in that part. He also informed me that he had superintended the construction of the Broadmarsh Road between Brighton and Hamilton. He was certainly not a mere labouring man. He seemed to me to have been exactly what he described himself, and I had no reason to find fault with his supervision of the Bluff Road. He only had a length of three miles to attend to, lived on the works, and I never found him absent.

811. Was he a cripple? Certainly not. I never observed that he was crippled in any way.

812. Is there a section of road from Sorell to Eagle Hawk Neck unnecessarily constructed, because it runs parallel with a natural road on the beach which is practicable at all states of the tide? The amount of construction expenses for the section of the road near East Bay Neck through Mr. Scrimger's property was limited to about £30 compensation for land taken, and the clearing only at some 8s. per chain for between 30 and 40 chains. The road was laid out as an approach to a bridge constructed over the One Mile Creek. I am sure this work was a mistake; and had I been able to have seen it when first laid out I should not have sanctioned it; but I have every reason to believe that the District Inspector who prepared the contract was misled by some of the local people, who represented to him the danger that existed in flood time from following the beach where this creek emptied itself.

813. Do you know the particulars of Mr. Nimmo's difference with the Department? Yes, but I have never seen his work.

814. Can you say from personal inspection what his failure was? No; I cannot spare time to inspect small £15 to £20 contracts in outlying places like this, but leave them to the inspectors.

815. Do you know if Mr. Cheverton gave him the contract on specifications prepared by Nimmo himself? I do not know, Mr. Cheverton left the Department before I entered it.

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MR. JOHN HELMER *examined*.

816. *By the Chairman.*—With regard to the deviation of the road at Castle Forbes Bay, through Heriot's land, would not the road have been better if constructed over the rises instead of going by the route you took? No, as a cutting would have been necessary on either rise, about 10 feet in depth and 10 chains long; and about 5000 cubic yards of stuff would have had to be removed. A large culvert, 60 feet long, would also have been necessary in the hollow, as a large creek comes down; and the whole road would have required metalling. The old road being only 20 feet wide between the fences, the slopes of the new road would have extended into private property, for which compensation would have had to be paid. The cuttings would have cost £250, the culvert £50, the metalling £360, and the fencing £20; total £680 without compensation; while the road, as constructed, cost £440, and the compensation £95; total £535—giving a clear saving of £145.

817. Are the slopes in the rises so uniform that taking the maximum depth of the cutting at 10 feet the mean depth would be about 5 feet? Yes, the mean depth would have been about that.

818. Was another road projected by Mr. Randall? The first portion of this route was Mr. Randall's, and I kept along it for a certain distance and then continued along level road until I joined the old road again.

819. Did you take a section of the old road? Yes, I ran out the quantities roughly.

820. Is there any record of the calculation you made? There might be one at the office among my papers.

821. In the continuation of this road, where it overhangs the sea, were logs left in the batter and made part of the slope? I had nothing to do with that road, Mr. Randall had charge of it.

822. When was the contract for that road finished? About 18 months ago; it was finished before I took charge.

823. Has any part of that road broken away? No, but where the deep sideling is the road is settling down a little, but no part of the road has been carried away.

824. Do you know from your own personal inspection that the road is in danger from these logs being left? The logs were left there, and the material thrown on them. These logs were lying on the slope end on, and would in no way endanger the road.

825. Have you inspected the recent repairs to the Sorell Causeway? I went down and saw Mr. Coram, and arranged to have the repairs effected temporarily. I started the men at the work, and stayed there one day, but have not been down since.

826. Is the statement correct that about one-half the material used was soft stone, and the rest loose sand? I do not think so. The material was taken from the quarry where it had been left when the causeway was made. All the stone there is sandstone. The stones which had been washed off the outer facing I had picked up and packed in again.

827. Was a large proportion of sand used? No, stone spillings entirely, except the sand formed by the stones working about.

828. It is stated that some repairs were done to the causeway twelve months ago which cost £30, but were not worth £10. Is that correct? It was not done under my inspection. Mr. Fincham arranged that.

829. Were the specifications avoided with regard to the metal on the Cambridge Road? It was not under my inspection. I know nothing of it.

830. What was the difference between Mr. Nimmo and the Department as to his contract? He did not conform to the specifications. The slabbing was to be 4 inches thick, and of good sound timber, but some of the slabs which I measured with him were only  $1\frac{1}{2}$  and  $1\frac{3}{4}$  inches thick on the thin edge, while some were split out of decayed timber. I went over the work with him twice, and on the last occasion he had finished his contract.

831. He states you pointed out no defect? I did. I went up to his house and went over the work with him. The first time I went down I did not know where he lived, but the next time I went down I went to his house, and went over the work with him, and pointed out the defects.

832. On what specifications did he take the contract? The contract was entered into before I took office. I believe he made an offer to the Department.

833. Did Mr. Cheverton agree with him upon specifications which he (Nimmo) prepared? I think the specifications were sent to the office, and Nimmo wrote about the matter and his tender was accepted, but another specification was written out when his tender was accepted, stating the thickness of slabs, &c.

834. Was any other defect found in his work? Only the slabs. I found many that were not 4 inches thick. Perhaps with thin defective and decayed slabs about 150 were faulty.

835. Was he so employed on some grubbing and other work on Fitzpatrick's abandoned contract? There were a few small roots left in the piece he slabbed, but he was not employed on any separate grubbing during my time. He charged for some grubbing, but it was on the piece he had to slab.

836. Was this grubbing provided for in the specifications? No; but he knew he had to do it.

837. *By the Minister of Lands.*—Were the slabs defective in length? Yes, some were only 9 feet instead of 10.

838. Are you under the impression that he clearly understood what work he was to do? Yes; but when I went over the work I measured the slabs and pointed out some less than 4 inches, when he stated that he did not tender for any particular thickness of slabs.

839. *By Mr. Cox.*—It is stated that the Government have never explained to him what was wrong with his work—is that correct? I pointed out to him the defective slabs, and what was wrong has been explained.

840. It is stated that no fault was found with the work—is that correct? It is incorrect.

841. It is stated that more work was required but he was not informed what work—is that correct? I pointed out the defects in his work, but he would not listen, and abused me.

842. Did you leave word with a neighbour pointing out the defects? That was the first time I inspected the work. I enquired where he lived from a neighbour, who told me Nimmo lived about a mile away in the bush, and as I had not time to look him up, I said, on being told that he was going to town, that I would see him there. I did see him, and then told him what was wrong.

843. Did you tell him on the occasion of your going over the work with him that you would take care he was not paid? I most likely told him I would not pass the work, and I remember he said he could get it passed without my interference.

844. Did you go down thinking the work was done, and find he had not commenced, and then tell him to begin? I believe he was written to from the Department in reply to his offer, but I could not be positive now about it. I believe there was a delay in his receipt of the letter, and I told him that I knew the work was approved, and most likely told him to go on with the work.

845. He states that he received a reply, but when he did so he had already commenced the work: is that correct? I could not say.

846. He states, "Mr. Helmer brought down my specifications;" did you do so? I don't know whether I had his specifications or not. It is over three years ago, and I could not say. I fancy I would have the official copy. His offer was contained in a letter, but he did not prepare any specifications.

847. Was the length of the slabs the only thing he bound himself to? His offer was made in a vague form altogether.

848. When you saw him did you tell him his tender had been accepted? I told him he had been written to from the office, but I don't think I exactly told him to go on with the work. I told him he had better go to the Post Office and get the letter. I cannot say whether I told him to go on with the work or not, as it is so long ago that I don't recollect.

849. *By the Chairman.*—Did you tell him he would be paid for grubbing or other work not mentioned in the specifications? No.

850. Did he tell you he expected to be paid for it? He sent in a claim afterwards, but said nothing about being paid before he entered on the work.

851. Is it usual to include grubbing when there are properly written out specifications? Yes.

852. Then he worked on specifications which could not be termed properly written out? The contract was taken before I took office, and there were no specifications beyond his letter.

853. *By Mr. Cox.*—Could he have slabbed without grubbing? No, the roots were in the roadway and had to come out.

854. When he offered to do the grubbing did he make a proviso that you should do the grubbing to enable him to do the slabbing? No.

855. *By the Chairman.*—Was his original tender made on 4th December, 1876? That was before I joined the Department.

856. *By Mr. Cox.*—Was the work done in a substantial and workmanlike manner? No, distinctly not. Some of the slabs were split out of decayed timber, and some were not of the specified length by a foot.

857. What would you say was about the average thickness of the slabs; was it sufficient? A good many were only  $1\frac{1}{2}$  and  $1\frac{1}{4}$  inches thick on the thin edge.

858. What proportion would the bad and defective slabs bear to the whole? About one-fourth.

859. Do you know anything about the clerk of works employed on the Cambridge Road? No, he was a stranger to me.

860. *By Mr. Lamb.*—Were you one of the contractors for the completion of the Sorell Causeway? Yes.

861. Is it a fact that £700 was deducted from your contract for not carrying out the specifications in not making a sufficient slope on the western side? No, it was said the material was bad, and that the stones were too small and soft, but it was the only material we could get, and came from the cutting.

862. Then you think it was owing to the bad material used at that part that the damage has occurred? No, the slopes should have been properly hand-packed, as that part should have been better protected. Better material and workmanship should have been provided for in the specifications. The work was carried out according to specifications.

863. *By Mr. Cox.*—Did your specifications provide that you should take the material out of the cutting and form the embankment with it? Yes, though of course the best of the stone was to be taken.

J. M. DOOLEY, *Esq., M.H.A., further examined.*

864. *By the Chairman.*—Have you anything further to state with reference to the construction of Public Works? Yes. I might mention the case of a complaint made against the Department by Mr. Crocker, who constructed two bridges near Railton under the Waste Lands Act.

865. *By Mr. Brown.*—What was the nature of his complaint? The disappointment and inconvenience he experienced in not having his work inspected and reported on when completed.

866. Who was the Inspector? Mr. Cresswell.

867. Do you know why Mr. Cresswell delayed inspecting the work? Not of my own knowledge, but only as stated to me by Mr. Crocker.

868. What reason was given by the Inspector for the delay? I know nothing of the matter beyond what Mr. Crocker told me, and his complaint will be found in the correspondence which is in the office. He told me that he could not get a settlement, but made other charges as well.

869. *By the Chairman.*—Have you any personal knowledge of any defects in the construction of Public Works throughout the Colony? I have not applied myself to the investigation of the manner in which Public Works have been constructed.

870. "The rough sketch of the road at Sheffield submitted by Mr. Cresswell referring to Dooley and Sweeney's contract does not represent the part of the road to which I referred when I stated that soil had been carted on to a rise to keep the grade." Do you still adhere to that statement? Most decidedly.

871. Is there any other information you can give, or any improvement to suggest, with reference to Public Works construction? I have heard that Mr. Cresswell stated that work now costs 50 per cent. more than formerly in some instances, and 25 per cent. in others.

872. Where has he stated that? Before people in Latrobe; but I have never heard him say anything beyond the fact that work costs more now than formerly. He attributes the increased cost to scarcity of labour, but contractors attribute it to the surroundings and conditions of the contracts.

873. *By the Chairman.*—Will you define these surroundings and conditions which make work more costly? I could not do so without going through the conditions and specifications clause by clause. However I consider them too complicated and one-sided.

874. *By Mr. Brown.*—Would you prefer a more lax method of dealing with contractors? No, I would make the conditions equally binding.

875. Could you suggest anything which would make them less one-sided? I have not applied myself to consider them, and could not undertake it.

876. *By Mr. Cox.*—Have you read the conditions used by the Public Works Department? Not carefully, but I will take a copy and make remarks on them for the information of the Committee.

877. *By Mr. Brown.*—Do you state generally that the conditions and specifications are too complicated and too stringent on contractors? The conditions and specifications are so, and the practice of the Government in retaining the sole power of deciding in case of dispute is objectionable, and I think that contractors put an extra per-centage on the amount of their tenders on this account.

JAMES FINCHAM, *Esq., further examined.*

878. *By Mr. Brown.*—Has the Department found any difficulty in carrying out the maintenance of Main Roads under the Act passed last Session? Not more than I expected at the first introduction of such a measure.

879. Some of the local bodies have refused to work under the Act, have they not? Some have refused, and others have ignored the invitation to act.

880. What reasons are given for such refusal? In some cases no reasons whatever have been given and in other cases the subsidy was complained of as being too small, and in some, members of the Board stated their objections to working for the Government without pay.

881. Do you think it would be possible to carry out the Act generally without such restrictions as would render it unpalatable to local bodies? Yes, if we are able to give them better assistance, and check by better supervision. The regulations are perhaps a little strict on account of the difficulty at present of supervising their work as closely as I should wish, and from my experience so far the Boards that have acted seem desirous of having further supervision, for cases are constantly occurring where they feel the want of technical assistance. At present a very large, and I had almost said unfair, amount of responsibility is thrown upon myself in having to recommend tenders and pass accounts without having the adequate means of fully checking them, but I have availed myself as far as I could of the services of the two permanent inspectors.

882. Do you see any difficulty in extending the system adopted with regard to the Main Road between Hobart Town and Launceston to any other road in the Colony? Only the want of adequate supervision; but I should prefer, after the experience I have had, to see that road, as well as all the other Main Roads of the Colony, managed by Boards, provided they had a sufficiently large area under their charge, and provided that we had the means of properly assisting them and checking both their proposed and finished works. The system which now prevails of having so many small Boards with, in some cases, two or three miles of road to look after, is a mistake. Our chief difficulty in carrying out the Act at present lies in maintaining the roads where the Boards have refused or neglected to act.

883. Has no attempt been made to let such roads in sections? We have let some by contract, and some repairs we have done by day-work.

884. What wages are the day labourers paid? 5s. to 6s. according to the locality.

885. Have you overseers upon whom you can depend as to getting a fair day's work from the men employed? I have no reason to be dissatisfied with the results of the work done under these overseers.

886. Would you or would you not prefer, where possible, letting sections to contractors, to be kept in repair for certain periods? I should not recommend that plan, but should have no objection to employ section men at day wages if I could look after them, or get the local authorities to do so. I find it a difficult matter to define and specify with sufficient clearness for the understanding of the contractors exactly what scale of maintenance would be required, and in his tender I am afraid he would allow too much for the risk of the unknown work that might be required of him.

887. Will the increased requirements as to supervision, to which you have alluded, be provided for by the proposals for supervision now made by the Government? The staff which I have proposed that the Government should employ in order to carry out the scheme of roads and bridges now before Parliament would be sufficient, and was intended to provide for the supervision and all other expenditure of every kind under the department, and beyond what should be fairly undertaken by the two permanent Inspectors of Works. I feel sure that unless I was able to charge a portion of their salaries to the other expenditure, as under Waste Lands Act, Main Roads Maintenance, and Country Buildings, I could not keep the total cost of surveys, drafting, clerical work, inspection, measurements, &c. within the limits of the £8000 which I proposed should be the cost of surveys, supervision, &c. in connection with the Public Works Scheme now before Parliament; and I base this assumption upon the analysis of the cost of the Department since 1862, given in my last report, and upon the conviction that, if anything, while carrying out the Public Works authorised by Public Works Construction Act, 1877, we were under-manned.

888. Do you approve of the present system of charging salaries of temporary officers against votes for work? I have always considered it very unsatisfactory, and it seems unfair to take from certain localities a portion of the moneys that ought fairly to go in actual work of construction.

889. Would not that apply to all localities for which money has been voted? Yes; but in some cases it is not felt, while in others it is a hardship, especially where the vote is small and inadequate for the work.

890. Have the works for which £400 (Government House) has been included in the Supplementary Estimates, now before Parliament, been commenced? They are nearly completed.

891. Were tenders called for? Yes, for portions, and others were done under the contract for general repairs for the year 1880. A portion of the work in connection with the large kitchenier could not possibly have been let by contract, was given to Mr. Meech, who has worked for Government House for a great number of years past, and can do better for us there than a stranger.

892. Will you explain to the Committee what is the nature of the annual contract for work? In order to do away with any suspicions of favouritism in connection with the smaller building contracts I made out a schedule of prices for all the different kinds of work, materials, and labour, based upon what the Department has been paying, and then invited tenders at a fixed per-centage to be stated by contractor above or below these rates at which he would do the work. This plan is that adopted by the English Office of Works, and I have found it answer very well.

893. Have contractors power to sublet their contract? Not without permission in writing.

894. *By Mr. Cox.*—Has it been satisfactorily done? I have not inspected it, but the Clerk of Works has reported that it has been most satisfactorily done.

895. Has anything beyond cheapness and efficiency been considered in accepting tenders? The work is done under tenders publicly called for. Mr. Cronly's being the lowest was accepted. It was 15 per cent. below rates charged previously. He had not done much work before for the Department.

896. On whose recommendations, and what were the character of the recommendations through which Edwards was appointed sub-inspector of Russell's Falls Bridge? I received a written recommendation from Mr. Henry Dobson.

897. Did the promoters of the Entally Bridge recommend him? No; they objected to his being appointed inspector of the Entally Bridge. He was clerk of works at an adjoining bridge, and when I sent him to look after both the promoters of the Entally Bridge objected to him.

898. Did you hear anything against him personally from them? No.

## APPENDIX.

## MR. M. CRESSWELL'S TESTIMONIALS.

1. From H. P. Le Mesurier, appointing him Unclassified Assistant Engineer on the G.I.P. Railway in January, 1858, at a salary of 200 rupees per month.
2. Promoted to Second Class Assistant Engineer, at 600 rupees per month. Was then in charge of the line between Callier and Agapoorra, including Thul Ghât.
3. Resigned January, 1872, receiving complimentary certificate from L. Ward, District Engineer.
4. Went on I.S.R., Holkar, and served there till February, 1873, when compelled to resign through ill health.
5. Employed on Tasmanian Main Line Railway 2½ years as Assistant Engineer. Was in charge of working line throughout, and of completion of construction from Jerusalem to Ross. Services acknowledged by letters from Messrs. C. H. Grant and James Fincham.
6. The certificate of Mr. Le Mesurier, Agent and Civil Engineer, G.I.R., is Mr. Cresswell's diploma as a Civil Engineer, he having left the Engineer's Office in which he served in England as a young man yet unclassified.

## TO THE EDITOR OF THE "MERCURY."

SIR,

THE Select Committee appointed to enquire into and report upon the administration of the Public Works Department desire to investigate the charges brought anonymously in the columns of *Mercury* against that Department.

The charges referred to are those contained in letters signed "Spikenail" and "Sledgehammer;" and, as Chairman of the above Committee, I have to ask you to give up the names of those anonymous writers in order that they may be summoned to give evidence before the Committee.

1st September, 1880.

E. BRADDON, *Chairman.*

*The Mercury and Tasmanian Mail Offices, Macquarie-street,  
Hobart Town, 2nd September, 1880.*

SIR,

I HAVE to acknowledge receipt of your letter to the Editor of the *Mercury*, dated yesterday, intimating that "the Select Committee appointed to enquire into and report upon the administration of the Public Works Department desire to investigate charges brought anonymously against that Department," and asking that the names of the writers of certain letters be given up.

I need scarcely remind you that correspondents address the *Mercury* under a distinct engagement that in giving their names they do so under the seal of confidence, and that under no circumstances are their names to be made public. I am, therefore, obliged to respectfully decline complying with your request.

Having consulted the proprietors I am, however, authorised to say that they have written the writers of the letters you mention communicating your request, and that on hearing from them I will do myself the honor of again addressing you.

I have, &amp;c.

E. BRADDON, *Esq., M.H.A.*

JAMES SIMPSON.

*House of Assembly, 7th September, 1880.*

SIR,

I AM requested by Mr. N. H. Gerrand, of Formby, to inform your Committee that he desires his case v. the Government, *re* Cam Bridge Contract, to be brought before the Committee for investigation. Mr. Gerrand will employ Counsel, and also an Engineer—Mr. Townsend, of Latrobe—to conduct his case. I believe it will be a very interesting case.

I am, &amp;c.

J. M. DOOLEY, *M.H.A.*

*The Chairman Select Committee on Public Works.*

*7th September, 1880.*

SIR,

IN reply to your letter of 7th instant, I have to inform you that Mr. Thos. Townsend has already been summoned. He will therefore have an opportunity of representing the case you refer to.

The Committee are of opinion that it is undesirable to hear Counsel in this matter.

Yours,

J. M. DOOLEY, *Esq., M.H.A.*E. BRADDON, *Chairman.*

*House of Assembly, 8th September, 1880.*

SIR,

MR. S. D. CROCKER, of Railton, has advised of his desire to bring before your Committee his case *Crocker v. Government*.

Crocker is a contractor under the Lands and Works Department for works near Railton, and asserts that he had been unfairly and badly treated in respect thereof. If your Committee decide to hear his case you may summon him.

His complaints are many and grievous, and in my opinion ought to be investigated.

I am, &c.

J. M. DOOLEY, *M.H.A.*

*The Chairman Select Committee on Public Works.*

*8th September, 1880.*

SIR,

IN reply to your letter of yesterday's date I have to inform you that the Committee on Public Works have decided that it is hardly necessary to summon Mr. Crocker before them; but if Mr. Crocker chooses to attend on his own account, paying his own expenses, the Committee will hear and enquire into his case.

E. BRADDON.  
9. 9. 80.

To J. M. DOOLEY, *Esq., M.H.A.*

*14th September, 1880.*

DEAR SIR,

WITH reference to your note of the 2nd inst. I have the honor to enquire whether it has yet been decided that the writers "Spikenail" and "Sledgehammer," or either of them, will appear before the Select Committee on Public Works Department.

It is the intention of the Committee to send in their report next week.

I am, &c.

To the Editor of the Mercury.

E. BRADDON, *Chairman.*

*18th July, 1880.*

CAM BRIDGE.

SIR,

OUR estimates of quantities in the superstructure as re-arranged with a large span is sent you to-night, together with a specification for the bow-string girders. You must verify the quantities for your own satisfaction.

STONE.

As there seems to be none in the district that is considered sufficiently good by the Inspector, Mr. Cresswell, you had better ascertain extra cost per cubic yard for the work if stone is brought from a distance by vessel, or else the extra cost of using bricks, taking whichever comes out the cheapest, and let me know.

Yours, &c.,

JAMES FINCHAM.

MR. R. MILBURN, *Contractor, Cam Bridge.*

Copy sent to Mr. Cresswell.

TELEGRAM.

*Port Esperance, 15th September, 1880.*

SUMMONS received; suffering from illness; unable to attend; will write.

W. H. ANDREWARTHA.

*Chairman of Committee Public Works, House of Assembly.*

*The Mercury and Tasmanian Mail Offices, Macquarie-street,  
Hobart Town, 16th September, 1880.*

SIR,

REFERRING to my letter of the 2nd instant, I am now in a position to say that Mr. James Nimmo, as the writer of the letters signed "Spikenail," is prepared to attend the Committee and give evidence, if on the ground without charge; but if he has to travel from his residence at Castle Forbes Bay to town he cannot afford the time and cost, except on condition that his expenses are paid.

The writer of the letters signed "Sledge Hammer" declines, for cogent reasons, to allow his name to be given up. He says, in addition, that the Engineer-in-Chief, if he were to examine and report on the works performed between Huon Bridge and Honeywood, and between Victoria and Port Cygnet, must substantially confirm the strictures made in our columns, and thus save the taking of further evidence.

I have, &c.

E. BRADDON. *Esq., Chairman Public Works Committee.*

JAMES SIMPSON.

I, JAMES Nimmo, of Castle Forbes Bay, in the Colony of Tasmania, Farmer and Contractor, do hereby affirm that the several matters deposed to and statements made by me before the Select Committee of the House of Assembly on the Public Works Department are true, to the best of my knowledge and belief.

And I make this solemn declaration under the provisions of an Act of the Parliament of Tasmania, intituled "An Act to provide for the Abolition of extra-judicial and unnecessary Oaths."

J. NIMMO.

Taken at Hobart Town, in the Colony of Tasmania, this  
22nd day of September, one thousand eight hundred  
and eighty—before me

E. BRADDON, *Justice of the Peace.*

*MEMO. of the Number of Days employed in laying out and inspecting Works by Inspector of Roads, Southern Division, during the Year 1879.*

	<i>Days.</i>		<i>Days.</i>
January .....	3	August .....	15
February.....	15	September .....	22
March .....	13	October.....	25
April.....	17	November .....	16
May .....	13	December .....	19
June.....	20		
July .....	23	Total.....	201

JOHN HELMER, *Inspector of Roads.*

DEPOSIT ACCOUNT.

<i>Date.</i>	<i>Particulars of Works and Names of Tenderers.</i>	<i>Amount and particulars of deposit sent with Tender.</i>	<i>How disposed of and date.</i>			<i>Remarks, date of receipt, &amp;c.</i>
			<i>Returned to Tenderer.</i>	<i>Sent to Bank for information or cash.</i>	<i>Paid into Treasury.</i>	

*From the Northern Inspector Public Works to the Hon. Minister of Lands and Works.*

1st September, 1880.

Subject: Diversion of Kindred Road.

I HAVE the honor to report that compensation for H. Smith's land, to be taken up for above work, is fixed at £10. Asks instructions.

J. M., *Northern Insp.*

*From the Minister of Lands.*

3rd October, 1880.

IN reply inform him that the amount of compensation is sanctioned at £10 as proposed.

Signature of Minister.

CORRIGENDA.

J. Fincham's Evidence, page 33.

*For answer to Question 685 read reply to Question 686, and add in continuation reply given to Question 685.*

*For answer to Question 686 read "Yes."*

JAMES BARNARD,  
GOVERNMENT PRINTER, TASMANIA.