1900.

NEW ZEALAND.

SPARKS FROM RAILWAY ENGINES

(INQUIRY INTO FIRES ALLEGED TO HAVE BEEN CAUSED BY).

Laid on the Table of both Houses of the General Assembly by Command of His Excellency.

COMMISSION.

To all to whom these presents shall come, and to JOSEPH WILLIAM POYNTON, Esquire, Stipendiary Magistrate: Greeting.

WHEREAS certain persons (whose names are set forth hereunder) in various parts of the colony have made claims against the New Zealand Government Railway Department for damage to their property by fire alleged to have been caused by sparks from railway engines:

And whereas it is expedient to make inquiry into the subject-matter of such claims, including the causes of the said fires, and the extent, if any, of the damage done thereby, and as to whether they were attributable to the negligence of any persons, and, if so, in what particulars and to what extent, and as to what precautions have been taken by the Government or the officers of the said department for preventing damage from sparks caused as aforesaid, and as to the sufficiency of such precautions and otherwise, and generally as to any matter or thing relating to the said several premises:

Now know ye that, in pursuance and in exercise of the powers and authorities enabling me in this behalf, and acting by and with the advice and consent of the Executive Council of the Colony of New Zealand, I, Uchter John Mark, Earl of Ranfurly, Governor of the said colony, do hereby appoint you the said

JOSEPH WILLIAM POYNTON

to be a Commissioner for the purpose of inquiring into the several matters hereinbefore set forth:

And for the better enabling you to carry these presents into effect, you are hereby authorised and empowered to make and conduct any inquiry hereunder at such places and at such times as you deem expedient; and also to call before you and examine, on oath or otherwise, as may be allowed by law, such persons as you think capable of affording you any information in the premisses, and also to call for and examine all such books, documents, papers, or records as you think likely to afford you any information in the premisses; and generally to inquire therein by all lawful ways and means whatsoever:

And, using all diligence, you are hereby required to report to me, under your hand and seal, your opinion, resulting from the inquiry hereby directed, in respect of the several matters investigated by you under these presents, not later than the 14th day of March, 1900, or such extended date as may hereafter be appointed in that behalf:

And it is hereby declared that these presents are subject to the provisions of "The Commissioners' Powers Act, 1867," and its amendments: and also that these presents, and

your powers and functions as Commissioner hereunder, shall continue in full force notwithstanding that the inquiry hereby directed may be interrupted from time to time by adjournment.

In witness whereof I have hereto set my hand, and caused these presents to be issued under the seal of the said Colony, at Wellington, this 15th day of January, 1900.

RANFURLY,
Governor.

Issued in Executive Council.

ALEX. WILLIS,
Clerk of the Executive Council.

LIST OF PERSONS WHO HAVE MADE CLAIMS AGAINST THE NEW ZEALAND RAILWAY DEPARTMENT FOR DAMAGE TO THEIR PROPERTY BY FIRE, ALLEGED TO HAVE BEEN CAUSED BY SPARKS FROM RAILWAY ENGINES.

Name.	Where Fire occurred.	Date of Fire.
W. S. C. Blackley, F. E. Claasen, W. Young, H. C. Fairlie, and R. M. Paterson	Whangamarino ...	15th December, 1896.
James Wallace	Papatoitoi ...	13th January, 1898.
John Gardiner	Rakaia... ...	2nd January, 1897.
Henry Mackle	Hinds	27th January, 1898.
James Moore	"	27th January, 1898.
George Williams	Woodend ...	2nd September, 1899.

REPORT.

To His Excellency the Right Honourable Uchter John Mark, Earl of Ranfurly, Knight Commander of the Most Distinguished Order of Saint Michael and Saint George, Governor and Commander-in-Chief in and over Her Majesty's Colony of New Zealand and its Dependencies, and Vice-Admiral of the same.

MAY IT PLEASE YOUR EXCELLENCY,—

Your Commissioner appointed by your Excellency's letters patent of the 15th day of January, 1900, to inquire into the several matters and things hereinafter mentioned and referred to, that is to say,—

(*a.*) Claims against the New Zealand Government Railway Department for damage to property, alleged to have been caused by fires due to sparks from railway engines;

(*b.*) The causes of such fires, and the extent, if any, of the damage done thereby, and as to whether they were attributable to the negligence of any persons;

(*c.*) What precautions have been taken by the Government or the officers of the said department for preventing damage from sparks caused as aforesaid, and as to the sufficiency of such precautions or otherwise,—

has now the honour to report to your Excellency as follows:—

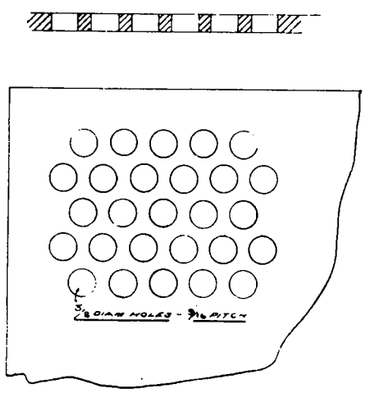
INVESTIGATION OF CLAIMS.

Evidence was taken in respect of the various claims at the places most convenient for the claimants, who were permitted to appear in person or by counsel. Witnesses were called by them to show how the fires causing the damage originated, and the extent of the damage done by them. The officers of the department called witnesses, including the drivers of the engines supposed to have caused the fires, and the guards who were on the trains at the time, to show what care was taken. In this way all the available facts bearing on the cases were brought before your Commissioner.

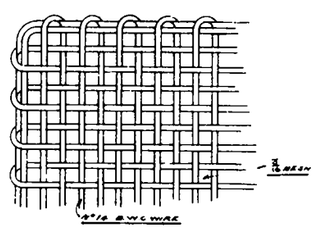
— SPARK ARRESTERS —

DIAGRAM Nº 2

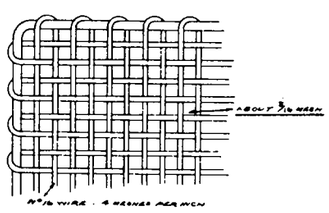
— QUEENSLAND —
— SMOKEBOX SPARK ARRESTER —



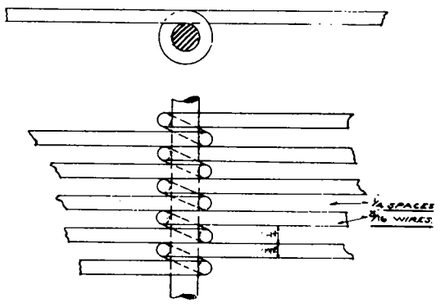
— SOUTH AUSTRALIAN —
— SMOKEBOX SPARK ARRESTER —



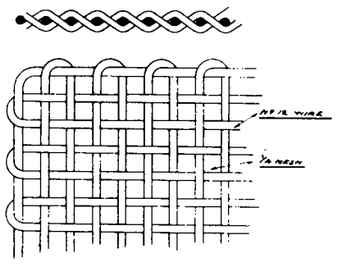
— WEST AUSTRALIAN —
— SMOKEBOX SPARK ARRESTER —



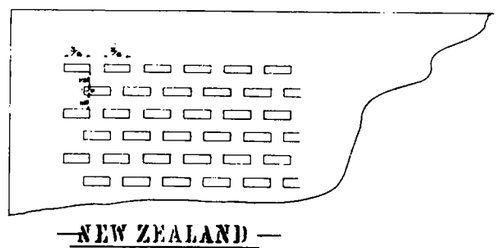
— INDIAN MIDLAND —
— SMOKEBOX SPARK ARRESTER —



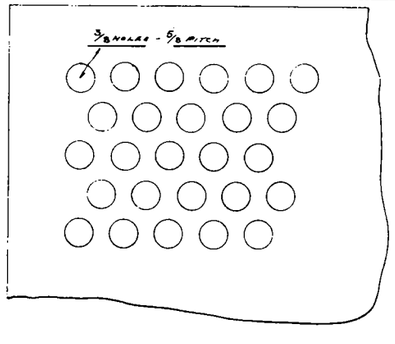
— NEW SOUTH WALES —
— SMOKEBOX SPARK ARRESTER —



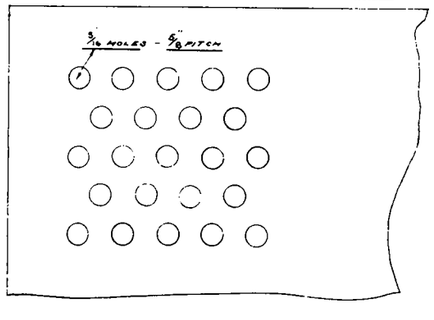
— NEW ZEALAND —
— SMOKEBOX SPARK ARRESTER —



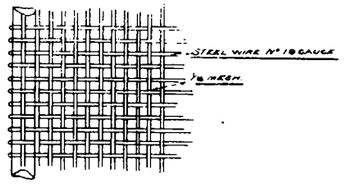
— NEW SOUTH WALES —
— ASHPAN SPARK ARRESTER PLATE —



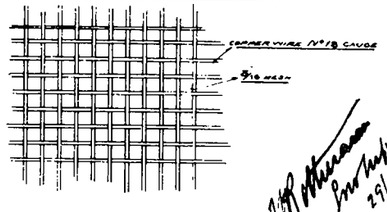
— NEW ZEALAND —
— ASHPAN SPARK ARRESTER PLATE —



— ASSAM-BENGAL —
— SOUTH AND INDIAN —
— SMOKEBOX SPARK ARRESTER —



— MADRAS RAILWAY COMPANY —
— SMOKEBOX SPARK ARRESTER —



J.T.P. Williamson
Loco Engr
29/8/98

— GREAT INDIAN PENINSULA —
— SMOKEBOX SPARK ARRESTER —

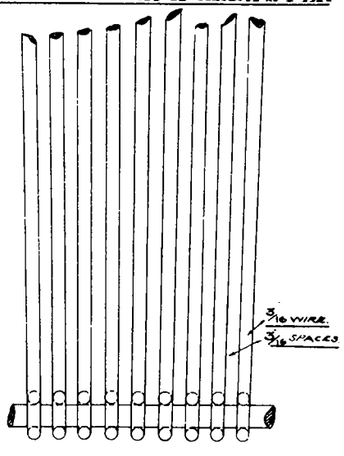
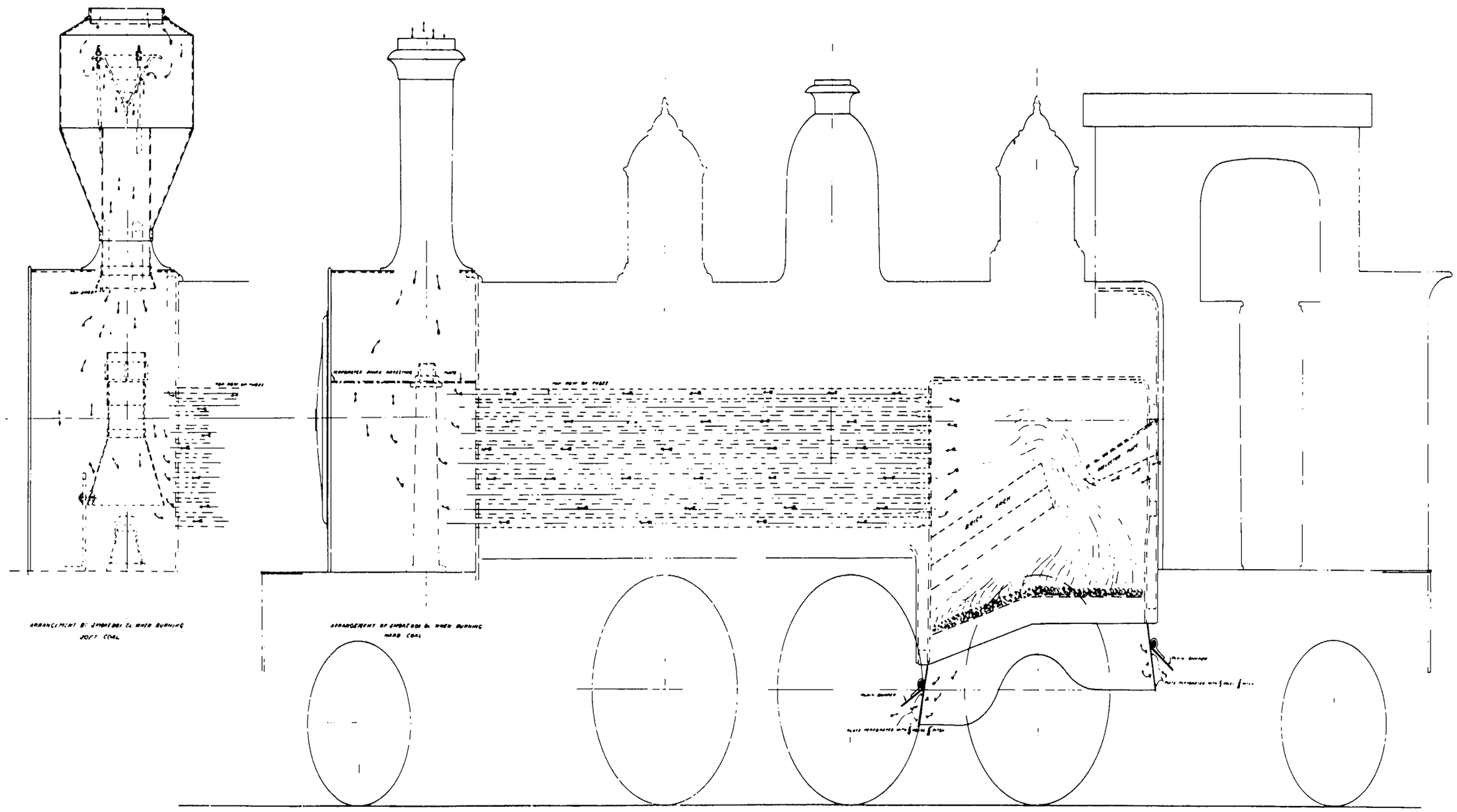


DIAGRAM SHEWING SIZE OF MESH AND PERFORATIONS IN PLATES OF SPARK ARRESTERS ON DIFFERENT RAILWAY SYSTEMS, ALSO SIZE OF HOLES IN NEW SOUTH WALES AND NEW ZEALAND ASH PAN DAMPERS.

DIAGRAM No 1.



—N.Z.R.—

—— DIAGRAM SHEWING ARRANGEMENT OF SPARK ARRESTING PLATE. ——

—— PERFORATED DAMPERS TO ASHPAN, & &c ——

—— IN USE ON THE NEW ZEALAND RAILWAYS ——

Causes of Fires.

There can be no doubt that fires are caused by sparks from engines. Allowing for those that may be due to the throwing out of the carriages by passengers of lighted matches or still smouldering stumps of cigars, there are still some that can be accounted for only by sparks falling from the engines on dry inflammable matter. These fires always occur in the dry season, and if there is much wind they spread in spite of all efforts to check them, sometimes doing much injury.

Claims investigated, and Findings thereon.

Claim of W. S. C. Blackley and Others.

This fire caused considerable damage to a wattle plantation. The exact amount of the damage cannot be given, but it would be somewhere about £1,000. The plantation was about three-quarters of a mile from the railway-line, on the other side of a raupo swamp. The fire started near the line, and spread through the dry vegetation of the swamp, and reached the plantation.

There were Maori gum-diggers about the place where the fire started, and they left immediately afterwards, and have not since returned. It is as likely that this fire was caused by them as by a spark from the engine.

Claim of James Wallace, Papatoitoi.

Mr. Wallace has suffered considerable damage apart from that caused by this particular fire; and, after viewing the ground, your Commissioner is of opinion that the damage is entirely due to sparks from the railway-engines. Owing to the configuration of the ground near his farm, on the opposite side of the railway-line, there appears to be an increased velocity of the prevailing wind at a particular place, which carries sparks on to his grass paddocks. Traces of former fires are very numerous, and, in addition to the damage from this source, there is constant watchfulness required on the part of members of his family during dry seasons in order to extinguish incipient fires after the passing of trains.

The amount of damage due to this particular fire would be about £20.

Claim of John Gardiner, Rakaia.

The fire causing the damage to this claimant started immediately after or just about the time of the passing of the express-train from Christchurch to Dunedin, on a piece of land leased from the department, amongst dry grass cut by the lessee for hay. After viewing the ground your Commissioner is of opinion that the fire came either from that or a former train. If from a previous train it must have been smouldering for a couple of hours. It may have been due to a lighted match or a smouldering cigar-end thrown from the train, but from the position of the road, railway-line, and the fence adjoining it, it is improbable that it was caused by any one trespassing. The fire spread for a distance of some miles, and did great damage, not to the claimant alone, but to others.

The amount of the damage done to the claimant would be about £550; to the Acton Estate, approximately, £520; to Mr. W. White, about £350; to Mr. S. Ross, £3 3s. 4d.; and to Mr. G. Elliott, 17s. 6d.

Claims of Henry Mackle and James Moore.

These two claims arise out of the same fire. It originated either in a plantation near the railway-line, belonging to the Government, or amongst some dry grass near the line. The evidence is conflicting as to whether the land between the plantation and the rails was ploughed. The fire was probably caused by a spark from the engine, but it may have been caused in some other way.

The damage to Mr. Moore's property was about £55, and to Mr. Mackle's about £85.

Claim of George Williams, Woodend.

This claimant's house was burnt during the night. A train had passed about an hour previously, but there is no evidence as to whether the fire was caused by a spark from the engine, or one from the fireplace, smouldering on the roof. The chimney was close to the place where the fire appears to have started. All that can be said is that the fire may have been due to a spark from the locomotive. The house was so near to the line and the wind was blowing in such a direction that there is a strong probability that the fire was caused by a spark from the engine.

The damage your Commissioner estimates at £50.

Negligence.

Your Commissioner cannot find, on the evidence, that these fires, or any of them, can be attributed to the negligence of any person.

The fire at Whangamarino, by which the wattle plantation was damaged, traversed an impassable swamp. The vegetation in this swamp near the railway-line could not have been cleared without great expense to the department, if at all. The fires at Papatoitoi started on the claimant's own land, and do not appear to have spread from any dried vegetation beside the railway-line. That at Rakaia began in some dried grass gathered into heaps by the lessee, making hay. Unless by consent of the lessee, the department's officers could not have removed such grass. The fire at Hinds may not have commenced on the railway-line, but in the plantation adjoining it.

Precautions taken to prevent Fires.

The regulations bearing on the prevention of fires are very complete. All those employed in maintaining the lines are enjoined to remove or burn any inflammable material therefrom, in order to minimise the risk of fire spreading from the line. These precautions appear to be generally observed. Fires are to be at once reported, on a form supplied for that purpose; and every assistance must be given by those in the employment of the department in extinguishing fires near the line.

Appliances in Use.

There are only two kinds of spark-arresters in use on the New Zealand railways. One kind is used when burning hard coal, and the other when soft coal is being burnt. That for the hard coal is a perforated plate through which all the smoke and gases, after passing through the boiler-tubes, are forced, before entering the engine-chimney. The openings in this plate are $\frac{3}{8}$ in. by $\frac{1}{8}$ in.

The best-known appliances are used in the furnaces to insure complete combustion of the coal. In all the locomotives the ashes fall through a perforated plate at the bottom of the furnace, and are then flooded with water to extinguish the embers. When soft coal is used, the blast does not force the smoke through a perforated plate. The aim is then to break up the soft, spongy masses of carbon, of which the sparks are composed, by driving them with great velocity against an obstruction. It has been found impracticable to use a perforated plate or sieve with soft coal or lignite. The obstruction against which the particles are driven is placed near the top of the funnel. The particles strike against it, or are supposed to do so, and by the impact are broken. Some of the larger pieces fall back, and are again shot upwards and further broken until they are either consumed by the oxygen of the air or are reduced to such a state of fineness that they are incapable of doing any damage. Notwithstanding such appliances sparks do escape, but these are the best-known arrangements for preventing them. On some of the Continental and British railways, when hard coal is burnt, no arrester is used. It is considered that there is little risk of fire, the hard coal not giving forth sparks to any extent.

There is a natural antagonism between spark-arresting appliances and effective work on a locomotive. All such interfere more or less with the draught, and hence diminish the efficiency of the locomotive.

Two of the witnesses in Auckland instituted a comparison between a locomotive and other engines, and contended that as it was possible to prevent sparks from the engines used for threshing purposes, so that it could be safely placed between stacks of straw; and, further, that as traction-engines did not emit sparks, therefore locomotives could with care be stopped from throwing them. The reasoning is not sound. The enormously greater work to be done by a locomotive necessitates a much more powerful blast, and what would be effective to prevent sparks in one class of engine would not do in the other. The addition of a foot or two to the chimney would not affect a spark that had already passed through the perforated plate or survived the battering process of the deflector; nor would the placing of a net on the top of the funnel be sufficient. It is immaterial whether placed on the top or near the bottom, as is done in the use of the perforated plate; and it has been found by one of these two witnesses that soft coal cannot be safely burnt in a threshing-machine, even with a net on the top of the funnel.

The appliances used on the New Zealand railways for preventing sparks are equal to if not superior to any used on the principal railway systems of the world. They are inspected daily, and any defect has to be at once reported.

The appliances being the best known, and proper supervision being exercised in order to maintain them in a state of efficiency, and reasonable precautions being taken to prevent the accumulation of inflammable material near the lines, the department is blameless in respect of fires caused by sparks from the engines. They must be regarded as accidental.

Remarks and Suggestions.

As the Auckland Section, on which soft coal only is burnt, appears to have very many fires apparently due to sparks from the engines, the department should, as an experiment, during the dry season burn only hard coal on that section. This would involve an expenditure of perhaps £1,500 for alterations to engines, and the extra price of hard coal; but the fires are so numerous, and the settlers appear to be so discouraged by them, that the outlay would be justified if the fires could in this way be prevented.

The question of damage to property by sparks from railway-engines is one of considerable difficulty. In the absence of proof of negligence the sufferer has no remedy, and, as settlement increases, the number of such claims against the department will grow. If claimants be compensated without the judgment of a Court there will be suspicion of favouritism. On the other hand, if there is to be no assistance without such a judgment, many deserving settlers will suffer great injury, if they be not wholly ruined, through no fault of theirs. Your Excellency's Advisers might consider the advisability of placing a small tax on property adjacent to the railway-lines for the purpose of compensating such sufferers. Being in the nature of an insurance, it would not press heavily on the contributors. It could be collected by the local authorities and handed over to the department without expense to it. If a fund derived from such a source existed, compensation could be given, under proper safeguards, without the necessity of Court proceedings, which must in the great majority of cases be fruitless. Your Commissioner is fully aware that there are grave objections to the adoption of such a system of compensating those injured, and submits the suggestion with diffidence. It would, however, be an attempt to solve a difficult problem. By placing the loss on all exposed to the risk, instead of on single individuals, much hardship would be avoided.

Smoking on platforms or other parts of a train, except in the smoking-carriages, should be entirely prohibited. In the smoking-carriages there should be receptacles for cigar-ends and used matches. There should be a by-law, if such be not already in force, making it an offence to throw such articles from trains, and notice of this, with the penalty for non-observance, should be posted in the smoking-carriages.

The Commission by which your Excellency honoured me is returned with this report.

The evidence taken and minutes of proceedings are being printed, and will be forwarded to your Excellency as soon as possible.

In witness whereof I have hereunto set my hand and seal, this fourteenth day of March, one thousand nine hundred.

J. W. Poynton, Commissioner.

MINUTES OF PROCEEDINGS.

INVERCARGILL.

The Commission sat at the Courthouse, Invercargill, on Monday, the 29th January, 1900.

Claim by Mr. George Williams.

Mr. A. J. McCredie, Assistant Engineer, Invercargill, represented the Railway Department.

George Williams, the claimant, gave evidence, and called William Holland, George Williams, jun., Thomas Dyke, Anthony Bulman, and Henry Kelland.

Mr. McCredie called Charles Henry Foster, Thomas Cooper, and Alexander McKenzie.

The evidence was taken down in shorthand.

WOODEND.

The Commission sat at Woodend, Southland, on Tuesday, the 30th January, 1900.

Further hearing of claim by Mr. George Williams.

Mr. A. J. McCredie, Assistant Engineer, Invercargill, represented the Railway Department.

Mr. Williams, the claimant, called Robert Eunson and Michael Keneally, and the evidence was taken down in shorthand.

The Commission visited the scene of the fire.

RAKAIA.

The Commission sat at the Courthouse, Rakaia, on Monday, the 12th February, 1900.

Claim by Mr. John Gardiner.

Mr. A. L. Beattie, Locomotive Engineer for the Hurunui–Bluff Section, and Mr. H. Macandrew, District Engineer, Christchurch, represented the Railway Department, and Mr. B. L. Lane appeared for the claimant.

Mr Lane: Sir, the facts of this case are shortly to this effect: On the 2nd January, 1897, a fire occurred, starting apparently in the neighbourhood of the railway-line a short distance from the Rakaia Railway-station, going towards Ashburton. The department, I understand, has had plans made of the ground the fire covered, which plans will be put before your Worship by Mr. Macandrew. The fire, as the evidence will show, was discovered a short time after the express-train for Dunedin had left the Rakaia Station. It soon extended, taking the direction the wind was going—from close to the railway-line over the piece of waste ground that was covered with grass between the hedge and the railway-line, and then on to Mr. Gardiner's land. It travelled at a great pace, and did considerable damage, as I shall prove later on, by burning hedges, as well as 200 acres of grass, an out-crop, and a large number of sheep. The department has had a survey of the ground made, which we are quite prepared to take as correct, showing the area that was damaged. The sheep—ewes and lambs—were in a paddock, and could not be removed from the fire before they were injured. There was also an extent of gorse fencing, which Mr. Gardiner estimates at from three to three miles and a half in length. This was also surveyed by the department, and we are quite prepared to take their figures. Officers of the department visited the locality; and Mr. Gardiner afterwards took legal advice as to his position, and his rights, and was advised that he had no claim to take him to a Court of law, not being able to prove legal negligence on the part of the Government. He then instructed us to write the following letter:—

DEAR SIR,— Christchurch, 12th January, 1897.

We have been instructed by Mr. Gardiner, of Rakaia, to write to you with reference to the damage sustained by him through a fire, which he believes spread on to his land from the railway reserve adjoining shortly after the south express train from Christchurch to Dunedin passed his property near Rakaia, on Saturday, the 2nd day of January instant.

We are informed by Mr. Gardiner that you inspected the scene of the fire, and saw the serious effect of it upon our client's property on Monday, the 4th instant.

Mr. Gardiner, from the information he has gathered, believes that there is no doubt the fire originated from the engine of the express-train, and as he has suffered most serious damage by the fire, he wishes us to ask on his behalf, if your department can see its way to compensate him for the loss he has sustained.

Mr. Gardiner admits that it is very difficult to assess the actual damage and loss sustained by such a fire, but he estimates his actual loss at £600, which is his valuation of the loss by the fire of three miles of fencing, 200 acres of grass, 100 acres of out-crop destroyed and damaged, and 600 cross-bred ewes and lambs actually destroyed or rendered valueless.

Our client submits that the above assessment of his pecuniary loss is a fair and reasonable one, but at the same time admits the difficulty of arriving accurately at the actual loss sustained, and he therefore suggests that, if the department can see its way to help him, and is not satisfied with the fairness of the above assessment, that it be left to yourself and Mr. Fenn, or any two farmers in the district you agree upon, to inspect the scene of the fire, and make an assessment of the amount of damage sustained by our client.

On Mr. Gardiner's behalf, we ask you to be good enough to submit the facts to your department with his request that it can see its way to assist him in his most serious loss, by compensation. Yours, &c.,

LOUGHREY AND LANE.

J. Burnett, Esq., Resident Engineer of Railways, Christchurch Railway-station.

To that letter we received a reply, dated the 15th January, as follows:—

GENTLEMEN,— Engineer's Department, Christchurch, 13th January, 1897.

I am referring your letter *re* damage by fire to Mr. Gardiner's land at Rakaia to headquarters at Wellington. I may say that the Railway Department does not admit any liability in the matter, and that, although arrangements are being made for measuring up the area burnt, this is not to be taken as in any way admitting that the department is in any way responsible. Yours, &c.,

JAMES BURNETT, Resident Engineer.

Messrs. Loughrey and Lane, Solicitors, Christchurch.

A certain amount of verbal communication—personal interviews—then took place; and on the 6th March Mr. Burnett wrote to us as under:—

GENTLEMEN,— Resident Engineer's Office, Christchurch, 6th March, 1897.

In reply to your letter of 12th January, asking on behalf of Mr. Gardiner for compensation for damage by fire on 2nd January, I have the honour to inform you that the matter has been considered by the Hon. the Minister for Railways, who has decided that he cannot see his way to pay any compensation.

I have, &c.,

Messrs. Loughrey and Lane, Solicitors, Christchurch. J. BURNETT, Resident Engineer, Per E.M.C.

Nothing further was done for a little time; but shortly afterwards Mr. Gardiner had information given to him that two passengers on the train had actually seen a good many sparks coming from one of the engines attached to the train just as it was leaving, or shortly after leaving, the Rakaia Station, and that they also noticed a fire burning where it was said it started. Before they got out of sight they also saw the fire burning through the fence, and they had no doubt that was the fire that did the damage. Then, we wrote to Mr. Burnett on the 15th April as follows:—

DEAR SIR,— Christchurch, 15th April, 1897.

Referring to your letter to us of the 6th of March last *re* the fire on Mr. Gardiner's property at Rakaia, Mr. Gardiner wishes us to inform you that he has obtained the evidence of two men who were travelling in the train in question, and can prove beyond all doubt that the fire was caused by the sparks falling from the railway-engine. Our client wishes to know if your department, on being satisfied with the correctness of this statement, will reconsider its decision not to entertain our client's claim for compensation.

Yours, &c.,
LOUGHREY AND LANE.

John Burnett, Esq., Resident Engineer,
Christchurch Railway-station.

In reply to that letter we received a communication from Mr. Burnett, saying he would be glad to interview those people, and some one afterwards interviewed them, their names being supplied to the department by Mr. Gardiner. The matter apparently rested there till Mr. Gardiner petitioned the House praying for compensation, and alleging the facts as he understood them and setting out the particulars of his damage. The next communication that Mr. Gardiner received was one advising him that you, Sir, would hold a Royal Commission. I have, unfortunately, not been able to get one of the witnesses who was on the train, but I hope that he will be here before twelve o'clock. I shall first call the two men I have, who can give the best evidence we are able to lead as to how the fire probably originated. I may say that for a few months Mr. Gardiner has had no personal communication with Mr. Mackay, the first witness I shall call.

Mr. Lane called James Ross Mackay, James Irvin, John Gardiner, and John McLean; the evidence being taken down by the reporter.

Mr. Beattie called Thomas Davidson, William Hill, and Albert Lees; and the evidence was taken down by the reporter.

The Commission visited the scene of the fire.

ASHBURTON.

The Commission sat at the Courthouse, Ashburton, on Wednesday, the 14th February, 1900.

Claims by James Moore and Henry Mackle.

Mr. W. J. Cresswell appeared for the Railway Department, and Mr. C. W. Purnell for the claimants.

It was agreed to take both cases together.

Mr. A. L. Beattie, Locomotive Engineer for the Hurunui–Bluff Section, and Mr. H. Macandrew, District Engineer, Christchurch, were also in attendance.

Mr. Purnell: Sir, the facts are these: A fire occurred on the 27th January, 1898, and the matter has been before the Government ever since. The two men, Moore and Mackle, are small farmers at Hinds. Their land is pretty close to the railway. On the day in question, just after the express had passed, the grass immediately alongside the railway was seen to be on fire. A nor'-wester was blowing, and my clients' land, lying to the south or south-east, soon caught, and the fire travelled over it with great rapidity. It was stopped only with great difficulty. I do not know that I shall be able to produce evidence to show that sparks were actually seen to proceed from the engine, because the persons I shall call were not near the engine at the time. Between Moore's land, which is nearest the railway, and the railway itself there is a plantation on the railway reserve. It was a young plantation. The trees were only two or three years old, and did not obstruct the view of the railway-line in any respect. Between the plantation and the actual line, also on the railway reserve, there was a strip about half a chain wide of tussock and grass. It was a dry season, and the grass was long and dry. It happened that Mr. Moore was standing at the door of his house, looking towards the railway, when the south express came along. Another person was with him. At the time of the express arriving there was no sign of fire; but immediately after the express had passed—in fact, the tail of the express had only left the plantation—smoke was seen rising between the plantation and the railway-line. The smoke rapidly increased, and flames appeared, and the fire, swept by a nor'-wester, was carried over the whole country. After hearing the evidence, I think your Worship will come to the conclusion that the fire was caused by the engine. Nothing else could have caused it. No person was about, and up to the present time I am not aware that the cause of the fire has ever been disputed. As to the damage in each case it was substantially the same. A quantity of fencing and feed was destroyed; but I cannot produce copies of the claims they made at the time, as neither of my clients kept copies of them.

Mr. Purnell called James Moore, William Fleming, Samuel Horsnall, John Studholme, David Henry Miller, Thomas Staunton, and Henry Mackle, and the evidence was taken down by the reporter.

Mr. Cresswell called John Brooker and Alexander McKee, and the evidence was taken down by the reporter.

CHRISTCHURCH.

The Commission sat at Christchurch on Friday, the 16th February, 1900.

Mr. Stringer appeared for the Railway Department, and Mr. B. L. Lane appeared for Mr. John Gardiner, a claimant.

Mr. A. L. Beattie, Locomotive Engineer for the Hurunui–Bluff Section, and Mr. H. Macandrew, District Engineer, Christchurch, were also in attendance.

William Lawrence Allan gave evidence as to damage done on the Acton Estate by a fire on the 2nd January, 1897; Henry Archibald gave evidence with regard to Mr. John Gardiner's claim;

Walter Edward Street, with regard to damage done on Mr. White's farm by the same fire; and evidence was also given by George Hanmer and Alfred Luther Beattie. The evidence was taken down by the reporter.

WAIRANGI.

The Commission sat at Wairangi on Thursday, the 1st March, 1900.

Claim by Messrs. W. S. C. Blackley and Others.

Mr. Theo. Cooper appeared for the Railway Department, and Mr. P. Oliphant for the claimants.

Mr. A. V. Macdonald, Locomotive Engineer, and Mr. C. Holm Biss, District Engineer, were also in attendance.

Mr. Oliphant called John Young, William Young, sen., Frank West Green, Harry Stretton, William Young, jun., and William Henry Andrews, and the evidence was taken down by the reporter.

Mr. Cooper called William Wildermoth, Arthur Macdonald, John Farrell, James Bennett, John James Curby Hackett, and Thomas Slade, and the evidence was taken down by the reporter.

The Commission visited the scene of the fire.

AUCKLAND.

Friday, 2nd March, 1900.

The Commission sat at Auckland on Friday, the 2nd March, 1900.

Claim by Mr. James Wallace.

Mr. Theo. Cooper appeared for the Railway Department, and Mr. Brookfield for the claimant.

Mr. A. V. Macdonald, Locomotive Engineer, and Mr. C. Holm Biss, District Engineer, were also in attendance.

Mr. Brookfield called James Wallace, William Ferguson Massey, Christoper Bailey, William McLaughlin, Fanny Wallace, James Grey, Robert Carruth, and Thomas Wylie, and the evidence was taken down by the reporter.

Mr. Cooper called Augustus Vanzant Macdonald, Dennis Hogan, Alfred Carmel Huckstep, Charles Smith, and Thomas Underwood, and the evidence was taken down by the reporter.

Mr. John Thompson, at his own request, was called to give evidence as to the danger of fires from engines and damage suffered by him thereby, and the evidence was taken down by the reporter.

The Commission visited the scene of the fire.

Saturday, 3rd March, 1900.

The Commission sat in Auckland on Saturday, the 3rd March, 1900.

Further hearing of the claim of Messrs. W. S. C. Blackley and others.

Mr. Theo. Cooper appeared for the Railway Department, and Mr. P. Oliphant for the claimants.

Mr. A. V. Macdonald, Locomotive Engineer, and Mr. C. Holm Biss, District Engineer, were also in attendance.

Mr. Cooper called Edmund Clifton, and the evidence was taken down by the reporter.

Thursday, 8th March, 1900.

The Commission sat in Auckland on Thursday, the 8th March, 1900.

Further hearing of claim of Messrs. W. S. C. Blackley and others.

Mr. Theo. Cooper appeared for the Railway Department, and Mr. P. Oliphant for the claimants.

Mr. A. V. Macdonald, Locomotive Engineer, and Mr. C. Holm Biss, District Engineer, were also in attendance.

Mr. Oliphant called John Gerrand and Francis Foster, and recalled William Young, junr.

Mr. Cooper called Norrys Kensington.

The evidence was taken down by the reporter.

WELLINGTON.

Monday, 12th March, 1900.

The Commission sat at Wellington on Monday, the 12th March, 1900.

Evidence was given by Henry Penn regarding the fires at Rakaia and Hinds, and by Thomas Forth Rotheram regarding the means taken on the New Zealand Railways to prevent the emission of sparks from railway-engines, the evidence being taken down by the reporter.

Tuesday, 13th March, 1900.

The Commission sat at Wellington on Tuesday, the 13th March, 1900.

Evidence was given by James Burnett regarding the fire on the property of Mr. J. Gardiner and others at Rakaia, and the evidence was taken down by the reporter.

MINUTES OF EVIDENCE.

INVERCARGILL.

MONDAY, 29TH JANUARY, 1900.

GEORGE WILLIAMS, sworn.

1. *Mr. Poynton.*] What are you, Mr. Williams?—I am a labourer.

2. You claim from the New Zealand Railway Department damages arising from the destruction of your house at Woodend on the 2nd September last, as you allege, by sparks from a locomotive?—Yes.

3. What time did it occur?—I am not quite certain; I think it was about 1 o'clock in the morning.

4. Was the house totally destroyed?—Yes, totally destroyed.

5. What was the value of the house?—I reckon £120, or more.

6. How many rooms were there in it?—Six rooms.

7. How much did it cost you?—Well, the house had five rooms when I went into it. I added a back-kitchen to it. The house, altogether, would cost me about £30 or £40.

8. The original cost was—how much?—I gave the owner £11 to let me into it.

9. How long was that before the fire?—That I went into it first?

10. Yes?—I think I went into the house in 1887—1886 or 1887.

11. The total cost to you would be £30 or £35?—Yes, without my own labour. I did the labour myself—everything.

12. Did you put up the rooms yourself?—Yes, and added a chimney costing £3 10s.

13. How much do you reckon as the full value of your labour?—About £12 10s., and then, besides, I put up scrim and paper, and put new boards through part of the building.

14. Do you reckon the total at £35?—I am not including my labour on the chimney, or scrimming, and that amount for my labour.

15. I want to know your total loss, considering the length of time that has passed since you made these repairs?—I reckon the loss of the whole building at £120.

16. Had you it insured?—Yes, the building for £25, and the furniture for £25.

17. Did the insurance cover the loss of the furniture?—No.

18. How much do you reckon you lost on the furniture?—I reckon about £10.

19. You need not describe the position of the house, because we intend to go and view it; but I want you to state all you know about the fire?—I put the children to bed about half-past 9. After I got them in bed I saw that the fire and everything was right, and went to bed myself, and the first thing I knew was I was awakened up by the noise of fire; and jumping out of bed I saw that the whole part of the building facing the railway was in flames. I opened the door and got the children out. I had not time to get anything out.

20. And you think that was about 1 o'clock?—I think that was somewhere about 1 o'clock.

21. You had been asleep?—Oh, yes.

22. Was it a windy night?—Yes, blowing a pretty fair wind.

23. Had it been dry weather before?—Yes.

24. What kind of a roof was on the house?—About three parts of it was iron and the rest weatherboards.

25. What was the nature of the roof at the end where the fire took place?—One side was weatherboards and the other iron.

26. Have you anything else to add?—When I went to bed I left a few embers, but there was no light about. I do not know of any cause but the engine doing it. There was nothing else to cause the fire that I saw.

27. *Mr. McCredie.*] When you bought the house it was an old house, was it not?—Pretty aged, I believe.

28. Had it been an old sawmill property?—I do not know I am sure.

29. The addition that you built to it, was that a new addition altogether? You did not use up any old house?—No, I bought the timber in Woodend yard and built it. I bought bricks and got a brickmaker to build the chimney.

30. Do you wish to make out that your total loss was £170—£120 above the insurance?—I was reckoning that the £50 would be deducted.

31. There is a balance of £70. You have got £50, and you do not say you have lost £50 as well?—No; I reckon my loss at £100 over the insurance—that is, including furniture and all.

32. From whom did you lease or get the house?—It was standing on the road. I paid the rates to the County Council.

33. What did you value your furniture at?—I valued it at about £35.

34. You are not quite clear about the direction in which the wind was blowing that night?—No, I did not take that much notice.

35. You did not notice when you went to bed whether it was blowing across or along the line?—No, I would not swear.

WILLIAM HOLLAND, sworn.

36. *Mr. Poynton.*] What are you, Mr. Holland?—A sawmill labourer.

37. Well, now, what do you know about this matter?—On one occasion I helped to put a fire out on the roof of the house that was burnt.

38. How long ago was that?—About eleven years ago.

39. What time of the day was it?—In the evening.

40. Can you say for certain what set it on fire?—No, I could not.
41. *Mr. Williams.*] From your knowledge of where the chimney was situated do you think it was possible for a spark from it to have set fire to the place where you put the fire out?—The engine had as big a show of setting fire to the place as the chimney had, and perhaps more so.
42. Do you think, from the direction the wind was blowing, that a spark from the chimney set fire to it?—I could not say that.
43. *Mr. McCredie.*] Why do you say the engine had as big a show, or more, to set fire to it? Do you think it had an equal show?—Oh, more so.
44. Of course, you know the engine would be further away than the chimney?—According to the way the engine throws the sparks.

GEORGE WILLIAMS, jun., sworn.

45. *Mr. Poynton.*] You are a son of the petitioner?—Yes.
46. What do you wish to say in this matter?—About three years ago I was working over in the bush, and I noticed the house burning. I ran over, and with the assistance of Mr. Eunson I put it out.
47. Was Mr. Eunson there before you?—No, he came along just after.
48. Did you notice the fire first?—Yes.
49. Had any one called your attention to it before you saw it?—No.
50. Could you say what set it on fire?—I could not say for certain.
51. What time of the day was it?—Between 2 and 3 o'clock.
52. Was it dry weather?—Yes.
53. I suppose there was fire in the house?—I could not say for certain.
54. *Mr. Williams.*] Was the fire all in one place?—In about six different places.
55. Was there any fire in the house or not?—I could not say for certain.
56. You got it out. Do you know the man who was there before Eunson?—He was working—surveying—about the line.

THOMAS DYKE, sworn.

57. *Mr. Poynton.*] What are you, Mr. Dyke?—Tally-clerk for the Pine Company at Woodend.
58. What can you tell us about this matter?—I cannot tell you anything about this matter—about the fire in question—because I never saw it.
59. *Mr. Williams.*] Do you know that it is possible for the engine to set fire to property beside the line?—Yes, I do.
60. Why do you think so?—Because she is continually setting fire to our sawdust heap at Woodend.
61. Can it throw out sparks enough to set a house on fire?—She sets up a good fire there very often.
62. You think it is that that causes the fire at Woodend yard?—We think so, but we cannot swear to it. Just directly after she passes we see the fire starting. We have to watch her in dry weather, and go and put the fires out. It is only when the train passes that there is fire.
63. *Mr. Poynton.*] How often does this happen?—Nearly daily in dry weather—in very dry weather.
64. How far is the sawmill bank from the line?—Only about a chain from the line—some of it is near the line.
65. Of course, sawdust in dry weather is very inflammable?—It is very inflammable.
66. *Mr. McCredie.*] How long has this sawdust been burning? Every day?—It is out for months, but when it gets a hold in summer it burns all the summer. In fine, dry weather we have to pay great attention to it.

ANTHONY BULMAN, sworn.

67. *Mr. Poynton.*] What are you, Mr. Bulman?—Sawmill labourer.
68. Can you tell us anything about this matter?—Not about this fire; only just the same as the last witness has said. For the last seven or eight years I have been working at Woodend. I am a member of the fire-brigade. In dry weather when the train passes the sawdust takes fire. We have to keep a lookout.
69. Are you quite sure it was the train?—Yes. We always look after the late train for a fire.
70. And this has been going on for how long?—Since I have been there—six or seven years—in the summer time.
71. *Mr. McCredie.*] Have you known sawdust to catch fire in other ways?—No; not in that part. We never expect it to catch fire from any other source.

HENRY KELLAND, sworn.

72. *Mr. Poynton.*] What are you, Mr. Kelland?—I am a settler at Woodend.
73. Do you know anything about this fire?—Nothing.
74. What have you to say about the matter in general?—I did not want to come here. I was subpœnaed to come. On Wednesday week, in the evening, after the 7 train had gone by, my children came in where I was. In consequence of something that was said I went out with some water to put on a fire. That was about twenty minutes or half an hour after the 7 train went up. I had a firewood-stack on the roadside. This fire was on the firewood.
75. What kind of firewood was it?—Just ordinary bush-wood.
76. Had it been long there?—A week or so.
77. How far was it off from the rails?—A quarter of a chain. It was right on the road at Woodend.

78. Do you believe that it was the train that set it on fire?—I cannot attribute it to any other cause.

79. *Mr. McCredie.*] Did you see the train pass?—Yes; about half an hour before that.

80. Did you see any fire coming from the funnel?—No.

CHARLES HENRY FOSTER, sworn.

81. *Mr. McCredie.*] You are an engine-driver in the employ of the Government of New Zealand?—Yes.

82. Do you remember the night you were driving the train when this fire took place?—Yes.

83. You had a very light load on?—Four carriages and a van.

84. Did you see the engine throwing sparks?—Not at all that night.

85. Did you notice Williams's house as you passed?—I did not.

86. You did not notice any sign of fire?—None at all.

87. There was no sign as the train passed?—No; I was running slowly on that particular night.

88. You did not have to get up a big head of steam or put on any fire?—No.

89. As far as you know, were your appliances in good order?—In perfect order. I did not see one spark that night.

90. Can you say in what direction the wind was blowing that night?—From due west, as far as I could see—right across the line.

91. *Mr. Poynton.*] On what side is Mr. Williams's cottage?—On the east side of the line.

92. About what time did you pass?—It would be about 11.40 or 11.45 p.m.

93. *Mr. Williams.*] You did not notice any sign of light or fire as you passed my place?—I did not.

94. Would you think it possible for a spark to set fire to my house?—Not very well, with the wind that was blowing.

95. *Mr. Poynton.*] Had you any appliances for arresting sparks that night?—Yes, there was the spark-arrester.

96. What sort?—We mainly call it the baffle-plate.

97. Was it in good order?—Perfect order.

98. Have all the engines on this line similar appliances for arresting sparks?—Every one of them.

99. *Mr. Williams.*] Have all the engines got these spark-arresters?—Yes, all the engines.

100. Does it keep the sparks from spreading?—It keeps the sparks from spreading. It catches them.

101. How do you account for the sawdust fires? Do you not reckon the engine does that?—No, I do not.

THOMAS COOPER, sworn.

102. *Mr. McCredie.*] What are you?—A ganger on the railways.

103. You know Williams's house?—Yes.

104. Do you know what it was before Williams went into it?—Yes.

105. It was used as a sawmill-house, was it not?—The first bit was, but there have been one or two other pieces put on to it since it was first erected.

106. It has been built up—one or two additions?—Yes.

107. You were in the habit of passing near it?—Often.

108. What would you have given for it?—As far as giving anything for it, I would not have given anything; it was on the road.

109. But apart from that, what was it worth?—About £20.

110. You have a house of your own there?—At Clifton.

111. And you have a rough idea of the value?—Yes.

112. Have you ever seen the house on fire?—No.

113. You did not hear any evidence on the line that this engine was throwing sparks on the Saturday night?—No.

114. Was there any sign of fire near the line next morning?—None.

115. If an engine has been throwing sparks there are generally signs of it?—Yes, because there is always a lot of dry grass about the roads.

116. *Mr. Williams.*] Do you think the engine would throw out sparks to reach my building?—That I could not say. I could not tell how the wind was. If the wind was in the south-west it might, but if the wind was from the west it would not do it.

117. Why?—Because the sparks would not go across the line.

118. How was the line running?—I do not know how it runs just there, but a south-west wind would drive the sparks across. A west wind would not.

119. You know that the sawdust has been on fire several times?—Yes; it gets on fire by itself. It is never out. There are so many youngsters knocking about with matches that they are as likely to set fire to it as the engine.

120. *Mr. Poynton.*] Do you remember the addition being built to the house by Williams of new timber?—No, I do not. It may have been done without my seeing it.

ALEXANDER MCKENZIE, sworn.

121. *Mr. Poynton.*] What are you, Mr. McKenzie?—I am running-shop foreman in Invercargill.

122. I want you to tell me about the appliances for preventing sparks on locomotives, and to give a description of those used on this line?—We have the same here as in other parts of New Zealand.

123. Have the engines all a deflector-plate?—All that burn soft coal.

124. Soft coal sparks the most?—Yes.

125. And for those that burn hard coal?—They are supplied with a perforated plate with holes about $\frac{1}{8}$ in. by $\frac{3}{8}$ in.

126. Have you many complaints about fires, apart from these claims for damages?—No. This is about the second time I have heard of them since I have been in Southland.

127. How long have you been in Southland?—Nineteen years.

128. There was a claim for the destruction of a sawmill?—Yes.

129. How long ago?—Close on fifteen years ago.

130. What was the result of the claim?—I did not hear the result. There was a long ligitation about it.

131. There are a lot of patents for spark-arresters?—Yes, several patents.

132. Have they been tried by the department?—We have tried three of them.

133. And were not satisfied with them?—No, we have never put them into use.

134. Were they too complicated, or not efficient?—They were not efficient. There was no possible chance of working them. With two of them we could not get steam in the engines. We could not raise steam with them.

135. They required a high pressure?—It was impossible to raise pressure with them under any condition.

136. That is the objection: the more effective the spark-arrester the less chance of getting up steam?—Yes.

WOODEND.

TUESDAY, 30TH JANUARY, 1900.

ROBERT EUNSON, sworn.

1. *Mr. Poynton.*] What are you, Mr. Eunson?—A bush labourer.

2. What do you know of this matter? Mr. Williams wants you to speak of a previous fire to the fire that destroyed his house?—I was going from Woodend, and the 3 o'clock train passed me when down near Williams's house going to town. When I got down to Williams's house one of the sides of the roof was on fire in patches—patches were burning.

3. Did you put it out?—Yes.

4. With water?—Two or three buckets. It was a pretty dry time—I think it was in February.

5. Can you form an idea from the appearance of it how the fire started?—From the appearance of the house I blame the engine for doing it because I could not account for anything else doing it. The roof was on fire in five or six different places.

6. Close to each other?—Spots here and there all over the sides of the roof.

7. Did you observe whether there was any fire in the chimney?—I do not think there was any fire in the chimney, because it was the time when the children would not have any fire in the house; they were outside.

8. That was after Mrs. Williams's death?—Yes.

9. *Mr. Williams.*] Did you notice the direction of the wind?—I would reckon it about north-west.

10. If the fire had been in the house it could not have been from the chimney?—No, because the chimney was at the far end of the house, and the side burning was nearest the town.

11. *Mr. McCredie.*] Did you see any train pass?—I believe the train passed me about 500 or 600 yards on this side of the house. I had a wagon, and it took me a few minutes to get up to where the fire was.

12. The house was on fire when you got up to it?—Yes. If I had been ten minutes later I could not have put it out with the buckets of water.

13. How long was it from the time the train passed the house until you got there?—From five to seven minutes, or somewhere thereabouts.

MICHAEL KENEALLY, sworn.

14. *Mr. Poynton.*] What do you know of this matter, Mr. Keneally?—I do not know anything about Mr. Williams's fire.

15. Well, you have had some experience of the engine setting fire to the places here?—Yes. About the Saturday before New Year, twelve months ago, we had occasion to watch that night for Mr. Massey, the owner of the sawmill. In the afternoon of the same day the engine had set fire to the sawdust, and there were three men there—Young, Gordon, and myself. We were standing near together at the time. The engine started, and sparks that blew out of it lodged at our feet. We would be about three-quarters of a chain from the side of the line.

16. Did the sparks go out?—The fire was on previous to that. The sparks lodged at our feet. Before that there was no sign of a spark there.

17. Do you know for certain that the fire was set alight by the engine?—It must have been. I could not swear it was the engine that set fire to the sawdust.

18. *Mr. Williams.*] You know my place that was burnt down?—Yes, I was in it.

19. What sort of a place was it?—The building was very comfortable in the inside; it looked better inside. It was much the same as a workman's family house. If anything, it was more comfortable inside than the majority of them.

20. You were a surfaceman on the railway at one time?—Yes, I have been a good few years on the railway.

21. You ought to be able to give an idea as to whether the engines throw sparks or not?—I could not say; but I have known tussocks set fire to, but did not know what set them on fire. I believe it to be the engine, but could not say it was.

22. Did you ever notice the engine throw sparks out?—No; you cannot notice it throwing sparks in the day time.

23. *Mr. McCredie.*] The sparks that landed at your feet on this occasion: did they set fire to anything at all?—That was the question. The place was afire.

24. But did they set fire to anything?—I could not swear they did, but the sawdust was set fire to.

25. *Mr. Poynton.*] You think they were sufficient to set fire to the sawdust?—They were sufficient to set fire to anything.

26. *Mr. McCredie.*] Have you any idea of the value of the building?—I know what it would cost me to put up one like it.

27. Supposing you were to go to Williams's house, what would you like to give him for it?—It would be worth about £50 or £60.

RAKAIA.

MONDAY, 12TH FEBRUARY, 1900.

JAMES ROSS MACKAY, sworn.

1. *Mr. Lane.*] You are a barber residing at Ashburton?—Yes.

2. Where you have been for some years?—Nine years.

3. You were travelling in the express train from Christchurch to Ashburton on the 2nd January, 1897?—Yes.

4. Do you remember the occasion distinctly?—Yes, perfectly well.

5. It was a long train?—Yes, a very long one.

6. How many engines?—Two engines that I could see.

7. As the train left the Rakaia Station, where were you?—I was sitting on the platform of the carriage, with my feet on the step.

8. On which side of the platform were you?—I was on the sea side, looking towards the left of the train going home—going towards Ashburton.

9. Down the train, as it were?—Yes.

10. Was your carriage some distance from the engine?—It was a good distance; I dare say it was six or seven carriages away.

11. Now, tell his Worship distinctly what you noticed with reference to the engine?—While the train was getting away there was heavy black smoke coming from the engine and a good many sparks falling from the smoke, and by the time my carriage got up to where the engine had been when I saw the sparks there was a patch of grass burning on the ground. I called the attention of another man—one Mr. Leitch—to it. He was on the platform of the carriage in front of me. I said "Hullo, there's a fire"; and shortly after the train had passed I got up to light my pipe, out of the wind, when I saw the fire going through the fence. I said, "It's going through the fence," and then I saw no more.

12. Where did you first see the fire?—Between the line and the fence. It was a good many feet from the side of the line, and was burning in a streaky patch.

13. How large was the patch?—About the size of a washand basin.

14. In what direction was the wind blowing?—There was a heavy wind blowing across the line towards the sea.

15. Would that be a north-west wind?—I could not tell what way it would be.

16. Did you see anybody on the line?—Nobody, except the people in the carriage.

17. But there was no one in the field or on the line who might have started the fire?—No, no one that I saw.

18. And the last you saw of the fire was that it was going through the fence?—Yes.

19. Do you know Mr. Gardiner?—No; I never saw him till four months ago.

20. He never approached you about this matter?—No.

21. You were interviewed by some one in April or May, 1897?—I could not say when it was, but I remember that a gentleman came to see me about it.

22. And you gave him the statement you have given us to-day?—Yes, just the same statement as I have given you now.

23. *Mr. Beattie.*] Will you tell his Worship what sort of a day it was—sunny, or clear, or dull?—As far as I remember, the sun was shining.

24. And do you wish his Worship to understand that on a bright sunny day you could see a red-hot ember falling to the ground?—I said that I saw sparks falling from the smoke.

25. *Mr. Poynton.*] You say you saw sparks falling?—Yes; but I did not see them fall on to the ground.

26. *Mr. Beattie.*] You said, too, that the fire was about the size of a wash-hand basin?—Yes, by the time my carriage got up to it.

27. And it was, approximately, half way between the line and fence?—Yes, just where it would blow over to.

28. You also said it was a heavy wind?—Yes, a wind that was blowing across the line.

29. Does it not strike you that a spark, necessarily a small one, would be carried by that wind considerably further away from the train than you say?—I could not say. I saw the sparks falling from the smoke, but where they landed I do not exactly know.

30. You could not say, then, where the sparks landed?—No, but it was between the line and the fence.

31. But you saw none actually touch the ground?—No; the fire was burning by the time we got up to where the engine had been when I saw the sparks coming from it.

32. And you were six or seven cars back from the engines?—Yes. I would not be sure of a carriage as to the distance, but I know I was a fair distance back from the engines.

33. *Mr. Lane.*] Was the smoke in which you saw the sparks travelling in such a direction that you think the sparks might have fallen where you saw the fire?—Yes. Seeing the way the wind was taking the smoke the sparks would fall where I saw the fire.

34. *Mr. Macandrew.*] In a statement made to Mr. Burnett you said that you saw an ember fall, did you not?—Well, I suppose an ember is a spark. I saw the sparks falling from the smoke. I could not say whether it was an ember or a bit of burning wood, but at any rate it was fire falling from the black smoke.

35. Can you say where it fell—inside the fence or outside?—It was not falling inside the fence, but it was falling between the line and the fence. The exact spot I could not say.

36. *Mr. Lane.*] Did Mr. Burnett read over to you what you said to him when he saw you?—No.

37. And you signed nothing?—No.

38. He asked some questions, and you told him what you have told us here to-day?—That is so. I did not know the man.

39. *Mr. Poynton.*] Were there any smoking-carriages ahead of you on that train?—I could not say. I got to the station just in time to catch the train.

40. *Mr. Macandrew.*] I have a copy here of the original statement you made to Mr. Burnett. Do you recognise your signature to it?—Yes, that is my signature.

41. And that is the statement you made to Mr. Burnett?—Yes; and that is my signature.

JAMES IRVIN, sworn.

42. *Mr. Lane.*] You are a labourer?—Yes.

43. Residing in this district?—Yes.

44. Do you remember the day of what we might call Gardiner's fire?—Very well.

45. Do you remember seeing the express train that morning?—Yes.

46. Where were you?—At the Methven crossing.

47. What were you doing there?—I was waiting with my horse and trap for the train to pass. I had come from Methven.

48. Can you give us any idea of how far that is from Mr. Gardiner's—from where we think the fire started?—I should think about a chain and a half or 2 chains.

49. How far were you from the crossing of the railway when the train passed you?—About 2 chains.

50. You stopped back 2 chains to allow the train to pass you?—Yes, and I then walked my horse across.

51. And what way did you come?—To Rakaia.

52. Did you notice any fire on the line?—Yes, after I crossed the line. I looked towards the train going away, and I saw a small fire starting just off the line on the edge of the grass.

53. It was a small fire burning in the grass between the line and the hedge?—Yes.

54. On the sea side of the line?—Yes.

55. Did you notice the fire any time?—I looked back once or twice and saw that the fire was spreading rapidly. It was small when I saw it at first, but when I got to the turning it had a hold of a chain.

56. Was it a windy day?—On the 1st January a nor'-wester was blowing, and on the 2nd the same, and it had been very dry weather.

57. It was the second year of the drought?—Yes.

58. From where the fire was when you saw it, would the wind take it in the direction in which the fire afterwards travelled?—Yes. I was there in the afternoon and saw where it had gone.

59. From what you saw that afternoon and in the morning you think then it was the fire you saw burning on the line that travelled over Gardiner's property?—Certainly.

60. And I suppose you saw the ground it had gone over and the fences and the sheep it had burnt?—Yes, and I had no doubt the fire was caused by the engine, because there was no one about—platelayers or any one else.

61. *Mr. Beattie.*] You are an old resident of the district, Mr. Irvin?—I have been here a few years.

62. Do you recollect that a short time after this fire, another fire occurred in the district?—Yes, there was a fire.

63. Can you tell his Worship how that fire was believed to have originated?—I could not.

64. Did you hear at the time or about the time that it was said to have been caused by a cow treading on a box of matches?—I never heard that.

65. At any rate, that fire was not near the railway?—I could not say where it started.

66. And you do not recollect what was alleged as the cause of the fire?—I do not know anything about it; I was away at the time.

67. Which way were you driving on the day you saw the fire on the railway-line?—I was coming from Methven. I was going towards the sea.

68. Did you see any sparks coming from the engine?—I did not.

69. When you first saw the fire, how large was it?—From the distance I saw it, it was about a couple of yards long, running towards the fence.

70. Could that fire have been easily beaten out at the time?—I do not know that. Generally, when you are beating out a fire it spreads more, unless you have proper control of it.

71. No attempt was made to beat this fire out?—I do not think any one knew about the fire until it had a good hold. When people began to rush, I suppose it extended for chains along the fence and the gorse.

72. Did you give the alarm?—I said in the town that there was a fire on the railway-line, and that the grass was on fire. When I had taken my horse out, the fire had a strong hold and all the people were running up.

JOHN GARDINER, sworn.

73. *Mr. Lane.*] You are a farmer residing in this district?—Yes.

74. You are the owner of the land, and the stock and crops destroyed by fire on the 2nd January, 1897?—Yes.

75. When did you first hear of the fire?—I was out in the paddock with a man's dinner when I heard of it.

76. You and your men did all you could to save the property, and to prevent the fire spreading?—Yes.

77. Will you tell us the direction in which the fire appeared to be coming when you first saw it?—Tell us, also, how it entered your land, and the nature of the fields it passed over?—It was coming towards the house when I went to it.

78. Is that in the direction of what you call the railway reserve?—Yes.

79. And the railway-line?—Yes.

80. Does the reserve adjoin your boundary?—Yes.

81. And the reserve is right up to your fence?—Yes.

82. Did you go along the line on the day of the fire, and see where the fire had apparently started?—No, I did not.

83. Or afterwards?—No.

84. You estimate that you had from three miles to three miles and a half of fencing destroyed?—Yes.

85. Now, his Worship wants you to explain as clearly as you can the nature of the fence, and what is a fair and reasonable sum to repair it. How much fencing was destroyed?—About two or three miles.

86. You cannot say for a certain?—Three miles or more.

87. Are you prepared to accept the department's estimate of the length of fences destroyed, and the area the fire covered?—Yes.

88. Now, as to the damage: the fences were gorse?—Yes.

89. You estimate your damage to the fencing at 5s. a chain?—Yes.

90. And you are prepared to take the department's estimate of the extent of fencing burnt?—Yes.

91. Then, you estimate that the fire passed over 200 acres of grass?—Yes.

92. What do you estimate your grass at per acre?—About 8s.

93. The grass was all thoroughly destroyed?—Yes.

94. And you had to plough again?—No, but the grass was destroyed.

95. Did the fire run through the oat-crop?—It ran in strips through the oat-crop, and men were engaged in beatlng it out.

96. And, although the department put it down at 36 acres, you consider that a larger area was damaged through the fire?—Yes.

97. You estimate it, roughly, at between 60 and 100 acres?—Yes.

98. You based your claim for damages on its value as oat-sheaf?—Yes.

99. As a farmer, and judging by what you got from the rest of it, will you tell his Worship what you estimate as the production per acre of oat-sheaf?—About a ton and a half.

100. Did you sell any oat-sheafs here?—Yes.

101. At what price?—£2 10s.

102. I think it was a particularly high price, owing to the droughty season?—Yes; but I sold the year before at £3. I had 2 tons to the acre.

103. You estimate you lost over 60 acres, and the production per acre was a ton and a half, and it was worth £2 10s. a ton?—Yes, that is what I sold at.

104. And you had sown grass with the oat-crop?—Yes.

105. To come up and be used for grazing after the crop was harvested?—Yes, and it was up at the time of the fire.

106. And was that ruined to the same extent as the crop?—Yes, about the same.

107. You also had some sheep destroyed?—Yes, some ewes and lambs.

108. How many sheep had you in the grass paddock?—Six hundred. They were ewes and lambs.

109. What breed?—Half-breed.

110. Age?—The sheep were full-mouthed.

111. You are sure about the number of sheep at the time of the fire?—Yes.

112. Can you give us any idea of the percentage of lambs they had with them?—I forget the number of lambs. I did count them, but I cannot remember the number.

113. After the fire, how many ewes did you take out that lived?—About seventy or eighty sheep were taken out of the paddock.

114. Including lambs?—Yes.

115. All the rest were destroyed?—Yes, they were dead.

116. What did you do with the seventy that you took out?—I put them into a paddock, but they all died but about forty.

117. They died from the effects of the fire?—Yes.
118. Did you sell any of the survivors?—I put them in the yard at Rakaia.
119. What did they fetch?—About 7s.
120. I suppose they were not much good?—No.
121. What do you estimate that flock of ewes and lambs at, Mr. Gardiner, before the fire?—8s. 6d. a-piece.
122. That is, six hundred at 8s. 6d.?—Yes.
123. Were the lambs thrown in?—No; the lambs 8s. 6d., and the sheep 8s. 6d.
124. What was the total number of sheep on the place?—Six hundred.
125. Did you lose any rams?—Five.
126. What were they worth each?—£2 10s.
127. And you duly sent in your claim, and finally petitioned the House, setting out the facts as you have told them to us?—Yes.
128. You have not received any compensation?—No.
129. You estimate your total damage at £600?—Yes.
130. Which you say is a fair and reasonable estimate?—Yes. I may say I never took the measurement of the ground.
131. You never had any communication from Mr. Mackay?—No.
132. You did not solicit his evidence?—No.
133. Nor did any one on your behalf?—No. I got a letter from Mr. Wason three or four months ago saying the case was going to come on here, and he told me to get my witnesses ready. That is the first time I saw Mr. Mackay.
134. Have you seen Mr. Leitch?—No.
135. *Mr. Beattie.*] Do you recollect a fire in the neighbourhood some time after your fire?—Yes; I was at it.
136. What was said to be the cause of that fire?—I could not tell you that. I had a place close by the fire, and I ran to get my sheep out of it. That is all I know about that fire.
137. That fire was quite away from the railway-line?—Yes, it was two or three miles away from it.
138. There was no supposition that it was a railway spark that caused that fire?—No; I heard nothing of that.
139. According to the newspaper report at the time, it was stated, I am told, that the fire originated through a cow treading on a box of matches: did you hear of that?—It may have been that, but I did not hear of it. I think, however, it would be easy to find out how that fire occurred.
140. *Mr. Macandrew.*] Did you see Mr. Coster when he came on to the ground to make a valuation?—No.
141. *Mr. Poynton.*] Were your place and the Acton Estate the only properties that suffered by that fire?—Mr. Leonard White also suffered by it.
142. Is Mr. White present to day?—No; he lives in town.
143. The three you have mentioned were the only sufferers?—Yes.

JOHN MCLEAN, sworn.

144. *Mr. Lane.*] What are you?—A farmer.
145. Residing in this district?—Yes.
146. And you have been here for many years?—Yes.
147. I suppose you know all about sheep and sheep-farming?—Yes, pretty well.
148. Do you remember the fire on the 2nd January, 1897?—Yes.
149. You also know Mr. Gardiner and his property well?—Yes; I am an adjoining neighbour.
150. You had frequently seen the grass-crop and the sheep and the fences?—Yes, and I helped on the day of the fire to put the flames out.
151. All the country-side was helping, I suppose?—Yes.
152. You had some difficulty in saving the house?—Yes; it was the first thing I tried to save.
153. We want you as a farmer to give us some idea of the damage Mr. Gardiner sustained. Let us start at the fences: they were gorse fences were they not?—Yes, and they were burnt to the ground.
154. At what do you estimate the damage to the fences per chain?—I reckon that 5s. 3d. would hardly pay the man.
155. There were 200 acres of grass. You saw the extent of the damage there?—Yes. I reckon he could not replace it at 8s. an acre, without labour; and then there would be a loss of seven or eight months of the grass.
156. As to the oat-crop: you saw it?—Yes; I went through it, trying hard to put the fire out.
157. And there were a lot of people trying to put it out?—Yes.
158. They would not do the crop much good?—No, they injured it more.
159. Can you give us any idea of the probable production, in oat-sheaf or grain, of the field if it had not been for the damage sustained by the fire?—Mr. Gardiner sold it in oaten-sheaf in the paddock.
160. What do you estimate it would produce per acre in sheaf?—I should say it would go a ton and a half to the acre.
161. What would you call it in bushels?—From 32 to 35 bushels an acre for the whole paddock; but the burning had gone through the heaviest part of the crop and followed the thickest

part, because there was a body of straw to keep the fire going, while in the lighter part of the crop the people could smother it and put it out.

162. Was it also sown in grass?—Yes; clover and English grass was laid down with the crop.

163. Had it come up?—Yes.

164. Good strike?—Yes.

165. Was that destroyed?—Yes, it was burnt clean out—it was useless. Any young crop is destroyed by fire at that time of the year.

166. What would you estimate the loss of the young grass at?—I should reckon that without labour the man would hardly replace the grass at 8s., that is, between grass-seed and clover. I know the way he lays down his ground; he puts in plenty of both.

167. What would be the labour per acre?—The labour of sowing, harrowing, and rolling would cost 3s. 6d. or 4s. extra.

168. You also saw the damage the sheep sustained?—Yes.

169. They were pretty well all killed by the fire?—Yes.

170. Did you see any that came out?—Yes.

171. What were they like?—They were all shrivelled up; they could not eat or walk.

172. And those that came out died shortly afterwards?—All except a few.

173. Did you buy any of them?—Yes, I bought some at the sale. I paid 7s. 1d. for them.

174. I suppose, as a sheepfarmer, you can say that sheep that went through what those sheep went through would be damaged by hunting and driving about?—They were not hunted about. Sheep will not run from fire; they stand and get burnt.

175. What would you consider the sheep were worth—more than 7s. 1d.?—They would be worth 11s. 6d. fully.

176. Those are fair estimates, you think, of the stock and produce and fencing that Mr. Gardiner had destroyed by the fire?—Yes. I think, too, that a larger area of the oat-crop was destroyed than is shown in the plan. There was a strip along the fence that is not shown, and the fire was running in forked branches through the crop.

177. Where did it cross into the Acton Estate?—At the bottom of Mr. Gardiner's land, through the oat-crop.

177A. How did it get into Acton?—It came down the fence.

[At Mr. Lane's request Mr. Beattie allowed the statement of T. T. Leitch to be put in, without calling Mr. Leitch as a witness. The statement was: "I am a sailmaker, residing at Ashburton. I was a passenger by the south express on the 2nd January. After leaving Rakaia I was sitting on the platform of the carriage, on the east side. I saw a little round patch of fire close to the line, perhaps a chain away. It seemed to have just started. It was just the ordinary grass burning. Just before I noticed very black smoke coming from the engine. It was a heavy train. I was somewhere about the middle. There was a man named Mackay in the next carriage to me. I do not remember any conversation between Mackay and myself at the time.—T. T. Leitch."]

THOMAS DAVIDSON, sworn.

178. *Mr. Beattie.*] You are an engine-driver?—Yes.

179. How long have you been on the New Zealand railways?—Close on twenty-three years.

180. And practically all that time on an engine?—All that time on an engine.

181. Have you driven through the Canterbury District for many years?—For nine years.

182. Do you recollect the 2nd January, 1897?—I do.

183. This sheet I produce to you is your driver's sheet for that day?—Yes.

184. What engine were you running?—Compound 27.

185. Was that engine in good order?—In perfect order.

186. What was the condition of the fire-arrester and the smoke-box?—In good order.

187. It is said that either your engine or another threw sparks when leaving Rakaia that day: Will you tell his Worship if it was even remotely possible for your engine to have thrown sparks?—It was almost impossible for mine to have thrown sparks.

188. *Mr. Poynton.*] Why?—Because the exhaust had to go through another cylinder before it escaped into the atmosphere. That caused a very light blast from the fire.

189. *Mr. Beattie.*] What was the weight of the train?—About fourteen total.

190. A second engine was assisting?—Yes, from Christchurch to Timaru.

191. Did you take that same train on?—Yes, from Timaru to Oamaru with my own engine only.

192. Was that train of such a weight as to render it likely that any engine would have thrown sparks?—The train that day did not require the engine to be worked in such a way as to cause sparks to come out. I did not need to work the engine full out, and therefore there were no sparks.

193. In other words, the train was a comparatively light one?—Yes, it was light for two engines.

194. Now, with your experience, could you distinguish a spark on a bright sunny day?—No, it is impossible.

195. And when an engine is emitting black smoke there is little likelihood of sparks being emitted?—That is so, because there is no blast in the fire to consume that smoke.

196. It is the least dangerous time when black smoke is being emitted?—Yes, that is so; it is the least likely time for sparks to come from the stack.

197. What sort of day was it?—It was blowing a nor'-wester.

198. Which would be square across the train?—Yes, blowing towards the sea.

199. Assuming, for the sake of argument, that an engine did emit a spark on such a day in such a wind, where would that spark land?—If an engine did throw a spark it would have landed in the paddock, because the wind was blowing the smoke straight across. The smoke never came near the carriages at all, but went into the paddock.

200. Would you think it at all likely, or even possible, for a spark to fall on the railway-line about halfway between the line and the fence?—I consider it almost impossible, because the coal, after the substance is out of it, is very light and would be carried away with the smoke in the wind that was blowing that day.

201. Have you ever seen passengers throw off cigarette-ends, cigars, matches, and so on from the train?—I have seen a party throw off a match.

202. *Mr. Poynton.*] Do you say that, as a matter of fact, they do?—Yes.

203. *Mr. Beattie.*] I have a report made by you to the running-shed foreman: do you recognise it?—Yes, I do.

204. In that report you say, "I beg to report *re* fire at Rakaia that I know nothing about it. This engine I never saw throwing sparks, and the ash-pan is in good order." That was written shortly after the occurrence?—Yes, when inquiries were made about the fire.

205. Did you see anything of the fire that day?—No.

206. *Mr. Lane.*] You say that sparks could not be seen on that day. If a black smoke was coming out of the funnel you could see the sparks against the smoke, could you not?—Well, you might see sparks against a black smoke.

207. It is almost impossible to prevent sparks coming from an engine, is it not?—It is almost impossible for sparks to come from these engines, seeing the way they are made and the quality of the coal we use.

208. But you cannot actually prevent them: it would stop the draught would it not?—No.

209. What vehicle is generally next you in the express train?—On that day, to the best of my recollection, we had a roadside wagon—a wagon for carrying roadside goods.

210. And then there would be a carriage?—Yes, the carriages would come next.

211. When on your engine you are looking ahead, of course; and how is it that you see people throwing matches from the carriages when you are in that position?—I once saw a man throw a match from a carriage at Dunsandel.

212. But when you are attending to your engine you do not know what is going on behind you?—No.

213. You look out in front?—Yes.

214. It is always a heavy time at the New Year holidays?—Yes; the passenger traffic is always heavy then.

215. *Mr. Macandrew.*] When you are driving you are supposed to keep your eye on the guard's van also, are you not?—Yes, when not otherwise engaged.

216. So that it would be quite possible for you to see anything that was thrown out of the carriages?—Yes. I have to turn round to see that everything is following in proper order.

217. The luggage-van next the engine does not hide your view if you lean out?—No.

218. *Mr. Poynton.*] What sort of coal were you burning?—To the best of my recollection we had Brunner.

219. That is a hard coal?—Yes.

220. Which does not give out sparks freely?—It is almost impossible to throw sparks from it with the plates and the smoke-box.

221. Do you use other coal?—Not on this section.

222. What was the nature of the spark-arrester in your engine on that day?—It was a perforated plate.

223. Had you examined it about that time?—I examined it every morning.

224. And about that time it was in good order, with no break in it?—Yes, that is so.

WILLIAM HILL, sworn.

225. *Mr. Beattie.*] You are an engine-driver?—Yes.

226. How many years have you been on the line?—Just on twenty-six.

227. You have been on an engine all that time?—Yes.

228. How long have you been driving in the Canterbury District?—The whole time.

229. Do you recollect the 2nd January, 1897?—Yes.

230. Would you identify your time-sheet for that day?—Yes, the sheet you show me is mine.

231. What engine were you driving?—No. 36.

232. It has been said that either your engine or one driven by Driver Davidson was throwing sparks on leaving the Rakaia Station. What was the condition of the spark-arresting appliances of your engine?—They were in good order.

233. No defect of any kind?—No defect whatever.

234. In leaving the Rakaia Station with a train of the size you had, do you think your engine would be even remotely likely to throw sparks?—I cannot see how it could. I was working the engine light, as there were two engines for that train.

235. What was the length of the train?—About fourteen total.

236. Your engine was the second engine?—Yes.

237. Did you see any fire alongside the line?—I saw a fire burning on the left-hand side, going south.

238. About what size was it?—I could not say the size. I only saw a small fire.

239. Was it inside the railway-fence or outside?—It was inside.

240. What was its position?—It was about half-way between the line and the fence.

241. Your engine was coupled on immediately behind Davidson's engine?—Yes.

242. And there was a high wind?—Yes, a hard nor'-wester.
243. As a practical driver, do you think it is likely, even assuming that Davidson's engine had thrown a spark, that that fire would have been going as you saw it by the time your engine came up?—I cannot say it would.
244. You think it is unlikely?—It is very unlikely.
245. It would not have had time to catch sufficiently?—No, it would not.
246. You were burning hard coal?—Yes, Brunner.
247. And with this hard coal do you find your engine liable to throw fire?—No.
248. A previous witness has told us that he saw red-hot sparks?—I have never seen a red-hot spark on a sunny day.
249. In all your experience?—In all my experience.
250. Supposing your engine was emitting very black smoke, is it not likely that sparks would be emitted at the same time?—No, it is not, because there would not be sufficient blast on to lift the sparks.
251. That would be the least likely time for sparks to be emitted?—Yes. The fire would be black, and would not lift.
252. Assuming a spark to have been thrown, where would it have landed on a windy day like that?—In the paddock, 2 chains away.
253. Do you think it is possible that on a day of that kind a spark could have been thrown that would have landed half-way between the train and the fence?—Seeing the blast we had on the fire, it is not likely a spark was thrown, and if it had been thrown it would have gone further than the railway reserve in the strong wind that was blowing.
254. You assisted as far as Timaru?—Yes.
255. Have you in your experience seen passengers throwing out cigarette-ends, cigars, matches, or anything of that kind?—Yes; while I have been looking round I have seen them doing it.
256. While the train was travelling?—Yes; it is one of our instructions to look back.
257. I have the Head Office copy of Driver Hill's report made on the 2nd January. I should like the witness to identify it?—That is my report.
258. In that report you say, "I beg to report that when passing Rakaia there was a fire burning about half a mile past the station—I am unable to state how it originated—on the left side of the line. It was not started with this engine, as the perforator is in good order in smoke-box and ash-pan." That is a perfectly true statement?—Yes.
259. *Mr. Lane.*] Where were you when you first saw the fire?—On my engine.
260. And what was behind you?—The van.
261. And Davidson's engine was just in front?—Yes.
262. Did you see anybody about?—No.
263. And you do not think it was possible for Davidson's engine to have started the fire?—No.
264. Yet it was apparently just starting when you saw it?—I could not say that.
265. How large was it?—It was not very large. I only caught sight of it.
266. Where was your engine when you saw it?—I saw it over the tender of my engine.
267. It could not have been caused, then, by a cigarette from any of the passengers?—No.
268. I suppose it would be bad driving, with a light train and two engines, to so stoke up as to emit sparks?—Yes.
269. On leaving the station is the line downhill or uphill?—It was on the fall where the fire occurred.
270. As you leave the station it is uphill, is it not?—Yes; but where the fire was it is on the fall.
271. *Mr. Poynton.*] How long before that had another train passed that spot?—About 10 o'clock.
272. *Mr. Lane.*] Is there not a train coming in from Ashburton at 12?—Yes.
273. And you were going out at a quarter past 12?—Yes.
Mr. Beattie: The 2nd January, 1897, was a Saturday, and the Timaru train did not run on Saturdays.
274. *Mr. Poynton.*] Then, the last train to pass the place where the fire was seen would pass about 10 o'clock?—Yes, that is so.

ALBERT LEES, sworn.

275. *Mr. Beattie.*] You are a fireman on the New Zealand railways?—Yes.
276. How long have you been in the Locomotive Department?—About seventeen years.
277. To whom were you firing on the 2nd January, 1897?—To Driver Hill.
278. On engine No. 36?—Yes.
279. You would be on the left-hand side of the station, going towards Timaru?—Yes.
280. On the seaward side?—Yes.
281. Do you recollect leaving Rakaia that day?—Yes.
282. Did you see anything of a fire alongside the line about half a mile out of Rakaia?—No; I would be busy with my firing. My mate, in looking round, would probably see it.
283. As a practical fireman, do you think that the engine at that time was throwing fire?—I do not. I saw the perforated plate before the engine left the shed in Christchurch, and it was then in good order.
284. All the spark-arresting appliances were in good order?—Yes.
285. Considering the pulling the engine was doing, would it be likely to throw fire?—No; if the engine had been throwing fire the fact would have been reported by the driver who was previously on the engine.

286. Have you ever been able to see a red-hot ember or spark falling through the air in broad daylight?—You could only see it with a dark background, but at the time an engine is emitting large volumes of smoke it is unlikely that sparks would be drawn through the funnel.

287. That is the least likely time?—Yes.

288. Do you recollect what the wind was that day?—It was blowing fairly strong from the nor'-west.

289. And, assuming a spark to have been emitted, where would it have landed?—Seeing the wind that was blowing, it would land two or three chains from the railway.

290. Beyond the boundary?—Yes.

291. Is it likely that on that day a spark would have landed midway between the railway-line and the fence?—I have not viewed the place, so I cannot say the distance between the railway and the fence.

292. How far do you think a spark would have been carried from the engine?—About a couple of chains.

293. That is, assuming a spark to have been emitted?—Yes.

294. *Mr. Lane.*] Have you ever seen a spark carried 2 chains?—I have seen it when they have been burning the lignite coal. In 1890, I think, they were burning it on account of the labour troubles.

295. And you base your estimate on that of the distance a spark would be likely to go?—Yes.

ASHBURTON.

WEDNESDAY, 14TH FEBRUARY, 1900.

JAMES MOORE, sworn.

1. *Mr. Purnell.*] You are a farmer, living at Hinds?—Yes.

2. How many acres of land do you own?—200 odd.

3. Your land lies between the railway and the sea?—Yes.

4. What is the distance between the railway-line and the nearest point of your land?—I should think about 9 chains, from the railway-line to my boundary-fence.

5. What lies between your boundary-fence and the railway-line?—The railway reserve and the road.

6. What is the railway reserve?—A plantation.

7. In January, 1898, when the fire occurred, what height was the plantation?—It was not very high. I could not say exactly.

8. Was it 2 ft. or 3 ft.?—Yes, I suppose so.

9. The trees did not obstruct your view in any way?—I do not think so.

10. Looking from your house you could see the railway-line?—No.

11. Well, between the trees and the railway-line what was there growing?—Grass and tussock.

12. Do you remember the 27th January, when the fire occurred?—Yes.

13. At what time does the south express pass your land?—About half-past one.

14. Were you at the door of your house at that time?—Yes.

15. Was any one with you?—Yes; Mr. Fleming.

16. Did you see the express come along?—Yes.

17. Up to the time when the express came along was there any sign of fire near the railway?—There was no sign of fire until the express had passed.

18. Did you see the express pass the plantation?—Yes.

19. What happened then?—I saw a little bit of smoke get up.

20. Where?—It seemed to me to be close to the railway-line. I could not tell how far it was off.

21. Was it between the railway-line and the plantation?—It must have been. I said to Mr. Fleming that we were going to be burnt out, and I ran to try and save my cattle and horses and things.

22. You went on horsback?—No, on foot.

23. Did the fire increase?—Yes, very fast. There was a nor'-wester blowing.

24. Would that bring the fire in the direction of your place?—Yes.

25. Did it bring it?—Yes, it came down fast.

26. Did it reach your land?—Yes, it swept the whole thing before it.

27. Did it pass on to Mr. Mackle's?—Yes.

28. And I believe some railway-men came to put it out?—Yes. Some came from Ealing, and some from Hinds.

29. Another train came and left some hands?—The other train came at 2 o'clock, and stopped nearly where the fire originated.

30. And finally the fire was put out?—Yes; but it was not put out for a long time. A lot of men gathered and put it out.

31. You went to save your cattle and horses from the fire?—Yes.

32. Did you go next day to see where the fire had started?—Yes, but I could not tell the exact spot.

33. Where did it start, do you think?—A little south of the 72-mile peg.

34. *Mr. Poynton.*] How far from the rails?—I could not tell.

35. *Mr. Purnell.*] Was it a foot, or a yard, or a dozen yards?—Well, that is a thing I would not say at all. I was not there to see whether it was a foot or a yard.

36. *Mr. Poynton.*] How far was the nearer edge of the plantation from the rails?—Not very far.

37. *Mr. Purnell.*] Was it a chain, or what distance?—It might be half a chain, but I could not say.

38. Had the fire started between the plantation and the rails?—It must have, from what I saw.

39. At the time you examined it you considered it had started between the rails and the plantation?—Yes.

40. Was there any tussocks or dry grass in the plantation?—Any quantity, of both tussocks and dry grass.

41. Was the grass on the strip of land long and dry?—Yes.

42. It had been a dry season?—Yes, a very dry season.

43. Was there any men about who might have set fire to the place?—I saw none.

44. You would have seen them if there had been any?—I think so.

45. There was no apparent cause, except sparks from the engine?—I concluded that that was the cause.

46. You came to the conclusion, from what you saw, that the engine had set fire to the place?—I did.

47. With regard to the damage done, I believe your fencing was destroyed?—Yes.

48. What sort of a fence was it?—Some of it was gorse, with wire in it, and some of it was stakes and wire.

49. All the fences destroyed were of the same description?—Yes, and where the fire went they were all destroyed.

50. Before they were destroyed were they in good order?—Yes.

51. Can you tell us how much fencing was destroyed?—I think there were 116 chains.

52. Take the fence nearest the railway: was it destroyed?—Part of it was, but I cannot tell you how much. Mr. Miller has the measurements.

53. How much a chain would it cost to replace that fence?—I calculated that it would take 7s.

54. Do you think that is a fair price?—I could not exactly say whether it is fair or not.

55. Would it cost you 7s. to replace that fence, including the cost of clearing away?—It might take more than 7s., because there would be a lot of work to do in clearing away.

56. How much would it cost to do the extra work?—1s. a chain.

57. Have you re-erected the fence?—No.

58. Why?—I have not had the means.

59. Then, I think you claim for 50 acres of grass destroyed?—There was more than 50 acres, but I only put in for 50.

60. How much grass altogether was burnt?—I should say there were 60 acres burnt.

61. Was it completely destroyed?—Yes. On 50 acres of it there was not a thing left, and the other ten acres were partly burnt.

62. What sort of grass and feed was there?—The 50 acres was good feed. I kept it purposely for my sheep.

63. Was there plenty of feed on it at the time of the fire?—Yes.

64. And feed was scarce that year?—Yes, very scarce.

65. Supposing you had let that 50 acres of feed, what would you have got for it?—I would not have taken less than £15 or £16 for it.

66. Do you think you could have got that for it?—Yes, if I had wanted to let it, but I required it myself.

67. How long would you have let it for that money?—Three or four months.

68. What loss do you consider you sustained with regard to the other paddock?—It may be about £1 or £1 10s.

69. I think that at the time of the fire you owned some sheep and lambs?—Yes.

70. And as a result of the fire, what did you do with them?—The fencing and the feed were burnt, and I had to sell them at a loss.

71. Were the lambs fit to sell?—No.

72. Can you give us any estimate of your loss in that respect?—That is a thing I would not like to say. If I had kept them I would have made more out of them than I did.

73. Is there any feed on the paddock of 50 acres now?—Plenty.

74. Last year the feed did not grow at all?—No; there was no feed on it till this year.

75. Did you have any use for the paddock last year?—The sheep were running over it because I could not keep them back.

76. Did they get any feed on it?—They would get a little.

77. *Mr. Cresswell.*] There is a public road running alongside the railway-line near your property?—Yes.

78. On which side of the line: your side?—Yes.

79. Does it run between the rails and the plantation?—No, it runs between the plantation and my section.

80. What is the width of the road?—The roads are supposed to be a chain wide.

81. The fire, according to your view, passed over the road to your property?—Yes.

82. Was there any wind blowing at the time?—Yes, a strong nor'-wester.

83. When you visited the spot on the following day, did you satisfy yourself as to the point at which the fire had started?—I satisfied myself that it started on the low side of the line.

84. Did you not take pains to satisfy yourself how far from the rails it started?—Now, how could any man do that?

85. Well, do you say the fire might have beaten up against the wind?—No, I do not.
86. It would travel in a south-east direction from the point at which it started?—It would travel towards the sea.
87. What was the nearest point to the line to which the fire had travelled?—That is a thing I am not able to say, because it must have started pretty close to the line.
88. *Mr. Poynton.*] Would it be half a chain, or 2 chains?—I think it might be about half a chain from the rails to the rough grass.
89. *Mr. Cresswell.*] And when the express passed you were looking at it from your door?—I was not at the door but in my paddock close to the house.
90. Had you been looking in the direction of the fire before the express came up?—Generally when I see the express coming I look to see the length of it.
91. And can you state positively that the fire was not burning before the express arrived?—Yes.
92. How can you do that?—Because there was no sign of smoke till the train came, and then there was only a little smoke when I saw it at first.
93. Had the train passed the spot before you noticed the smoke, or did you notice it when the train was passing?—It was when the train was passing. It had passed the spot a little.
94. How far?—About 3 or 4 chains.
95. The guard's van was 3 or 4 chains from the spot when you noticed the smoke?—Yes.
96. And what did you see—smoke, or flames?—The smoke got up, and the flames came soon afterwards, and it took me all my time to get my cattle and things out of the way.
97. Is the public road much used?—No; it is not a formed road.
98. Coming to the damage you have sustained, what do you estimate your total loss at now?—I do not estimate it at all now, because two men went over it and chained it, and valued it.
99. And you accept their figures?—Yes.
100. You are calling them as witnesses?—I suppose so.
101. You sent in a claim a few days after the fire, did you not?—It was a good few days afterwards.
102. And you then stated your loss would be about £50?—Yes.
103. Do you think now your loss would be in excess of that?—I believe it would. That was only a rough calculation.
104. Was it native or English grass that was destroyed on your land?—Native grass.
105. As a matter of fact, is the native grass not improved by having a fire over it?—It might improve it in two or three years.
106. As long as that?—Yes. It did not improve it last year, for there was nothing on the land. There is something on it this year.
107. We had had two exceptionally dry seasons prior to the fire?—Yes.
108. And the grass was very dry at the time?—Yes, the long grass was dry.
109. Have you sown it down since?—No.
110. Is the grass now as good as it was before the fire?—I believe it is.
111. Is it better?—I do not think so.
112. What is the ordinary thing allowed for erecting fences such as yours were?—I could not tell you what the fence cost when it was put up, because my boys did the work. Another thing is this: that stakes and wire are not always the same price.
113. Is 4s. or 5s. not regarded as a reasonable sum for a farmer for the erection of an average fence?—I do not think so.
114. It costs more than that?—Yes, a good deal more than that.
115. How far were you away from the spot where the fire commenced when you first saw it?—About 40 chains.
116. Of course, you could not tell at that time how far the fire was from the railway-lines?—No.
117. It was after you had viewed the locality that you came to the conclusion that it had started close to the line?—Yes.
118. *Mr. Purnell.*] When you first saw the smoke you say it was rising between the plantation and the railway-line?—Yes.
119. You were asked whether the fire could beat against the wind?—Well, it would beat itself back, but the wind was so strong it would not beat far back.
120. But as it might spread in that way you say you are not sure as to the exact spot where it originated?—That is so.
121. With regard to the damage, I believe the grass was not merely tussocks?—It was tussocks and grass.
122. And it was good feed?—It was fair feed.
123. What you actually lost with regard to that is about eighteen months' feed?—Yes.
124. Why have you not sown it down in grass again?—I would have to break it up again, and I was not able.
125. You had not the means?—Exactly.
126. With regard to your estimate, it was only a rough estimate, and you thought the Government would make inquiry?—Yes.
127. You did not even keep a copy of the claim you made?—I did not.
128. *Mr. Poynton.*] How long had your fences been up before the fire?—About six years.
129. What is the life of a fence of that sort?—Well, it is hard to say. Sometimes you have to put in an extra stake here and there.
130. Ordinary red-pine stakes?—Yes.

WILLIAM FLEMING, sworn.

131. *Mr. Purnell.*] You are a farmer?—Yes, living at Ashburton.
132. You remember this fire, do you?—Yes.
133. I think you were standing with Mr. Moore when the fire commenced?—Yes.
134. Did you see the express coming along?—Yes.
135. Before the express came along, was there any sign of fire?—No.
136. When did you first see signs of fire?—Directly after the express had passed. Mr. Moore drew my attention to the smoke.
137. That is, directly the express had passed the plantation, he drew your attention to it?—I do not know where the plantation starts, but it was in a straight line from where we were looking.
138. Where was the smoke you saw?—Close behind the train.
139. Was it between the railway-line and the plantation?—I could not say exactly. It seemed to be on the line.
140. What conclusion did you come to at that time, as to the origin of the fire?—That sparks had come out of the engine. Mr. Moore had just been saying to me that he always dreaded fire from the engines on account of the sparks.
141. Did the fire spread rapidly?—Yes.
142. There was a strong nor'-wester blowing?—Yes.
143. I think you visited the place where the fire was supposed to have started some time afterwards?—About a month afterwards I passed in the train, and I saw where it had been burnt.
144. Where was it?—Close up to the line.
145. Was it near the plantation?—Yes.
146. From what you saw did you conclude it had started between the line and the plantation?—Yes.
147. What was the nearest point of the fire from the railway-line?—I think it had burnt close up.
148. Of course, outside the line there is a certain amount of space occupied by the gravel?—Yes. It had burnt close up to the gravel.
149. Had you seen Mr. Moore's fences before the fire took place?—No.
150. Did the fire burn his fences and grass?—Yes.
151. How far is the spot where you and Mr. Moore were standing from the line?—About 30 or 40 chains.
152. You could not see sparks from that distance?—No.
153. *Mr. Cresswell.*] You concluded that it was sparks from the engine that ignited the grass?—Yes.
154. As a matter of fact, you did not see any sparks?—No.
155. And assuming the fire came from the train, you could not see whether it came from a spark, or from a lighted match or a cigar thrown from the carriages?—That might have been so; but the fire started, it appeared to me, while the train was passing.
156. How far was the train from the fire when you first saw it?—3 or 4 chains.

SAMUEL HORSNALL, sworn.

157. *Mr. Purnell.*] You are a railway guard?—Yes.
158. I think you were the guard on the south express on the 27th January, 1898?—I tried to find my own memorandum relating to that fact last night, but I could not. I am told, however, that I was the guard.
159. Do you accept the official statement on the point?—Yes.
160. Do you remember a fire on that date?—I do not; it is too far back. Whenever there is a fire I take action, and I have no doubt I did so on that day.
161. *Mr. Poynton.*] Have you any knowledge of that particular fire?—I believe I threw a note out to the men on that day to attend to it.
162. Did you make a report on the fire?—Yes, afterwards.
163. You were called on to do so?—Yes. It is as follows: "I beg to state that as express was passing the plantation on the left of the track south of Hinds station on, I believe, 27th January, Mr. Clark, Bridge Inspector, of Timaru, who was in the van, drew my attention to some smoke that was then arising in the plantation about 3 chains from the train. There was a strong north-west wind blowing. Two gangs of platelayers were sent back to attend the fire."
164. Did you see the fire start?—No. My attention was called to the smoke, but we were then some distance away from it.
165. You saw no smoke before you arrived at the plantation?—No.
166. Do you know anything more about it?—No; only that I sent the platelayers back, if that is the time the inquiry is about.
167. Did you see any sparks flying about?—No.
168. You do not know how the fire originated?—No.
169. What you do know is that before you arrived at the plantation there was no smoke?—I could not say anything about that. I was busy at work in the van, and when my attention was called to the fire I looked out and saw it. I saw the smake rising.
170. You were busy at work, and after you passed the plantation you saw the smoke rising?—Yes.
171. *Mr. Cresswell.*] Was Mr. Clark in the train with you?—Yes.
172. In the van?—Yes.
173. When passing the spot you would be in the van?—Yes.
174. And you would not be likely to see the fire, if there was any fire, until your attention was drawn to it?—That is so.

175. How far was the train from the spot when Clark drew your attention to the smoke?—A quarter of a mile or so.

176. *Mr. Poynton.*] You ordered the platelayers to go back?—I threw out a note or called out to them.

177. That is the custom?—Yes; that is the orders we have.

178. The department renders every assistance in case of a fire?—Yes; the platelayers went back directly. I watched them going back.

JOHN STUDHOLME, sworn.

179. *Mr. Purnell.*] You are a sheep-farmer, living at Coldstream?—Yes.

180. Do you remember the fire?—Yes.

181. You assisted to put it out?—Yes. I was riding on the road at the time, and halfway to Hinds I saw a fire. I rode up as quickly as I could and assisted to put it out.

182. Did you visit the spot afterwards to see where the fire originated?—No. I saw signs of the fire later on, when I was passing in the train. I saw that the plantation was burnt.

183. Did you notice whether the grass between the plantation and the line was burnt?—I did not notice that.

184. Do you know whether Mr. Moore's and Mr. Mackle's fences were burnt?—The only fences I went over were three of Mr. Mackle's.

185. At the time did you know whether Mr. Moore's or Mr. Mackle's fences were burnt?—I know the boundary-fences were burnt.

186. I think you recently examined Mr. Mackle's fences to see what damage they sustained?—Yes.

187. What length of fencing has been destroyed?—The total length of the fencing on the three sides of Mr. Mackle's section I did not measure by chain, but by a map of the place on a large scale, I find the total chainage is 199·4. There is a small piece in the north-west corner that was not burnt. It was all burnt except that piece, and I do not know the actual length of it.

188. What is the length of the boundary-fence?—59 chains.

189. Therefore, you would have to deduct 29 chains from the 199·4 chains to get at Mr. Mackle's loss?—Yes.

190. Did you know the fence before the fire?—Yes.

191. Were all the fences in good order?—They were thoroughly stock-proof.

192. What would it cost to replace the fences?—I could not say what it would cost to put up fresh gorse fences altogether, but my valuation of making the fences stock-proof with stakes and wire is 6s. 9d. a chain.

193. It was a stake-and-wire and gorse fence before?—Yes.

194. Does that include the cost of clearing away the *débris* of the fire?—No.

195. You necessarily have to remove that?—Yes; the fence would have to be cut level.

196. What would that cost a chain?—1s. a chain.

197. You have had experience in these matters?—Yes, a great deal.

198. And, although the fence may be made stock-proof, the effect of a fierce fire would be to damage the bank permanently, would it not?—Yes, it would damage the texture of the sod. It would never be so strong again, and it would be liable to be pulled down by sheep.

199. Your estimate does not include damage for that?—No.

200. You know the paddock that was burnt?—Yes.

201. Was there good feed in it before the fire?—I do not think there is good feed in any part of the district; it is all so dry.

202. Was it average feed?—Yes, because there had been no stock in it for some time.

203. What would that paddock be worth a year to the owner?—It would be difficult to say.

204. *Mr. Poynton.*] If he let it out to some one who wanted it, what would it be worth?—My valuation for my own purposes would be 2s. 6d. an acre a year.

205. *Mr. Purnell.*] Feed was scarce that year, and he would have had no difficulty in letting it?—That is so: feed was exceptionally scarce.

206. *Mr. Cresswell.*] I suppose if other evidence is called as to the measurements of the fences destroyed, and the evidence differs from yours, you would not be confident about your measurements?—I could only say what it was on the map. It is a map I have always found very correct.

207. Did you know the fences before the fire?—Yes, I knew Mackle's.

208. You did not know Mr. Moore's?—No.

209. Do you know when the fence was put up?—No.

210. How many years have you known it?—Well, I forget when it was put up. I think it was put up when I was in England.

211. How long ago was that?—I have been Home so many times that I really do not know when it was put up.

212. It was several years old, at any rate?—Yes, but a gorse fence would be none the worse for that.

213. Would you call it a gorse fence?—Yes, with stakes and wire running through it.

214. Gorse fences have not been very satisfactory in this district for some years past, have they?—It depends on how they were made.

215. Have they not been dying out in all directions?—Not so much as in other parts of Canterbury. I have had a few gaps.

216. If a fence were put up at 6s. 9d. a chain, would it not be a better fence than the old one?—The stakes would be better, but it would not keep stock out better than this fence would at the time of the fire.

217. In other words, 6s. 9d. a chain would put up a fence of the same description as the old one, but it would be a new fence, and consequently a better one?—It would not re-erect a new gorse fence.

218. *Mr. Poynton.*] But it would be an equally good fence, and it would be new?—It would be equally good, except the sod itself, which would be a good deal injured by the fire.

219. You have allowed nothing for the clearing away of the remains of the old fence. Would not the old material be worth something?—No; the fire was too fierce. The stakes would certainly be worth nothing.

220. Not for firewood?—It would bring a trifle for firewood, but the bulk of the stakes had been burnt clean out.

221. What about the wire?—It might have a value for tying down stacks of grain, but no value for fencing purposes.

222. Would not the old material compensate for the trouble of removing?—I think it would compensate for the trouble of removing the wire. What I meant was that the 1s. a chain would go towards cutting the charred gorse even.

223. Would not the old material be worth at least 1s. a chain?—The stakes would be worth nothing, and it is difficult to say what the wire would be worth.

224. Roughly, would it be worth 1s. a chain?—That would be an extreme value for it.

225. Was Mackle's land in native grass?—No, it was in English grass.

226. I suppose you agree that a fire sweeping over native grass does not do it much harm?—I think it ruins the feed altogether.

227. Temporarily?—More or less permanently. If it is burnt in the spring it does the native feed a good deal of good; but if it is burnt in the autumn, especially a dry autumn, it almost completely ruins the tussock feed.

228. Mr. Moore says it is no worse now?—Well, I never will allow a shepherd to set fire in any part of the native grass except in the spring. I have had various parts of the tussock feed burnt in the autumn by mistake, and it has never been so good.

229. You have already said this was a particularly dry season, and that there was a great scarcity of feed?—Yes.

230. The previous season had also been dry?—Yes.

231. Are your values directed to Mackle's property as well as Moore's?—To Mackle's only, with the exception of a portion of the boundary-fence.

232. *Mr. Purnell.*] Farmers consider that when wire fencing has been subjected to a severe fire the wire is valueless afterwards?—Yes; but it all depends on the nature of the fire.

233. You would not use this wire for anything?—No.

DAVID HENRY MILLER, sworn.

234. *Mr. Purnell.*] You are a storekeeper, living at Hinds?—Yes.

235. You know both properties—Mackle's and Moore's?—Yes.

236. Did you assist to put the fire out?—No; I was not there.

237. You have examined Mr. Moore's fencing, have you, and also the paddock that was injured by fires with a view of ascertaining the damage?—Yes.

238. You are well acquainted with the value of fencing material?—Yes.

239. Did you actually measure the fences that have been destroyed?—I did.

240. Was anybody with you?—Mr. Staunton.

241. Can you tell us the chainage?—There are 160 chains of Mackle's fence actually destroyed.

242. Does that include the whole of the boundary-fence between Mackle and Moore?—No; that is Mackle's share.

243. What would it cost to replace the fences?—I have worked out the cost of material, but not the cost per chain. In Mackle's case it would require 1,120 stakes, allowing seven to the chain, and the cost, at £1 4s. per hundred, would be £13 8s. 9d. I may say the price of stakes and wire was less at the time the Government asked me for a quotation to replace this. Then, eighteen straining-posts, £2 5s.; 33 cwt. of wire at 13s. 6d., £22 5s. 6d.; clearing the old gorse and the old fences away, 160 chains at 1s. 6d., £20; erecting 160 chains, at 2s. 6d. a chain, £20; staples, say, £1 5s.: total, £71 4s. 3d.

244. Mr. Studholme estimated 1s. a chain for clearing away. Why do you say 1s. 6d.?—I have had experience in these things, and I put it down at 1s. 6d.

245. That is a common price?—Yes. The work is worse than clearing away old gorse.

246. With regard to the cost of putting up the fence, is 2s. 6d. a chain reasonable?—I think so.

247. Supposing the fence had been re-erected at the time of the fire, the cost of material would have been less?—Yes. Wire was about £3 a ton less, and the stakes would be about 4s. a hundred less.

248. What would be the difference in the cost?—Roughly speaking, it would be £10.

249. Were the fences in fairly good order at the time of the fire?—Yes.

250. You have seen the feed that was burnt?—No; I was not over the feed immediately before the fire.

251. You have only made an estimate of the cost of the fences?—Yes; but I have let out sections there for settlers at various prices. In fact, I think I let a section that year at 4s. an acre for the twelve months for the feed. It depends altogether on the state of the feed.

252. You have heard what previous witnesses have said who knew it. They say it was good feed?—Well, it would be worth more than 2s. 6d., as stated by a previous witness. The native grass is the best for sheep in a dry year.

253. In that year feed was scarce and dear?—Yes.
254. You put it down at 4s. an acre?—Yes.
255. You have seen the acreage destroyed by fire?—Yes.
256. How much did you put it down at?—Mackle's, at 70 acres.
257. It is burnt in an irregular way, is it not?—Yes; and this is only a rough estimate.
258. Did you measure Moore's fences?—Yes; it is 116 chains.
259. You are allowing for only 20 chains of the boundary-fence?—Yes.
260. What would be the cost of replacing that?—Well, there are various lengths that take different quantities of wire and stake.
261. The fire in Moore's case had acted irregularly too?—Yes. I calculate that 77 chains, with two wires, were fit to use. Then 20 chains would require five wires. That is where the gorse was, where the fire burned fiercely. Then 9 chains would require four wires, and there were 10 chains without wires at all. The cost would be: 812 stakes, £9 15s.; 12 cwt. of wire, £8 2s.; ten posts, £1 5s.; erecting 116 chains, at 2s. 6d. a chain, £14 10s.; clearing 77 chains, at 1s. 6d., £5 15s. 6d.; staples, say, 10s.: total, £39 17s. 6d.
262. Can you tell us anything of the value of the feed destroyed?—No, I cannot say.
263. What did Mr. Staunton do?—He measured the fences with me.
264. *Mr. Cresswell.*] Have you land of your own?—Yes, a farm.
265. In this district?—Yes.
266. How far from Mackle's?—About five or six miles.
267. Have you found any difficulty with the gorse?—No, except that it takes a lot to keep it cut.
268. Has it not been attacked generally by a blight that has played havoc with it?—Not in our district. I have noticed that in other districts.
269. Gorse is liable to be attacked by a blight that practically destroys it?—I believe so.
270. A good post-and-wire fence is a more desirable fence for a farmer here than a gorse fence?—Not in the winter.
271. Well, taking it all the year round?—I would have the gorse fence. If properly looked after it is the best fence.
272. You have given us the figures for the erecting of a fence: it would be a better one than the old one, I presume?—Yes; it would, of course, be new; but you could not put a gorse fence there straight away.
273. No, that would take some time to grow. Now, how old was Mackle's fence?—I do not know.
274. How long have you known it?—About five or six years.
275. What is the average life of a fence of that description?—That is hard to say. With proper attention it will last for ever, by replacing a few stakes now and again.
276. So that, in course of time, the original material had all disappeared?—That might be.
277. Has this fence been repaired a good deal from time to time?—I could not say.
278. *Mr. Purnell.*] Although a stake or two might want putting in, the wire would last?—Yes.
279. Do you agree with Mr. Studholme in his opinion that the sod banks are permanently injured to some extent?—Most decidedly.

THOMAS STAUNTON, sworn.

280. *Mr. Purnell.*] What is your occupation?—A farmer at Hinds.
281. Did you go with Mr. Miller to measure these fences of Mackle's and Moore's?—Yes.
282. Did you hear the measurements he gave?—Yes.
283. Do you agree with those measurements?—Yes.

HENRY MACKLE, sworn.

284. *Mr. Purnell.*] You are a farmer, residing at Hinds?—Yes.
285. Your land adjoins Mr. Moore's?—Yes.
286. How many acres of land have you?—About 420, in several paddocks.
287. I think you were away from home at the time of the fire?—Yes.
288. How soon after the 27th January did you return?—It might be a week after that I heard of the fire.
289. Had the fire done you any harm?—Yes.
290. What damage?—It burned about 160 chains of fencing.
291. Does that include the whole of the boundary-fence between you and Moore's, or only half of it?—It included all the boundary-fence, except Moore's.
292. What sort of a fence was it before the fire?—A good gorse fence.
293. Stakes and wire?—Yes.
294. You have not re-erected the fence?—No, only temporarily.
295. Why have you not re-erected it?—I have not had the means.
296. What would it cost you to re-erect the fence?—I could not put up such a good one as the one that was burnt for 8s. a chain.
297. Would that include the clearing of the remains of the fire?—Yes, including everything.
298. That comes to £64 altogether?—Yes.
299. Do you agree with what Mr. Studholme and the last witness said about the bank being permanently injured?—Yes.
300. You do not take that into account in reckoning the cost of re-erecting the fence?—No.
301. What sort of feed was there on your place before the fire?—Fairly good feed for the dry season.

302. And one paddock of 150 acres was burnt?—Yes.
303. The whole of it?—More or less; it was no good afterwards. There were only spots left here and there.
304. And a certain quantity of it was completely destroyed?—Yes, about 80 acres.
305. What do you reckon is your loss?—Well, the paddock has not been much good to me since.
306. It was let to a tenant at the time?—Yes, for three months, I think.
307. How much was he to pay for the three months?—£13.
308. How long had the tenancy run?—About half the time.
309. And after the fire you returned him his money?—I returned him £6 10s. The tenancy was stopped, as there was no feed for his sheep.
310. You actually lost £6 10s. then?—Yes.
311. Did you use the paddock for any purpose for some time afterwards?—Not for about nine or twelve months later.
312. What did you do with it?—I broke up 50 acres of it for turnips.
313. That is all the use you have had of it since?—Yes.
314. Did any feed grow last year at all?—A little.
315. What would be the value of the paddock for a year?—I reckon it is worth about £25 a year to me.
316. And you had no use for it for a year in consequence of the fire?—That is so.
317. Have you sustained any other loss beyond the fencing and the feed?—No.
318. And you claim £64 for the fencing and £25 for the loss of the feed?—Yes.
319. On your return home did you go and view the place where the fire started?—No.
320. *Mr. Cresswell.*] When did you first decide to make a claim on the Railway Department?—Directly after I saw the damage I made up my mind, but I think it was two months before I made a claim.
321. I think you then claimed £61 4s. for fencing and £22 10s. for the grass?—It was something like that, but I have lost the memorandum.
322. You are now claiming more: Is that in consequence of the valuation that was made for you?—I had not seen the full damage to the grass when I made my claim. I thought it was not so bad as it was.
323. If a new fence were put up of the same description as the old one you would consider you had been fairly dealt with?—No.
324. Would you not be better off with a new fence of the same description as the old one?—They could not do it.
325. How old was the fence that was burnt?—I could not say. I had purchased the property some years previously.
326. How long before?—About five years.
327. Was it an old fence then?—It was a good gorse fence.
328. How long had it been erected?—Several years, I expect.
329. Is it not a fact that as early as the April following—three months after the fire—the grass on this patch that had been swept by the fire was even better than the rest of the grass on your land?—No.
330. Was there any decided difference?—It was a good thick sort of grass, and there was none at all after the fire. Only the chickweed came up.
331. If an independent gentleman is brought who visited the place in April, and swears that at that time the grass on the part that had been swept by the fire was even better than the rest of the grass, would you say his evidence was dishonest evidence?—I would. You could not judge by the grass that was on it then, because the fire went over the whole of it. What was left was scorched.
332. Had the grass recovered itself by April?—No.
333. It would recover itself pretty quickly after a rain or two?—No. In a dry season when it is burnt it takes a long time to recover, and probably it will never be what it was before.
334. *Mr. Purnell.*] With regard to the 80 acres you say were completely destroyed, had any grass grown there three months afterwards?—No.

JOHN BROOKER, sworn.

335. *Mr. Cresswell.*] You are an engine-driver on the Hurunui–Bluff line?—Yes.
336. How long have you been an engine-driver?—About twenty-four years.
337. And nearly all that time you have been on the line between Oamaru and Christchurch?—Yes.
338. You were the driver on the express from Christchurch to Oamaru on the 27th January, 1898?—Yes.
339. What was the number of your engine?—No. 30.
340. What train had you?—About twelve total.
341. Was that an ordinary train?—Yes, for the express.
342. Did your engine have spark-arresting appliances fixed to it?—Yes.
343. Were those appliances in good order on the date in question?—Yes, in perfect order.
344. When last did you examine them before the fire?—They are examined daily.
345. Then, you would examine them that morning before leaving Christchurch?—Yes.
346. Did you examine them after the fire?—At night, at the end of the journey.
347. And they were still in good order?—Yes.
348. Did you see any fire on the date in question at the spot referred to?—No.

349. We are told there was a fire alongside the line on that date, and that it was noticed almost immediately after the train had passed a certain spot. Admitting that, what is the probability of the fire having been ignited by the engine?—I do not think it could have occurred from the engine, because all the spark-arresting appliances were in good order.

350. You do not think there was any probability of a spark having been emitted from the engine?—No.

351. I suppose the risk of such a thing is greater in proportion to the load of the train?—Yes. The bigger the load the greater the risk will be. The engine would be working slightly harder.

352. Does your engine throw out sparks even when you have a big load on?—No.

353. Then we may put it that it is extremely improbable that it threw sparks on this occasion?—It is quite improbable that the fire was caused by sparks from the engine.

354. Could you account for the fire in any other way, assuming it did take place as the train was passing?—Not unless it was caused by a passenger throwing a match or a cigarette from the carriage.

355. It is more likely to be caused in that way than in any other?—Yes.

356. Have you seen passengers throw out lighted matches from the train?—Yes.

357. What coal were you burning on this occasion?—Hard coal.

358. Is that the safest coal?—Yes.

359. What particular coal were you burning?—Brunner and Cardiff mixed.

360. Is that regarded as a safe coal?—Yes, quite safe.

361. And the engine was being worked only light at the time?—Yes.

362. *Mr. Purnell.*] I suppose it is possible that sparks might be emitted from the engine without your noticing them?—I have all the apparatus in perfect order.

363. But sparks might pass your engine that you would not see?—They would have to be very small ones.

364. Do you know what space is taken up by the ballast on the line?—I do not.

365. If a passenger threw a match out of the window, would it not be likely to fall on the gravel?—It might reach the tussock.

366. There was a strong nor'-wester blowing on this day?—Yes, a medium nor'-wester.

367. Would that not cause a stronger draught from the engine?—A stronger nor'-wester would cause it.

368. I believe that in some places the railway authorities have ploughed up portions of their reserves so as to stop fires. They had not done so at this place, had they?—I might have noticed it if they had done so at that place.

ALEXANDER MCKEE, sworn.

369. *Mr. Cresswell.*] You are a fireman and spare engine-driver?—Quite correct.

370. How long have you been in the service?—From the 20th October, 1884.

371. What part of that time has been spent on the engines?—Since about 1889.

372. Running over the Canterbury Plains?—Yes, principally.

373. On the 27th January, 1898, were you on Brooker's train?—Yes, in the capacity of fireman—a post I had held for five years.

374. Do you recollect passing Hinds?—Yes.

375. Did you see anything of the alleged fire?—No.

376. Did you examine the spark-arresting apparatus on this engine?—Yes, on the morning of that day.

377. When did you next examine it?—On returning to the shop from the trip.

378. In what condition was the apparatus then?—In perfect order. There were no holes above the regulation size.

379. *Mr. Poynton.*] Was it a perforated plate?—Yes.

380. *Mr. Cresswell.*] You have heard it said that the fire was noticed almost immediately after the train had passed the spot. Assuming that to be correct, do you think there was any probability of the fire having been caused by a spark from the engine?—It was absolutely impossible.

381. Why?—Because the spark-arresting appliances were in perfect order, and would prevent the emitting of any sparks. The spark-arresting appliances are equal to the task set them.

382. What was the draught on the fire at the time?—The engine was working very lightly, and there was a very small volume of exhaust.

383. The conditions were all unfavourable, then, to the flying of sparks?—Quite so.

384. Have you ever seen this engine throw sparks?—No, not in my five years.

385. Do you know what coal was being burned on that occasion?—Yes; screened Brunner and Cardiff mixed.

386. Is that a safe coal?—Yes; the best known steam-coal there is.

387. Have you seen passengers throw lighted matches from the train while it was in motion?—Yes.

388. Have you seen anything else thrown off a train that would be likely to cause a fire?—Cigar- and cigarette-ends.

389. And in a dry season, when the grass is dry and inflammable, a fire would be likely to start in that way?—Yes.

390. If a passenger threw out a match, would the wind carry it any distance?—It was only slightly blowing.

391. And the wind would carry a match some distance from the rails?—Yes.

392. *Mr. Purnell.*] You do not pretend to say you threw a lighted match out?—Not on that occasion.

393. It is customary for the engine to fire up about this part, is it not?—The fire is attended to regularly.

394. And at this particular place they do attend to the fire?—No, not at that spot.

395. But is it not usual to fire up there?—It would not be usual to attend to it there any more than at any other part of the road. It all depends on how the engine is working, and on several other conditions.

396. The spark-arrester consists of a perforated plate?—Yes.

397. What size are the holes?—$\frac{3}{8}$ in. by $\frac{1}{8}$ in.

398. And therefore a small spark would go through the holes?—That would be impossible.

[For continuation of evidence in these claims see evidence given in Christchurch and Wellington.]

CHRISTCHURCH.

FRIDAY, 16TH FEBRUARY, 1900.

WILLIAM LAWRENCE ALLAN, sworn.

1. *Mr. Poynton.*] What were you, Mr. Allan, at the time of the fire on Mr. Gardiner's property and the Acton Estate?—I was the manager of the Acton Estate.

2. Where were you when the fire occurred?—I was having lunch at the time.

3. How far from the origin of the fire?—About three miles.

4. You can throw no light on the origin of the fire, can you?—No.

5. Your evidence will be as to the damage?—Yes.

6. Can you remember the amount of damage done to the Acton Estate?—I could not give you from memory the chainage of fencing destroyed and the acres of grass destroyed, or the acres of plantation destroyed, but I can give you what I thought was the value per chain and per acre for the grass and the plantation.

7. Will you give us, then, the actual damage?—There were so many miles of inside fencing—fencing within the company's property—and there were so many miles of boundary-fencing.

8. There was a claim sent in. Was that accurate?—Yes.

9. Amounting to £573?—I do not recollect the amount.

10. Particulars were sent in at the time?—Yes.

11. The department's estimate is £516?—There is not much difference between them. They would value the fences or the plantation lower than we did. At the time I put the plantation in trees were dearer than they are now.

12. Were the railway officials with you when you estimated your loss?—Mr. Burnett and Mr. Lowe were with me several times after the fire, looking at the damage that had been done.

13. And you have no doubt as to the accuracy of their measurements?—No.

HENRY ARCHIBALD, sworn.

14. *Mr. Poynton.*] What are you?—A fireman.

15. Are you also a driver?—An acting-driver.

16. *Mr. Stringer.*] How long have you been in the Railway Department?—About sixteen years.

17. And for eleven of that you have been on the engines?—Yes.

18. You have been a fireman on the express between Oamaru and Christchurch, I think, for nine years?—Yes.

19. Were you the fireman on the 2nd of January, 1897?—Yes, from Chrisichurch to Oamaru.

20. You were, I think, on Davidson's engine?—Yes, the leading engine.

21. Was your engine throwing sparks on that day?—No. I fail to see how it could have thrown sparks. It was a compound engine, which exhausts steam at a much lower pressure than a smaller engine, so it was almost a matter of impossibility for it to throw sparks.

22. It has been suggested that red-hot sparks were seen emitted in black smoke from the engine. Is that probable in daylight?—They must have very good eyesight. I have never seen a spark in daylight. I think it is impossible.

23. Is it likely that sparks are being emitted when thick, black smoke is being emitted?—There is a poorer chance than ever, because it shows there is very little exhaust.

24. What was the wind on that day—north-west?—It was right across the track.

25. Was it a light train or a heavy train?—There were about fourteen or fifteen total, and that was a light load for two engines.

26. Supposing sparks were emitted, was the wind such as to carry them any distance?—It would have carried them right away from the line, at any rate.

27. It was not likely to have dropped them on or near the line?—No; but it was almost impossible for the engine to throw sparks.

28. For the reason you have already given?—Yes, owing to the exhaust and being a compound engine.

29. Is it within your knowledge that passengers sometimes throw out lighted matches, and cigars and cigarette-ends, burning?—Yes, I have seen it done often. People on the platforms often throw a cigar or a cigarette butt away.

30. *Mr. Lane.*] You were on the first engine?—Yes.

31. Did you see any fire on the grass?—No.

32. Did you at any time notice the fire that started after the express passed?—No.
33. Do you mean to say it is impossible for sparks to come out of the chimney of an engine such as you were driving?—The engine we were on was a compound. I have never seen it throw sparks all the time I have been on it.
34. I suppose if the engine were emitting black smoke you could then see the sparks, if there were any, notwithstanding that it was a bright day?—I do not see how one could see them.
35. If they were in the black smoke you would see them against the smoke, would you not?—Yes, but the more black smoke there is it is the surest sign the engine would not throw sparks.
36. It would not be good driving to so work your fires with a light train as to cause sparks to be emitted?—No; but I fail to see how it could thrown sparks, owing to the lightness of the train.
37. Have you any special places for stoking-up the fires on the south lines? Do you not generally stoke-up at Rakaia?—We very seldom stoke-up when standing at a station.
38. You generally do it after starting?—It depends on how things are going.
39. You have no particular rule or regulation about it?—No; we keep up a uniform fire.
40. Did you see anybody on this occasion throw a match or a cigarette from a carriage?—No.
41. As a rule, you are not looking back much?—It is part of my duty.
42. You have to keep an eye on the guard's van?—Yes.
43. Do you remember this day particularly?—Yes. I took note of it myself.
44. There is a broad strip of grass land, now in stubble, between the actual line and the fence?—Yes.
45. More than a chain?—I would not be sure about the distance. It would be about that.
46. Was that in grass two years ago?—I do not remember.

WALTER EDWARD STREET, sworn.

47. *Mr. Poynton.*] What are you, Mr. Street?—Manager of Mr. White's farm.
48. Were you manager when the damage took place?—Yes.
49. And you wish to give evidence as to the damage?—Yes.
50. Can you state how the fire occurred?—No.
51. What do you estimate is the damage done to Mr. White's farm?—I estimate the damage done to the farm by the fire in this way: 46 acres of plantation, at £6 an acre; 260 chains of fencing, at 10s.; and about 100 acres of grass, at 5s.
52. *Mr. Stringer.*] What sort of a fence was it?—A gorse fence, except about 6 chains of posts and rails.
53. Was the fence in good condition?—Yes, in very good condition.
54. Do you know Mr. Coster?—Yes.
55. He is a very experienced man?—Yes.
56. And knows the country?—Yes.
57. He estimates the fencing at much lower than you do. I think he puts it at 3s. 3d. a chain. How do you explain the discrepancy between 3s. 3d. and 10s.?—Well, you could not put the fences up for 10s. I would rather have the fence as it was before the fire than a fence at 10s. a chain.
58. Why?—Because sometimes it does a gorse fence good to burn it, but when everything is dry it is burnt clean out by the roots. We have been unable to get it up since. The posts were burnt right down to the ground, and the bank is all tumbling away.
59. What have you done with regard to fencing?—We are going to put a wire on the fence and a wire on each side.
60. What has it cost yon to do what you have done?—I could not say exactly. I could not give the price per chain.
61. But you have reinstated the fence?—Oh no, it is nothing like it was before.
62. But you have done what you consider necessary to make your fences effective?—We have, and we have not; because what we have done we did until the gorse would grow, as we thought it would, but the gorse has not grown to be a good fence.
63. Has the grass grown at all?—In patches.
64. What have you expended on the fence per chain already?—From memory I could not say.
65. Have you expended 1s. a chain?—Yes, it has cost more than that. It would cost 3s. a chain at the least to do what we have already done to the fences.
66. And you will have to do more on account of the gorse not coming?—Yes.
67. What will you have to do?—We will have to bank on the south-west side for the whole length at 2s. 6d. a chain, and then the gorse will have to grow.
68. And you estimate the grass at 5s. an acre?—Yes.
69. Mr. Coster put it at 2s. 6d?—I think that is too little.
70. How do you calculate 5s.?—Feed was very scarce, and the feed in the paddock was good. It was quite a foot high, and was worth 5s. for the stock. It was a good paddock. It would not have burnt readily if there had not been feed on it.
71. *Mr. Macandrew.*] What was the nature of the feed?—Mixed ryegrass and clover.
72. *Mr. Stringer.*] Was it ploughed and properly laid down in grass?—Yes.
73. How long have you been manager of the farm?—Ten or eleven years.

GEORGE HANMER, sworn.

74. *Mr. Stringer.*] What are you?—A licensed surveyor.
75. I think you made a survey of the country affected by the fire?—Yes.
76. I refer to the fire that took place at Rakaia on the 2nd January, 1897?—Yes.
77. This is the plan you made?—Yes.

78. It is made from actual survey and observation by yourself?—Yes.
79. Did you go over the whole of the country affected by the fire?—Yes.
80. And you have shown it all on the plan?—Yes.
81. *Mr. Lane.*] Do you remember particularly going through the oat-crop?—Yes.
82. Did you notice that tongues or strips of fire had run through the crop?—No. When I was there the crop was cut, and it was difficult to follow the exact track of the fire.
83. How long after the fire was it that you were there?—I could not say.
84. Was it some time afterwards?—Yes.
85. Did you walk round the boundary-fences and the oat-crop to see where the fire had gone?—Yes; I followed the burnt fences as far as I could.
86. You did not notice any fire round the edges? Some of the witnesses say it extended round the edges?—In some places the fence is shown on the plan in black and in other places in green. The black denotes where the fences were burnt.
87. Did you notice whether the fire had burnt inside the fences or not? It would burn inside, would it not? Not necessarily.
88. You cannot remember, can you?—If there had been any burning I think I would have noticed it.
89. The paddock was in stubble at the time?—Yes; the crop had been cut.
90. Was it difficult to get at the exact area?—It was difficult to get at the exact forks of the fire, but I got the measurements as near as I could. I spent a considerable time in trying to find out where the fire had gone by walking over the ground and so on.
91. Your survey was made about the 18th January—a fortnight after the fire?—Yes; by the papers you show me I see that that is so. It would be about that time.
92. If there were two or three forks into a paddock you would take the outside, and include them all in your survey?—Yes.
93. You would go round the extreme limit?—Yes.
94. About the 18th January the traces of the fire would be clearly defined?—Yes, with the exception of the crop being cut. If the crop had been standing I would have been able to follow the fire more easily, but having been cut and taken away it was somewhat difficult.
95. That only applies to the oat-crop?—Yes; the grass was easily followed.

ALFRED LUTHER BEATTIE, sworn.

96. *Mr. Poynton.*] Your position, Mr. Beattie?—I am Locomotive Engineer for the Hurunui-Bluff Section of the New Zealand railways.
97. How long have you been connected with the New Zealand Railways?—For twenty-two years and a half.
98. Did you have experience before entering the New Zealand railway service?—Yes, in England.
99. In what department?—In locomotive building.
100. You are familiar, then, with the appliances used to prevent the emission of sparks?—Yes.
101. What appliances are used on the New Zealand railways?—I will describe the appliances used on the New Zealand railways at the present time. I might premise my remarks by saying that as a department we have given very special attention for many years to the matter of spark-arresters. We have not only conducted experiments ourselves, but we are also familiar with experiments that have been conducted in other countries. We never hesitate to copy the good points of other people's appliances if we think they may be adapted to our work here. It is a subject that has received perhaps more attention on the railways in New Zealand than almost any other point of locomotive running. It has been looked on by the department as a matter of very great importance, and the mere question of economy has been subordinated to the more important question of efficiency. The apparatus at present used on the New Zealand railway engines is, in my opinion, as an expert, the most modern and the most efficient known to the railway world. We have every confidence in stating that there is no laxity on the part of the department in connection with equipping the engines with the best-known appliances for the prevention of fire from stray sparks. I will put in, for your information, Sir, a tracing which shows the fundamental idea of spark-prevention. It is a sectional outline of an engine firebox, and shows where the sparks are originally manufactured. In order to effect as perfect combustion as possible we use a firebrick arch, which extends back from the tubes for more than half the length of the firebox. We have also a deflector or baffle-plate projecting down towards the fire from above the fire-door opening. This deflects a current of air into the fire, and the effect of these two appliances is to make more perfect combustion, and therefore to consume the fuel and pass it out in the form of gas rather than in a partly-burnt condition. Therefore the course of the products of combustion is delayed and rendered much more circuitous than if these appliances were not used. That being so, as the products of combustion pass to the funnel there is every probability of them being consumed, so that the likelihood of a spark getting from the fire is considerably minimised by the appliances in the firebox. I have also a tracing of the smokebox appliances used when we are burning hard coal, the effect of which appliances is to prevent any particle of partially consumed fuel from getting away. The size of the hole in the perforated plate or diaphragm is $\frac{5}{8}$ in. by $\frac{1}{8}$ in. In England and on the Continent of Europe it is not customary to put any appliance of this sort into engines when burning hard coal. The tendency of this coal to form sparks when burnt in a locomotive is so very small that practically it may be looked on as free from danger. The consequence is that in England, Scotland, Ireland, and the Continent they do not consider it necessary to put in this spark-arresting appliance, the use of which, I may say, increases the consumption of fuel, because it baffles the egress of the gases, and therefore you have to increase the blast to over-

come the extra resistance caused by the spark-arresting appliance. The railway companies I have mentioned prefer to take the risk—that risk being so infinitesimal with hard coal—and save the fuel rather than have this extra resistance. At one time on the New Zealand railways, a good many years ago, the same practice was followed with hard coal. We had no special spark-arrester when burning hard coal, Newcastle or Brunner; but it was ultimately decided that, as a matter of extra precaution, this diaphragm-plate should be adopted; and, after many modifications as to the size of holes in plates, we have now used this standard pattern for a number of years. This pattern, I may say, was in use before any of these fire-claims were made.

102. Are all your engines on the same principle?—Yes, all that burn hard coal. I might, for your information, Sir, show the difference in burning lignite coals. The firebox arrangement is the same in both, the firebrick arch and the deflector being identical. When burning lignite we use a special funnel with a deflector-plate in it instead of this diaphragm, which has been found by experience to be not adapted to burning lignite, as it gets choked. This deflector is placed near the top of the funnel, and all the sparks by virtue of their velocity have to strike there. There they are broken up by impact and fall back into a space prepared for them. They are again shot up and again broken up, and the result is that they are ground into an almost floury state, and escape in the form of dust in the current of smoke and gas. We contend that, with this arrangement in efficient working-order, all the larger particles are broken up and the danger from fire is reduced to the lowest possible minimum. This does not apply to the Canterbury fires at all, because there we were burning hard coal.

103. You consume only hard coal in Canterbury?—Yes; and therefore this lignite arrangement does not apply except in Southland and Otago.

104. Is lignite used in any other part of Otago?—It is used only in Southland and Otago. For the use of the lignites we have our engines specially fitted with the apparatus as described, this being the outcome of many years' experience, and it has been brought now to as fine a point as we are able to bring it in the meantime. We are satisfied it is the most efficient form of spark-arrester known up to the present time. In the smoke-box of the lignite-burning engines we have an arrangement of petticoat pipes which largely assists in the safe combustion of lignite coal.

105. Is that used in all the engines?—Yes, in all engines burning lignite. I might also point out that our smoke-boxes are made as I will show you on an engine. They are much longer than is the case in the English practice. We follow the American practice in that respect. The American practice is to give more space for the ashes and cinders that may come through the tubes, so that they lie, as it were, in a dead corner out of the eddy of the draught. These particles of unconsumed fuel shoot right against the inside of the door, and their tendency is to fall down out of the way of the eddy, and, as a matter of fact, we find ashes where the eddy of the draught has swept past and left them. I might say that the question of the most efficient method of spark-arresting has been investigated by scientists and railway men for many years, and up to the present time it is in a tentative state. The difficulty is this: that if you are to allow the smoke—the products of combustion—to pass out freely—and that they must pass out comparatively freely is essential in order that there may be sufficient draft for the fire—it presupposes that you must allow an exit, even if somewhat restricted, for some comparatively small dust with the products of combustion. The most effective spark-arrester of all is, of course, a solid piece of plate on the top of the funnel, but at the same time it is an absolute bar to the use of the engine. If you make one hole or a thousand holes in that plate on the top of the funnel to let out the gases you at the same time make a certain amount of opening for the small particles of dust and unconsumed fuel. The only thing I want to point out is that the most efficient methods have been adopted, so far as known, and the perforated plate I will put in will show that only very small particles can get out. I claim that the small particles that might get out, even although in an incandescent state when ejected, do not necessarily remain hot, because in passing through the air all the body is out of them, and in travelling a short distance the last vestige of heat disappears, usually long before they reach the ground. I might put in for your consideration, Sir, an extract from a recent number of the *Scientific American Supplement*, 2nd December, 1899. It bears on the subject, and is, I think, of interest. It is as follows:—

Investigations made at Purdue University, in Indiana, do not bear out the current belief that locomotive sparks are the cause of the greater number of the forest fires. In the Indiana experiments a series of large pans were placed at a distance of 15 ft., 25 ft., 50 ft., 75 ft., 125 ft., 175 ft., 275 ft., and 375 ft. from a railroad at a point where there was a heavy grade and where many freight-trains passed daily. Each pan was covered with soft cotton cloth, so that if live cinders reached them the fact would be known by scorched or burnt places in the cloth. When the experiments were concluded it was found that the greatest number of sparks or cinders had fallen in the pans 50 ft. and 75 ft. from the track. The largest cinder did not equal the size of a white bean, while in no instance was the cloth in the pans even scorched. The inference was that, if the cinders were hot when they left the smoke-stacks, they had lost their heat in travelling the 50 ft. or 75 ft. This would indicate that fires communicated from locomotives are rare.

I might say that this experiment was made at a point where there was a heavy grade, and, of course, that means that the engines would be belching forth their smoke and steam at the maximum rate. Of course, the cases of fire we have had under consideration were not at heavy grades, and therefore there was much less liability. I would also point out that a spark or unconsumed particle the size of a white bean would not go through the perforated plate we use. In the last number of an American technical paper there is a leading article on "Draft Appliances and Extended Smoke-boxes," as follows:—

The development of the different parts of the locomotive from the most primitive form to the shapes and dimensions that are the most simple, durable, efficient, and hence the proper forms of use, presents remarkably interesting subjects of study. None of these divisions of locomotive development presents more curious phases of study than that of locomotive draft appliances. In a paper by the well-known engineering expert, Mr. Snowden Bell, presented to the Western Railway Club, on "Locomotive Front Ends," an excellent history is given of the principal appliances used for draft-inducing and spark-arresting purposes. Unfortunately there is a natural conflict between

devices designed to promote free draft and those intended to prevent spark-throwing; and the conflict between the free passage of fuel gases from the fire-box to the atmosphere, and the obstructions put in to prevent these gases from carrying cinders along, has led to the multitude of inventions that have been applied to the front end of locomotives. Locomotives had been in use a long time before designers and master mechanics recognised the importance from an economical standpoint of having the draft appliances arranged in the manner most conducive to the economical use of fuel, the free working of the engine, and restriction of spark-throwing. No practical arrangement has yet been produced which would entirely prevent spark-throwing. We have seen a few devices that prevented spark-throwing, but they also prevented the engine from steaming freely enough to pull a train. . . . There have been hundreds of spark-arresting smoke-stacks patented, but the cone and netting, that both came on the suggestion of necessity and were not patented, were the most meritorious features of all of them. There were wonderful attachments added to perfect the work of the cone and netting, and their principal success was in obstructing the draft so that the nozzles had to be reduced to a ridiculous extent to force the fire-gases through the obstructions.

This paper, *Locomotive Engineering*, is one of the recognised standards in the locomotive world. It has been published in New York for twelve years, and the number from which I quote is No. 12, volume 12, page 534 (December, 1899). The editor is a practical railway man of very wide experience. The American practice for many years was to use woven wire netting, which was proved to be less efficient than the perforated plate, and the perforated plate such as we use has lately been adopted in America and other countries as a more efficient appliance, and has practically superseded the netting. From the extract I have read, it will be seen that as late as December, 1899, the editor of an important scientific paper states that netting or perforated plate is still the most efficient appliance known in spark-arresting methods. That shows that we are not lagging behind in the matter of providing for contingencies. There are one or two things in connection with the case at Rakaia that I wish to say. Mr. James Ross Mackay, a witness who was a passenger by the express, said he saw black smoke and red-hot embers falling from the engine funnel. Of course, that evidence is for you, Sir, to weigh and to come to a conclusion upon; but I wish to submit for your consideration at the same time the improbability of that witness having really observed with accuracy. Many people think they see things when perhaps if not trained to observe that particular phenomena their judgment or observation may unwittingly be faulty. It will also be within your recollection that the driver of the second engine said he saw a small fire just after the end of his tender passed it. He would be standing at the right-hand side and looking over the opposite end of his tender, the train being immediately behind the tender, the distance behind his tender that he would be able to see would be very limited. I have estimated it at, approximately, 100 ft. from where the alleged spark was ejected by the funnel of the leading engine to the spot where he would be able to see the fire on the ground. I may point out that at the speed at which the train would be travelling, assuming a spark to be ejected by the leading engine, the man would have had about four seconds during which the spark would have remained within his range of vision, after which the advancing train would shut off his view. In a north-west gale such a spark would be carried by the wind for a considerable distance and beyond the railway boundary, and would be unlikely to reach the ground within the time stated. Therefore, the theory based on the witness Mackay's statement that a particular spark from a particular engine set fire to the grass is untenable, because I do not see how a spark could have landed there in that time. There was admittedly a heavy gale blowing, and a light spark would have been carried by the gale of wind considerably further. I state that without hesitation, because I feel sure that the spark must have been carried further than was suggested in the witness Mackay's evidence, assuming that there was a spark. The leading engine of the train was an engine that I have no hesitation in saying could not really throw a spark if it tried, under the conditions obtaining at that time. It was a compound engine, which means that the steam, after it has passed through one cylinder, is used over again in another. This reduces the pressure to such an extent that when it finally comes out through the funnel there is hardly any force in the steam at all. It comes out at such a very low velocity that, speaking with full knowledge of the subject, I say this engine practically could not throw sparks, because there is not a sufficient blast to lift even the lightest of them up with the gases. That engine, of all the engines in New Zealand, was the most unlikely in the railway service to lift sparks. The second engine was also fitted with the most up-to-date appliances, and obviously from the evidence it is not even suggested that the alleged spark was thrown from it. The evidence would suggest that it was from the leading engine, and altogether the possibility is so small that your Worship might dismiss it as beyond the range of practicability. I might also mention that for a good many years past we have reduced the force of the draft by enlarging or softening the blast, and therefore the liability to draw up particles of unconsumed fuel is still further reduced. That has been the practice throughout the colony; and the velocity with which the exhaust steam is rejected from the chimney has been much lower during the last ten years than previously. I might, in conclusion, say that the question of the absolute prevention of spark-throwing is the subject of experiment in other colonies. In Western Australia they are wrestling with the same problem of how to get an engine to steam efficiently and at the same time to absolutely prevent spark-throwing. Such a thing has not been wholly achieved yet in any part of the world. Very small sparks may under certain conditions be thrown. Those conditions exist when an engine is using its utmost power to pull a train up a grade, but when an engine is running light it is not using a tithe of the steam it would use on a heavy grade, and therefore its liability to throw sparks is reduced to a minimum. The evidence before your Worship at Hinds and Rakaia has been in regard to trains working on the level, or practically on the level, and where there has been no heavy pulling, and I contend that the conditions were such that the liability to throw sparks was reduced to the very lowest point. I might finally say that at the present time we are trying some fire-arresters in the South. They were submitted to the department by some patentees who are very enthusiastic as to their merits. I mention that to show that the department is desirous, as it always has been, to investigate any

appliances that have the slightest likelihood of being an improvement on the appliances we already have. Experiments of this kind are always made with the greatest willingness. I submit that the department, as a department, has done everything that is possible in actual railway practice to do. We have the most up-to-date appliances. We have made experiments repeatedly ourselves, and we have profited by other people's experiments; and, as an expert, I say that we do not know of any better appliances than those we are using, and we are quite safe in saying that no other railway has appliances superior to our own at the present time. To show how we try to maintain these appliances I will read from the book of locomotive instructions. Rule 323 says, "The chimneys and spark-arresters of all locomotives must be kept perfectly clean. Engine-men neglecting this must be reported." Rule 324 says, "The apparatus used for preventing the emission of sparks must be kept in perfect order. All cases of defect must be reported, and immediate action taken to remedy them." We have also perforated dampers in the ash-pan to prevent cinders getting out in any way. As a matter of fact, we drown them by the overflow from the injectors which is led into the ash-pan. The duty of a fireman when he goes on in the morning to get the engine ready is to clean his spark-arrester in the smoke-box, to thoroughly examine it and to satisfy himself that it is in perfect order, and that there are no holes larger than the regulation size. If there is any hole larger, or any defect, it is his duty to call the attention of the driver to it. Every possible precaution is taken. In the cases before the Royal Commission the spark-arresting appliances were in perfect condition.

106. Are the patents that are being tried local patents, or are they patents that are being tried in other places?—They are local patents.

107. They have had no trial outside New Zealand?—No.

108. How long have you been trying them?—We tried one of them about twelve months ago. The second one, which I have specially in mind, we are trying now. The trial is not yet complete.

109. When will it be completed? Could you furnish me with an interim report?—Not so far. The patentee is making some alterations to it which are not yet complete.

110. Your department is giving every facility for the trial?—Yes, every possible facility.

111. What is the life of one of those plates?—The plates are not renewed, unless necessary, between the workshop overhauls; and a complete overhaul takes place every two or three years.

112. But they are cleaned every day in the year?—Yes, by the fireman, before the engine leaves the shed. They are cleaned and examined.

113. *Mr. Lane.*] In looking over the evidence I see a witness spoke of black smoke: is that indicative of any part cular condition of the fire as likely to show that sparks would be emitted?—It is the least likely time for sparks to be emitted. Sparks would be little likely to be formed when there is black smoke coming from the fire and through the tubes and up the chimney; and if sparks were formed their passage through the black smoke would be likely to extinguish them before they left the funnel. When black smoke is coming from the funnel there is the most remote chance of sparks being formed, and it is so unlikely that it might be put down as a very remote possibility.

114. When black smoke is issuing you could more readily distinguish sparks than at any other time if sparks were issuing?—Well, speaking as a practical locomotive engineer, I may say I have never yet been able to see a spark in the broad daylight.

115. Take a train starting as this train was starting from the Rakaia Station: at what force would the sparks strike the grating?—The sparks are not forced agalnst the grating; they are all shot to the front of the smoke-box.

116. What would be the velocity of the air through the perforations?—The velocity of the gases through the perforations would be about the same as the velocity of the air through an ordinary fiercely burning fire. The velocity is not very great. I could not exactly say the velocity of feet per second.

117. It would come at a fair pace, would it not?—Yes; but the sparks go straight away underneath and fall into an out-of-the-way part of the smoke-box, and their tendency is not to impinge on the perforated plate at all.

117A. As to the apparatus you use on the lignite-burning engines, can you use the same apparatus on engines such as the engine that was used on 2nd January, 1897?—No. We have to adapt the apparatus to the nature of the coal, and this necessarily varies, and the most efficient spark-arrester for one coal may not be—and, as a matter of fact, is not—the most efficient for another coal.

118. Would the apparatus used on engines burning lignite-coal be better than the one you have explained is in use with hard coal?—No, not for the reasons already given.

119. Although this is the least likely engine to throw sparks, yet you admit that you cannot stop sparks?—I admit that under certain conditions there is a bare possibility of sparks coming out.

120. But you admit they do come out?—Yes, under certain conditions, but the conditions that day were not such as to render it likely that they would come out.

121. You base that opinion on the statements of your staff who were employed on the engines?—Yes, and from what I actually know of the engines and the train and the grade.

122. Do the gratings crack, or are larger holes ever made in them?—They do not crack. Any defect would be immediately noticed by the fireman.

123. It would not be noticed until the overhaul next morning?—Well, there is really no liability to crack, the plates being of wrought-iron.

124. Do the little pieces chip out?—No.

125. Have you ever seen any of the holes burnt out?—No; but I have seen holes much more contracted with use. The tendency is to contract rather than to enlarge.

126. You spoke about the evidence given by Mackay. I think you were wrong in what you said. He said "sparks," and when shown his statement to Mr. Burnett, in which he had used the word "embers," he said be meant "sparks." According to the evidence of the two men on the engine there was no fire, and they saw no one anywhere about, and the driver of the second engine says he observed a small fire when looking behind over his tender. Can you, then, give us any explanation of the cause of the fire?—I can only suggest a theory, because we have no evidence one way or the other. It is all supposition. My theory is, that from some previous cause, with the actual nature of which I am at present unacquainted, a small mouldering fire had existed there for some time before the express train came along. It was, in all probability, on the lee-side of a tussock or a sod or Maori-head—it might have been there for hours—and when the train came along the eddy of wind caused thereby might have fanned this smouldering fire into flame. If you stand on the lee-side of a train, especially when a high wind is blowing, the eddy is most noticeable, and my theory is, that the fire existed before the train came along, and that this swirling eddy of wind passing under the train, fanned it into flame.

127. That is how you think the fire started immediately after the express passed?—That is my supposition.

128. Do you think the fire could have been in the dry grass stubble for some considerable time before the express came along?—Yes, I decidedly do, because if it was on the lee side of any raised portion of material it might smoulder for a long time before it burst into flame. It might require a special fanning wind to blow it into flame.

129. After hearing the evidence, that is your explanation of how the fire started?—I merely put it forward as a theory, and I think it is more probable that is the correct explanation of the fire than the theory that it was started by the engine. I consider that the theory that an engine-spark caused the fire is based on such an utterly unreliable and supposititious foundation that I fail to see there is any reasonable ground for considering that the engine was the primary cause of it.

130. Do you consider that Mr. Mackay, who no doubt thinks he is telling the truth, is mistaken when he says that looking towards Ashburton he saw smoke and sparks coming from the engine, and that shortly afterwards the fire started?—I think he is mistaken. With the best intentions I think he is mistaken. Unless a man is a trained observer of phenomena he is liable to be mistaken.

131. Your practical evidence is, then, that you use the most approved and latest means and appliances for arresting sparks, but you admit that you cannot actually stop them from being emitted by the engine?—That is practically what I contend. We have the best known appliances—the most efficient appliances—known to the railway world, but the absolute and positive prevention of sparks has not been arrived at in actual working anywhere.

132. Have you ever seen a fire start that was caused by sparks from an engine?—No.

133. *Mr. Poynton.*] How long before the express train had another train passed?—About 10 o'clock—two hours previously.

WAIRANGI.

THURSDAY, 1ST MARCH, 1900.

JOHN YOUNG, sworn.

1. *Mr. Oliphant.*] What are you, Mr. Young?—A farmer, residing at Wairangi.

2. You remember the occurrence of the big fire that took place here some few years ago?—Yes.

3. It burnt a large portion of your plantation?—Yes.

4. Do you remember the date?—The 15th December, 1896.

5. Where were you at the time of the commencement of the fire?—I was carting in bark to the shed.

6. What time in the afternoon was the fire?—About half-past 4.

7. There is a train goes past about that time?—Yes, the Auckland goods train.

8. You saw it go past?—Yes.

9. You might tell us what you saw as to the commencement of the fire as you saw it?—I was carting in the last load of bark as the train passed. Shortly after it passed I saw a fire start in the swamp. I would be about a mile and a half in a straight line from the railway-line at the time.

10. Whereabout did the fire start—where we saw to-day?—Yes.

11. On the edge of a swamp about a mile from here?—Yes, a little over a mile.

12. Did you see what occasioned the fire? Did you see any sparks emitted from the engine?—No; I only saw the smoke rising. I could not see sparks coming out of the engine.

13. How soon after the train passed was it that you saw the fire start?—Ten minutes after the van went past.

14. You saw it break into smoke?—Yes.

15. What then happened?—The fire went south-west from where it started, and when I got home I reported to my father about it. Next morning there was no sign of a fire at all till 1 o'clock, when the wind changed to the north-east, and it came up and went right through the plantation, and surrounded me when I was carting the bark.

16. Do you connect the two fires?—I knew where it went to on the first day.

17. You followed it?—Yes.

18. It was showing a red light on the sky, was it?—Yes.

19. All the night?—Yes.

20. It was continuous from one day to the next?—It died down, and we did not see much of it until the wind came up again from the north-east.

21. And it was one continuous fire?—Yes.

22. You were alarmed about your plantation, were you?—Yes.

23. Tell what next happened?—My mate and I tried to stop the fire, but we could not. We managed to save the shed. Four men from the Government plantation came up and gave us a hand.

24. Did you send for the men?—Yes, we sent for assistance. We saved the house; but we could not save the wattles.

25. And the fire then went out?—Yes, we put it out. In places it died out. That was the last of it.

26. How long did it last?—About a day.

27. Did you follow the fire to see whether it was continuous from your shed, round about the ridge, and round the swamp to the railway track?—Yes; I could see it all the way.

28. Was it blowing a strong gale of wind on the afternoon when it started?—No, the wind was not strong.

29. Next day it was strong, was it not?—Yes, it came up from the north-east—I mean from the north-west.

30. So the wind had changed next day?—Yes.

31. How many acres of the plantation were burned in the twenty-four hours?—About 500 acres. I did not actually measure it.

32. What age were the wattle-trees at that time?—It was all planted before I came to New Zealand. I believe it was planted in 1885.

33. It would be a ten years' growth, then. What would be the average height of the trees?—Between 30 ft. and 40 ft. high.

34. They were just at their prime?—Yes.

35. Have you any idea of the value per acre of the bark obtained?—No, I could not estimate it.

36. When the Government men came up to assist you did they make any reference to a fire they had had that same day?—Yes; it was on the previous day.

37. They mentioned they had had a fire on the previous day?—Yes, a fire near the line.

38. To what did they attribute the fire?—To a spark.

39. *Mr. Cooper.*] Who were the men?—There were four of them. They were the plantation men.

40. *Mr. Oliphant.*] They said another fire had occurred by the same train?—Yes.

41. And that they had been engaged in putting it out?—Yes.

42. Was it a serious fire?—No.

43. They happened to be there to extinguish it?—Yes.

44. How many years have you been on the plantation?—About six years.

45. And during the dry season are the fires frequent?—Very.

46. Can you assign the cause of these fires?—Not the cause of them all.

47. Does the railway-engine cause any of the fires?—A good few of them. Many of them started just after the train passed. That is about as much as I can say.

48. Have you never individualised one fire to see that it actually came from the engine?—No. I have never been on the line or on the train to see that.

49. But just after the train passed you would see the smoke rise?—Yes.

50. And you have been putting them out from time to time?—Yes, for two or three years.

51. Do you remember a serious fire that occurred about a year subsequent to this fire, in December, 1896?—I do not. I was not on the plantation at that time.

52. *Mr. Cooper.*] There are a good many gum-diggers about the district, are there not?—There were.

53. There were at the time of the fire in 1896?—There were before, but not on the day of the fire.

54. But just about that time?—Yes, there were gum-diggers about that season.

55. In the hot season are fires not very frequent, even at places distant from the railway-line, in this district?—Sometimes where there is a road we see fires about.

56. I am referring to this particular district—round about here—where there is scrub?—Yes, in dry weather there are always fires about.

57. This afternoon, you say, the fire had apparently died out, and you did not notice any fire on the morning of the next day?—No. There was a mist and I saw no sign of the fire.

58. But about 1 o'clock you saw fire spring up again?—Yes, when the wind rose I saw a fire spring up again.

59. It was that fire that did the damage—the second fire? You say it was a continuous fire, but we will differentiate and call the fire on the second day the second fire?—Yes, it was the fire on the second day.

60. Was it on the second day, then, that the Government men came up?—Yes.

61. It is rather important that you should be able to identify the men, if you could. Did you not know them at all by name?—Yes.

62. Who were they?—One was Harry Masters, another was Willie Gerrand, another was Caseley, and the fourth man I do not know. I am not certain of him.

63. Which of the four men made a statement about the origin of the fire on their plantation?—It was not made by any one of them; the three of them were speaking about it.

64. Which three?—The first three I have mentioned.

65. Are those men still in the district?—As far as I know they are not.

66. You were a mile and a half from the train when it passed. Of course, at that distance you would not be able to say whether there were any sparks emitted by the engine or not?—I could not see.

67. Prior to the 15th December had there been fires about this place?—No; there was no sign of a fire at all.

68. I do not mean in the particular part that was burnt, but about the district?—I do not know; not that I know of.

69. Are there Maoris about?—Now?

70. Then?—They were there about a week before.

71. In the area covered by the plantation?—No, not on the wattle side. They were digging gum.

72. But close handy. You saw them digging gum on the opposite side of the line?—Yes, they were digging gum all along the line this side of the station.

73. A good many of them?—Yes.

74. Had you at any time taken any precautions by burning off a cordon round your plantation?—No.

75. You did nothing in the way of cutting the undergrowth?—No.

76. And you took no precaution in the way of making a fire-break?—No.

77. *Mr. Oliphant.*] Have you ever seen any gum-digging on your wattle side of the line?—A little.

78. Where about?—Near the station—along the swamp.

79. Has any fire occurred from that gum-digging that you saw?—No, none at all.

80. You know the exact spot where the fire commenced?—Very near it.

81. You have been down there?—Yes.

82. You have gone over the point of land?—Yes.

83. Can you see any signs of gum-digging there?—No, it is too deep.

84. The swamp is too wet?—Yes.

85. Have you examined the ridge?—There is no gum-digging on our wattle plantation at all.

86. *Mr. Poynton.*] Can you see any signs near the railway-line on this side of the swamp?—I have not noticed any.

87. *Mr. Oliphant.*] Have you ever seen them digging on the swamp?—I have seen them on the little swamp near the station, but not on the big swamp.

88. That big swamp is a protection to the plantation?—Yes.

89. Does the fire go across it now?—Nearly every dry summer there is a fire in that swamp.

90. Will you explain what you mean by two fires? Do you mean that one fire had died out and that another had started?—No. A fire was started by the train, but the wind died down, and the fire smouldered till next day, although I did not see it on account of the mist.

91. You traced it with the eye across the swamp, did you?—Yes.

92. *Mr. Poynton.*] It would be in the swamp that it died out?—Yes.

93. *Mr. Oliphant.*] No new trespasser could have gone in the morning and started the fire?—No.

94. The place on which you stood on your estate commands a view of where the fire originated?—Yes. I was on the top of the hill and I could see the railway-line and the swamp.

95. And the fire started on a ridge facing your house?—Yes.

WILLIAM WILDERMOTH, sworn.

96. *Mr. Cooper.*] You are an engine-driver?—Yes.

97. And you were an engine-driver in the employment of the Railway Department in December, 1896?—Yes.

98. What train were you driving on the 15th of December of that year?—No. 31.

99. What train is that?—From Auckland to Cambridge.

100. What time would you pass the wattle plantation?—The time varies. Sometimes about half-past 12 and sometimes 20 minutes to 1.

101. Is that the goods train?—No.

102. When you passed it on this occasion did you notice any sign of fire?—There was a fire on the west side of the line in the swamp.

103. Was it of any extent?—No. Apparently it had been burning for some time in the swamp.

104. Was any person trying to put it out?—The surfacemen were close by, but the fire was doing no harm.

105. Can you say whether your spark-arresting apparatus was in working-order on that day?—It was in perfect order.

106. Did you go down the next day?—Yes.

107. At what time did you pass the same spot?—About the same time, but I could not remember.

108. It would be about mid-day?—Yes.

109. Was there any fire then?—I could not remember.

110. When you were coming up past that place was your engine working easily?—Yes.

111. Were you pressing it?—No; I seldom have to press it hard.

112. When you have been passing along the line have you noticed gum-diggers in the swamp?—Yes, at various times.

113. At this particular place?—Yes, between Wairangi and there.

114. At various parts along the line?—Yes.

115. On one side only, or on both sides?—On both sides.

116. Maoris or Europeans?—Maoris.

117. They are very careless as to fires as a rule, are they not?—Yes.

118. *Mr. Oliphant.*] What makes you specifically remember the fire on the 15th December, 1896, about mid-day? How do you manage, after a period of three years, to remember the occurrence?—By my report.

119. I suppose that report is available?—Yes.

120. It was sent to the department?—Yes.

121. What is the west side of the line?—The side the Wairangi Station is on.

122. You did not notice any fire on the east side next day, did you?—No.

123. The surfacemen were about putting out fires?—Yes, they were close by.

124. Did you see the same surfacemen about the next day?—They were there for some time close to where the fire was.

125. The spark-arrester was in perfect order, you say. How do you know that? I suppose these spark-arresters have certain corrugations inside the funnel?—Yes, a deflector.

126. Do you examine them?—Yes, every day.

127. How many exist between the burning of the coal and the outgoing at the top?—Only the one inside the chimney.

128. And the hood was over the top of the funnel?—Yes.

129. Have you ever seen gum-diggers on the east side?—On both sides on various occasions.

130. But not where the fire originated in the deep swamp?—No, not in the big swamp. I have seen them close where the railway goes.

ARTHUR M'DONALD, sworn.

131. *Mr. Cooper.*] You are a fireman?—Yes, employed on the Waikato line.

132. You were a fireman on the 15th December, 1896?—Yes.

133. On the engine driven by Wildermoth, the last witness?—Yes.

134. On the trip from Auckland to Cambridge?—We ran from Mercer to Cambridge.

135. You know the plantation of wattle on one side of the line and the Government plantation on the other, do you?—I do not know the Government plantation from the other. I know there is a plantation on both sides of the line.

136. When you passed up the line on the 15th December did you notice any fire?—Yes, there was a fire. It was burning on the west side. That was my side.

137. How far from the line?—It was in the swamp alongside the line.

138. It was burning when you reached it?—Yes.

139. Did you notice any men engaged in putting it out?—No.

140. Were your spark-catchers working perfectly?—Yes, all in perfect order.

141. Was the engine working easily?—Yes.

142. Have you noticed gum-diggers digging gum on either or both sides of the line about this place?—Yes, there were a lot of Maoris there at that time. They were all over the place, on both sides.

143. Was it a dry season in 1896?—I do not remember.

144. Have you seen any Maoris lately about this place?—No, not this summer.

145. Did you see any last summer?—No, I could not say.

146. But there were a lot in 1896?—Yes.

147. You cannot say when you saw the last of them?—They keep coming and going.

148. *Mr. Oliphant.*] Did you make a report of the fire on the 15th December?—Yes.

149. It was your duty to send in a report of the fire?—Yes.

150. You saw no fire on the east side?—No.

151. Did you see any fire on the east side next day?—No; we saw the remains of a fire.

152. It had the appearance of having gone out the previous night?—If I recollect rightly, it had all finished burning.

153. But the traces were quite fresh?—It was all out.

154. What time of the day do you think that fire occurred?—I could not say; it was all out when we passed on the down trip next day.

155. Still, the remains of it were there. It must have occurred, then, between the time you went up and when you came down?—Yes.

156. Do you know the exact spot where the big fire commenced? It was about a mile down the line, was it not?—In the report I put in I said it was between the 52- and the 53-mile pegs.

157. Where the big fire commenced was close to the 52-mile peg?—I could not say particularly to a mile.

158. Have you seen gum-diggers about that part?—Yes, on both sides.

159. They do not dig in the swamp, do they?—Yes, I have seen them in the swamp there.

160. This fire you saw the next morning had died out completely?—Yes.

161. You saw it in the swamp?—Yes, it had burned the rushes.

162. Do you think it might have been smouldering?—When you are passing you cannot tell exactly, but it appeared as if the fire had passed through and burned out.

163. *Mr. Poynton.*] Had it extended into the swamp?—Yes, it had burned across the swamp.

164. *Mr. Oliphant.*] Have you seen any fires on the east side of the plantation, belonging to Fairlie and Patterson?—Only in the swamp.

165. You know the wattle plantation?—Yes.

166. You have never seen any of it burnt?—I have not noticed it.

WILLIAM YOUNG, Sen., sworn.

167. *Mr. Poynton.*] What is your occupation, Mr. Young?—Manager of the plantation that was partly destroyed.

168. *Mr. Oliphant.*] When did you take up the duties of manager?—In January, 1888.

169. There have been numerous fires in your plantation, have there not?—Yes, and this particular summer was a very hot one.

170. What was the first serious fire?—The one in 1890.

171. How did it commence?—It commenced near Mercer. The fires for some time started near the workmen's houses, and I told Mr. Jackson it seemed as if the engines fired up when leaving Mercer. Two or three fires originated there.

172. How many acres were burnt on that occasion?—Five. It crossed to the north end of the plantation and burnt 5 acres completely.

173. Did you send in a report at once?—Yes, and I said that if the wind had veered round we might have lost the whole plantation.

174. What would be the value of the 5 acres?—They were young trees; they were about 1¼ in. in diameter.

175. You could not appraise the value?—No, not at that age.

176. As to the fire in 1896, you remember it, I suppose?—Yes, on the 15th December, 1896.

177. You were in the district on the day?—I was down the road and about the house.

178. What did you notice from the house? Did you see a train go past about the time of the commencement of the fire?—I saw the down goods-train passing about half-past 4, and shortly afterwards—I cannot say how long—I saw smoke arising from the point we visited this morning. It seemed to me to be nearer Whangamarino.

179. You would be about a mile and a half from the fire?—Yes. I watched its progress right across the swamp until bedtime—10 or 11 o'clock. It died down as it crossed the plantation. It seemed to go round the bay off the peninsula.

180. Do you mean to say that the fire had gone out?—No. Any fire in the swamp would not go out immediately—there is such a body of fire.

181. The fire was apparently ready to start with the next wind?—Yes, the next morning it started again. I saw no fire that morning. I looked out.

182. Well, you saw the fire up to 11 o'clock at night, and next morning you saw the same fire?—No. My men were carting in bark, and they saw it about 12 or 1 o'clock. It was about that time I saw it too. I got on my horse and went down, and it was coming roaring towards the bark-shed. It had crossed John and Robert Patterson's paddocks, burning down everything before it.

183. Can you connect that fire with the fire of the previous day?—Yes, I think so. There was a large fire on the previous day covering a mile or more of the swamp. It went into the bay behind the peninsula, and there is no doubt it smouldered there all the night, and that the wind started it afresh next morning.

184. Did you afterwards go to the bay?—I am not sure. Mr. Macdonald and I visited the place. My son wrote to him.

185. You say then that it was a continuous fire extending from the railway?—Yes.

186. How many acres were burned over on this occasion?—A rough estimate would be about 500 acres.

187. Was it a good plantation in full profit?—There were two of the sections with first-class, good trees.

188. What area would be on those two sections?—Robert Patterson had 200 acres, and John Patterson 120 acres—I am not sure of the latter from memory.

189. There would be about 320 acres of good plantation, then?—Yes.

190. What do you value the loss at?—I did not take that upon myself. I allowed my son to compute the value.

191. I suppose that plantation has been destroyed ever since? You have had no returns from it?—No returns from it.

192. How many years' growth had it in 1896?—Fifteen.

193. When did the plantation commence? I think we have it in evidence that it was in 1884?—Yes. Well, that would give the trees twelve years' growth.

194. What height were the trees?—From 30 ft. to 40 ft.

195. You reported that fire to the department?—To my son.

196. And Mr. Macdonald came up shortly?—In a few days, with his assistant, and I took them over the burnt plantation and showed them the damage done.

197. Do you remember the day when you were assisted by some of the Government employés in putting a fire out?—That was on the 16th. Four of the men came up, and with great difficulty we managed to suppress the fire.

198. Did these men speak of a fire caused by the same engine on the same day in the Government plantation?—Yes; they were all engaged in putting out that fire, and they mentioned it.

199. Was there another fire of a serious nature?—Yes, but I did not see it, although I saw the effects of it. It went across the swamp.

200. When was that?—It was in the summer following, I think. I had a much larger one than that in 1893, that went over 50 acres; and I went in personally to see Mr. Hudson. The thing was alarming.

201. What did you say to Mr. Hudson?—He called in the engineer, and I told him how much I was afraid of losing the whole plantation. The engineer was very good, and said they were doing all they could, and recommended me to apply to Mr. Jackson, who was in charge of the department. I wrote to him, and got a curt reply.

202. That fire destroyed 100 acres?—No, 50 acres. It scorched the bark.

203. In reference to the fire of 1897, what do you say about it?—I was told about it. Mr. Slade told me about it. The fire started close to where the fire of 1896 started and left a black

track, but when it got to our plantation it struck to the northward, so that I do not know that it did much damage to our plantation.

204. Have you ever seen gum-digging on the east side of the line?—Never. Some Maoris came to me and asked if they could take out the gum close to the house. I was living there at the time, and I allowed them to take it out. I then stopped them. I never saw a Maori on the big swamp. The fact is they could not walk on it.

205. To-day you examined the place where the big fire commenced. Did you see any sign of gum-digging ever having taken place there?—No. I examined it with you, and I did not see a single spade-cutting on the bank.

206. How many times have you reported fires to the department?—Four times, at least.

207. How many times have the department recognised your reports by sending men to examine?—My son will tell you that in his evidence. I may say that every summer it was a constant dread to me that the whole country would be burnt.

208. *Mr. Cooper.*] There are fires all over the country in this hot weather, are there not?—Yes.

209. From various causes? You would not blame the railway for every fire that occurs?—No, not unless it is alongside the railway-line. Coming in from Remuera some nights it is like a smithy's forge.

210. Have you any knowledge of gum-digging?—No.

211. You do not know whether it is the practice to burn a swamp off before starting to dig it?—Yes, that is the practice.

212. When you saw the fire start on the 15th you were a mile and a half away?—Yes.

213. And whether the fire was smouldering or not, you saw no appearance of it the next morning?—No, only the black track.

214. You could see the black track?—Yes.

215. You saw no smoke?—No.

216. And it was not until 1 o'clock that you saw the smoke or the fire again?—That is so.

217. It was then in a different place?—It was in the same course.

218. But how far away from where the fire started?—It stopped in the bay.

219. But the fire you saw on the 15th started in the swamp?—Yes.

220. And how far away from the swamp was it that you saw the fire burst out on the 16th?—When I saw it it was actually coming up the road towards the shed, but my men saw it before that.

221. How far from the swamp was it that you saw it?—It might be half a mile.

222. Was it on the high ground?—Yes. It had crossed two hills.

223. During all the time you have been managing the plantation you have taken no precaution, have you, by making such a thing as a fire-break?—I have looked into that and found it impossible.

224. Well, it may or may not be impossible, but you have not done it?—No.

225. Do you not think it is a dangerous thing to plant a plantation so close to the railway-line?—Well, it would have been better if a break had been left.

226. If you had had the planting of the plantation you would have left a break?—Yes.

227. As to the fire in 1890, can you say what damage was done?—It destroyed 5 acres growth of a fine plantation. It threw it back for two or three years.

228. And the fire in 1897: did it do any damage to the plantation?—No.

229. Your real grievance is the fire of 1896?—Yes; but it is really a case of grievance for the ten years.

230. But if the fire had not taken place in 1896 you probably would not have made any claim?—If you read the letter I sent in in 1890 you will see that I said I would hold the department responsible.

231. But if the fire had not occurred in 1896 you would not have made a claim?—I question if I would.

232. *Mr. Oliphant.*] You say it is the practice to burn before digging. What is the swamp you saw to-day? Is it not an impassable swamp?—I have never seen any one cross it.

233. So that if the fire occurred on the railway-track, and went into the swamp some distance and died down, could a man have followed into the swamp and started it again?—No; I should think not.

234. *Mr. Poynton.*] What distance is the edge of the plantation from the edge of the swamp?—Our trees are planted right to the edge of the swamp.

FRANK WEST GREEN, sworn.

235. *Mr. Oliphant.*] What is your calling?—I am a settler.

236. How long have you been in the district?—Five years.

237. Do you remember a big fire occurring in the plantation on the east side of the line in 1896?—I remember seeing the fire, and I heard subsequently what it was. I was not nearer than Whangamarino, and I did not know at the time whether it was a scrub fire or not.

238. How far is Whangamarino?—From where I live it is about nine miles, but as the crow flies it is probably half the distance.

239. Are fires numerous along the line?—Yes, they are very frequent.

240. What is the cause?—I believe—and I have reason to believe—they are caused by sparks from locomotives, or by live ashes.

241. Have you seen a fire commence immediately after a train had passed?—I have. I saw one recently.

242. When was that?—I am not quite sure of the date, but I believe it was on Wednesday of last week. It was a night on which rain fell.

243. Where was that fire?—I had just left off wattle-stripping in the plantation a few miles north of this, and a ballast-train passed. I went to get my horse, and immediately I had crossed the line I looked round, and my attention was attracted by some smoke, which I thought was issuing from the swamp. I had a quantity of bark in the shed, and I was anxious on that account to know where the smoke was coming from. I ran to look, and I saw flames going up the cabbage-tree, and the grass on fire. I got some green tea-tree branches and put the fire out.

244. Did you see any one about?—No; there was no one within a mile or two. The platelayers had gone home. The fire was an incipient one, but if allowed to go on it might have burnt the shed.

245. You know the east side of the line from here to the big swamp?—Yes.

246. Have you ever seen gum-digging on that swamp?—No, I cannot say I have. I do not recollect seeing any. I think the swamp is too deep, and the gum would be too deep to get out.

247. Have you examined the spot where the big fire commenced in 1896?—No.

248. Are you acquainted with the value of bark? What would be the value of an acre of land with trees in full profit?—That is a difficult question to answer, because the trees vary so.

249. Well, where the trees are 30 ft. or 40 ft. high?—It would depend on many things, and it would be difficult to say. I understand something about the bark, but I could not give a confident opinion. An acre of bark might be worth so-much, and in another part of the field so much more or less.

250. *Mr. Cooper.*] On the occasion of last Wednesday week how far was the fire from the railway-line?—Within 12 ft. or 15 ft. from the middle. I did not measure the distance. That is where the cabbage-tree was.

251. Do you mean the cabbage-tree by the bark-shed?—Yes.

252. It is close to the road, is it not?—No.

253. There is a private level crossing there, is there not?—Yes. That is used by myself, and by no one else.

254. How long have you been in the district?—Five years.

255. Are there not in the dry season frequent fires all over the district, quite irrespective of the railway-line?—There are fires about the district through people firing and settlers burning off fern to obtain cattle-feed, but the fires near the railway are far more frequent than the other fires.

256. But there are other fires in other parts of the district?—Yes; but they are infrequent as compared with the fires that are traceable to the railway.

257. You said you were about nine miles away on the 15th?—Yes, by the road.

258. Were you there on the 16th?—I do not remember the date, as it is so long ago.

259. *Mr. Oliphant.*] You speak of frequent fires along the railway. Has the department taken any extra precaution within the last few years in the way of burning off close to the track?—I have noticed it within the last few months. The platelayers have been burning off dry grass. They did so before the dry weather set in.

260. Did they do the same last season?—I did not see it.

261. Do you remember if that was done prior to 1896?—Not from my own personal knowledge and observation.

262. You think the department is recognising now that there are frequent fires?—Yes; they recognise the danger, and are taking steps to prevent the fires.

HARRY STRETTON, sworn.

263. *Mr. Oliphant.*] You are a settler?—Yes, at Whangamarino.

264. Have you noticed frequent fires along the railway-track?—Yes, in dry weather.

265. What is the cause?—I have always understood they were caused by the engine.

266. Did you see a train passing and then smoke arising?—Yes; that was the general thing. It is generally in the edges of the swamps that I have seen fires.

267. Have you noticed any particular instance in which you could directly trace the cause of the fire?—No, I cannot say I can. My evidence is simply what I have been told, not what I have seen.

268. You cannot attribute the fires to the engine at all, then? There might be some other cause?—I do not think it is likely.

269. Have you ever seen gum-diggers in the big swamp about a mile lower down?—No.

270. You have not seen them digging on the east side?—No, I cannot say I have. I have been told they have been digging there, but I have not seen them.

271. Could they dig in the big swamp?—I think they would have a job to. They might have to use a hook.

272. You have never seen gum-diggers fire the swamp?—No.

273. *Mr. Cooper.*] How long have you been here?—About two years.

274. *Mr. Oliphant.*] Have you ever had to leave your work at stripping to go and put out fires?—Yes, last season. I have also seen fires in places where I thought there was no danger, and did not bother about them.

275. Do you see fires frequently?—Yes, in the direction of the railway, and I think there is no doubt of their being caused by the train, but whether it is by sparks or by some other cause I do not know. I have seen shovels of fire that have been thrown out of the engine, but whether it was alive or not when thrown out I do not know.

276. And fires might arise from that cause?—Certainly.

277. *Mr. Cooper.*] Where would that be?—Between Whangamarino and McLean's Crossing.

278. How near to the station?—About a mile from the station.

279. Was the coal alive when you saw it?—No, it was dead.

WILLIAM YOUNG, Jun., sworn.

280. *Mr. Oliphant.*] You are part proprietor of this plantation?—Yes, I own a part, but not any of the part affected by the fire.

281. How many acres do the claimants own—Messrs. Fairlie and Patterson?—1,200 acres; and Blackley and Glassen claim to own about 300.

282. Altogether, about 1,500 acres?—Yes.

283. You have been pretty constantly in the district for—how many years?—It is sixteen years since I began to plant the place, but I was absent for a number of years.

284. You were the first to commence planting here?—Yes, I introduced wattle-planting into the North Island of New Zealand.

285. When you planted a large area here there was no Government plantation, was there?—No.

286. What can you say about these fires that happen frequently? We have evidence of a fire in 1890. Do you remember that?—No, I remember my father sending me a report about it. I was in Auckland at the time.

287. What did you do?—I was in England at the time of the fire. My father dealt with it.

288. There was another fire in 1893. Were you here then?—No.

289. Then there was the big fire of 1896. You were in Auckland at that time?—Yes.

290. Was a report sent to you?—Yes, at once, both on the 15th and 16th.

291. What did you do?—I got a report on the 15th that a fire had sprung from the railway and crossed to the plantation. I sent a report to Mr. Macdonald.

292. I have two replies here that you got from Mr. Ronayne, the General Manager of Railways. I will read them. The first letter is:—

SIR,— 9th February, 1897.

With reference to your letter of the 3rd instant, in regard to damage to your wattle plantation near Wairangi by fire alleged to have been caused by railway-engine on the 15th December last, I have the honour, by direction of the Minister for Railways, to whom the matter has been submitted, to inform you that he cannot admit any liability in the matter.

I am instructed to add that, from the inquiries which have been made, it appears that there is no direct proof that the fire was caused by the locomotive.

This is the second letter:—

SIR,— 1st March, 1897.

With reference to your letter of the 22nd ultimo, in regard to damage to your wattle plantation near Wairangi by fire alleged to have been caused by railway-engine on the 15th December last, I have the honour to inform you that this department cannot admit any liability in the matter.

Did you receive those two letters?—Yes, I did.

293. Now, we want some evidence as to value. How many acres were destroyed by the big fire?—Roughly speaking, we say 500 by measuring the plan to the best of our ability.

294. How old was the forest then?—Ten or eleven years.

295. In fact, it was in its full prime?—Yes, it was ready to strip.

296. At what do you value it per acre?—The cost of the planting came to about £2 an acre, but that does not include management during the ten years, or interest on the capital.

297. *Mr. Poynton.*] Can you give the market price of the bark and the cost of stripping per acre?—I took about 100 tons off my 100 acres last year—a ton to the acre.

298. In 1896 what would be the value of a ton of bark?—The average price of bark has been from £7 to £8. It was about £7 a ton, I think. The previous year it was £8.

299. That is when stripped and bound together?—Yes.

300. How much would you deduct for the labour of preparation?—It costs us nearly £2 an acre to strip and prepare for market, and to cart and yield it.

301. The net value would be about £5 an acre, then?—That is rather much. There is other expense, such as the railway freight to Auckland. You would have to deduct another £1 a ton. I think £4 a ton would be fair.

302. That is, £4 an acre?—Yes.

303. And, roughly speaking, there were about 500 acres destroyed?—Yes; but I do not think it would be all bearing at that rate.

304. We have evidence that 320 acres of the 500 acres held first-class trees?—Yes.

305. That would be worth £4 an acre?—Yes.

306. But the other 180 acres might be inferior?—Yes.

307. How much inferior? Would it be worth half?—I think half would be fair.

308. About £2 an acre?—Yes. Of course, these estimates are not exact.

309. How many reports have you sent in altogether about fires?—I think I have sent in four reports.

310. These reports were generally recognised by the department writing back denying their liability in the matter?—They did not acknowledge them all, but they have not admitted liability.

311. They did not dispute the fact that the engines might have caused the fires?—They never said that was not the case.

312. You are well acquainted with the east side of the line from this station to the big swamp?—Yes.

313. Have you ever seen gum-digging on the east side?—Not except at the station; and I have seen gum-digging in the big swamp for about half a mile down.

314. But not where this serious fire started?—No, not in the sixteen years. I have not known of a man being in the swamp.

315. Are these fires common?—They are so common that I have not brought evidence on the point, but if there is any question about it I could get any number of witnesses. I have a letter I

addressed to the Locomotive Superintendent of what I actually saw last year. I was going back to the shed Green has spoken about, and getting out at Whangamarino and walking along the line I saw a fire burning alongside the railway, evidently caused by a train that had gone by half an hour previously. The crop was burning at the side of the railway. I found that for about 10 yards along the edge of the railway the swamp was on fire.

316. Is that mentioned in the report of the 28th December, 1898?—Yes, I think so. It was not on my ground, but I notified it. It seemed to me just what was happening on the plantations. I do not think attention has yet been directed to the fact that, although fires may occur along the roads in other districts, this is a roadless, uninhabited district. Except one house near Whangamarino I do not know of one habited spot between here and the Whangamarino Creek.

317. On the occasion of the big fire did you come up?—Yes, but I do not remember the day. I rode over and saw the damage a few days after it occurred.

318. You saw that the fire had a continuous connection?—My recollection is not very clear. I remember seeing a black track, which extended right to the railway. It was not a straight line, but a large black track of fire extending from where my plantation had been burnt to the railway.

319. Have you had any conversation with Mr. Kensington, the manager of the Government plantation?—Yes, but I could scarcely remember it.

320. He has assisted your father?—Yes. I asked him on one occasion what he remembered, and I think that was the only occasion on which I spoke to him about the fires.

321. Did he mention any cases of fires occurring through engines?—Yes, both Mr. Kensington and Mr. Clifton have mentioned fires to me.

322. *Mr. Poynton.*] The wattle-trees when once stripped are killed, are they not?—Yes.

323. *Mr. Cooper.*] Supposing a fire goes through your wattle plantation the damage done is not so great as the damage you have done by stripping the trees. Do you not get a better crop of young wattles than if you simply stripped the bark?—No; we get such a crop that we do not know what to do with it. It would cost too much to thin it out.

324. After you strip the bark from the wattles, what do you do: abandon the land?—The Government and ourselves have been experimenting in the matter.

325. But at the present time you practically abandon the land, do you not?—This year I have been clearing away some parts and burning others to bring up clumps of trees to let the air get into the patches that grow.

326. Is it not a fact that after a tree grows for fifteen years you strip it, and that is the end of it?—No; the proper way to deal with a plantation would be to strip the trees as they come to 8 in. or 10 in. or 12 in. in diameter, and next year get another crop. We began on that system, and when you calculate it out you ought to get a recurring crop for nearly ten years.

327. To whom do you sell the bark?—To some of the tanners in Auckland.

328. Can you produce account-sales showing the prices you have obtained?—Yes.

329. Did you sell any bark in 1896?—I could not say; I would have to look up my books.

330. Had you yourself been through the 500 acres burnt?—Yes.

331. Before it was burnt?—Yes.

332. Is there any system on which it was planted?—Yes, there were so-many trees to the acre.

333. Can you give us any information as to how many trees there were?—Yes. They were planted 18 ft. apart, and the rows of trees planted were from 3 ft. to 5 ft. apart. In a row there would be on an average perhaps four in a square yard.

334. It was not all of the same quality?—No.

335. Have you had it surveyed or examined by any one for the purpose of ascertaining the quality of the trees?—No; we have marked it on the plan. Mr. Macdonald saw it on the plan.

336. But Mr. Macdonald, in his report, says it may be 400 acres?—Yes, and when I state an area it is really a guess.

337. Of course, there was a considerable quantity burnt?—Yes. We know what we planted and what we bought for planting.

338. But as to what was burnt you have had no survey made?—No. It might be made yet. You can still see where the fire went.

339. I suppose the indication is there yet?—Yes.

340. Will you give a detailed statement from your books, so that we can get at the actual value of the property destroyed?—Yes.

341. You speak about an approximate area of 320 acres. Were those acres as good as your 100 acres that you took 100 tons off?—As far as I know they would be, but my father could speak better on that point.

342. *Mr. Oliphant.*] All this area was planted in accordance with the Forest Trees Planting Act of 1873?—Yes.

343. And you had to meet the requirements of the Act?—Yes.

344. Did you put in 400 trees per acre as required by the Act?—Yes.

345. And did you earn the grant of £4 an acre awarded under that Act?—Yes.

346. *Mr. Cooper.*] It would not have been very difficult for you to have had a survey made of the ground destroyed?—Well, if it is wanted we will get it.

347. Was the 500 acres not all covered with trees?—It was planted in an irregular way.

348. What is the total acreage of the two lots—378 and 380? Or can you say what area was covered by trees?—Well, in 378 I am certain there were 100 acres of first-class trees; in 379 there were 150 acres; and in 380 there were 80 acres; or 330 acres of good trees in all.

WILLIAM HENRY ANDREWS, sworn.

349. *Mr. Oliphant.*] You reside in this district?—Yes, I am a small settler.

350. How long have you been at Wairangi?—Ten years.

351. Have you seen any fires coming from the railway towards the plantation?—Yes, I have seen plenty of fires. They are a common occurrence.
352. What is the cause?—The engine.
353. Can you remember a big fire three years ago?—Yes.
354. Where were you?—I was carting bark in the plantation.
355. Do you remember the afternoon train going past?—No, I do not. I was about the shed unloading the bark.
356. When did you first see the fire?—It was on the 16th I saw it.
357. You did not see it on the first day?—No.
358. In what direction was it coming next day?—It was coming from the Whangamarino end of the plantation.
359. I suppose you were one of the men who fought the fire?—Yes, I was the first man there to put it out.
360. Did you go over the part that was damaged and see the damage?—Yes, I have been all over it.
361. Did you see that the fire connected with the swamp and the railway?—Yes, you could see then that the fire had come from the railway.
362. I suppose you had some difficulty in putting it out?—Yes.
363. You sent for assistance?—Assistance came without being sent for.
364. Did the men who came to assist speak of another fire?—Yes.
365. When did it occur?—It was in the Government plantation.
366. On the previous day?—I think so.
367. Did they say it was caused by the engine?—Yes.
368. They had been beating out a fire near the line on the previous day?—Yes.
369. I suppose you see engines passing frequently at nights?—Yes.
370. Do you see them belching out cinders?—I cannot say they do.
371. At any rate, you think the fires are caused by the train?—Yes.
372. Can you remember a fire about a year after the big fire?—No, I was not employed there then.
373. Have you seen Maoris digging on the plantation side of the railway?—No.
374. They have never dug in the big swamp?—Not that I am aware of.
375. Were there Maoris down the line in 1896?—Do you mean a large number of Maoris digging gum?
376. Can you remember of any Maoris about here digging gum?—I do not think so. It was about that time I was away in Hamilton sick.
377. But at the time of the big fire?—At that time there were no Maoris.
378. There were none that season?—No.
379. You saw no one else about who was likely to start the fire?—No.
380. As a witness of the fire, you thoroughly believe it originated from the train?—Yes. At any rate, a year ago I saw a fire started by an engine. I was on the high land at the time, and a train came by, and a fire started immediately afterwards.
381. *Mr. Cooper.*] How far were you away?—Half a mile. Then, the season after the big fire I got my tent burnt. It was about a chain off the line, and the fire started just after a train had passed.
382. Had you left any fire in the tent?—No. It was at 2 o'clock in the afternoon, and I was at work at the time.
383. You have known of Maoris being about here?—Yes.
384. But on the 16th December there were none?—No, none were employed.
385. I do not ask you if they were employed?—There was not one about that I am aware of.
386. You cannot say if there were any about on the 15th?—No, there were none about.
387. You did not see any?—No.
388. How far was the shed in which you were working from the place where the fire started on the 15th?—I was two miles away in a straight line.
389. *Mr. Oliphant.*] Would it be two miles away?—No, I do not think it would be.
390. *Mr. Cooper.*] You do not know, then, who was in the swamp on that day?—It was impossible to see.
391. All you know is that Mr. Young had no Maoris in his employment on that day?—No.
392. *Mr. Oliphant.*] Do you remember when the Maoris were digging gum?—I think it was when I was away in Hamilton sick.
393. Have you ever been able to cross the swamp in the direction the fire took?—No.
394. It is not impossible for anybody to cross it?—You can cross it now in one part.
395. At any rate, it is too wet to dig gum?—Yes.
396. You never saw gum-diggers in the swamp?—No.

JOHN FARRELL, sworn.

397. *Mr. Cooper.*] What are you, Mr. Farrell?—A ganger.
398. You were a ganger in December, 1896?—Yes.
399. Were you in charge of the length here at that time?—Yes. The whole of the part on which the fire took place is within my length.
400. What can you say about the fire on the 15th December?—I reported to the department about the fire.
401. Did you see the origin of it?—No.
402. When did you first see anything of it?—I did not see any fire at all, but I saw where the fire was supposed to have been.

403. It had burnt out when you got to the place?—Yes.
404. Did you go on the ground?—Yes, but I could not get through the swamp.
405. You found there had been a fire in the swamp?—Yes.
406. And the swamp was too soft to go through?—Yes.
407. Where did you go then?—Back to my work.
408. Did you not go on the hills?—No.
409. Can you say whether there were any Maoris about?—Yes, there were plenty of Maoris.
410. In the month of December?—Yes, there were three camps.
411. Close by where the fire occurred?—There were two camps within a couple of chains, and another nearer Whangamarino.
412. Where were the two camps?—Near where the fire was supposed to have originated.
413. Were they there at the time of the fire?—They were there on the following morning, because I was speaking to them.
414. Had you seen their camp there before the fire?—Yes.
415. What were they?—Gum-diggers.
416. Have you known the Maori gum-diggers to set fire to places along the line?—I have known the men to be there, and a fire would start just after the train had passed by. They arrange it so that the fire will take place at that time.
417. Your suggestion is that the Maoris started the fire shortly afterwards in order to throw suspicion on the train?—Yes. I saw it happen in one case. It was so barefaced that it must have been them, because the fire started on the side of the railway from which the wind was blowing. It started on the windward side of the line instead of the leeward side.
418. When was that?—About the same time.
419. Was that the fire that occurred in the Government plantation?—Yes. It travelled towards the south road, and came back into our plantation.
420. You say the Maoris originated it?—Yes, they must have.
421. Have you known fires take place along the railway-line by reason of passengers throwing out lighted matches?—Yes.
422. Have you seen the actual occurrence?—I have.
423. Along your section?—Along this section and on the section I am on now. I picked up the cigar and showed it to the man who was with me.
424. It originated a fire?—Yes, and I put it out immediately.
425. During your time on the section did you do what you could to prevent fires spreading or starting?—Yes, everything that we could possibly do.
426. You went up and down the line to use what care you could to prevent fires?—Yes.
427. Will you describe the regulations for that purpose?—It is our duty to get rubbish that accumulates on the line and burn it in a safe place.
428. *Mr. Poynton.*] Do you adhere to those regulations?—Yes.
429. *Mr. Cooper.*] And you did then?—Yes.
430. But no precautions were taken by the owners of this plantation to protect it?—No.
431. Shortly after this serious fire did the Maoris clear out?—They cleared out the day after the fire was supposed to have occurred. They cleared out on the day I spoke to them.
432. They have not come back again?—No, not that I know of.
433. *Mr. Oliphant.*] You know the 52-mile post on the line?—Yes.
434. And the swamp on the east side?—Yes.
435. You saw the remains of the fire in that swamp?—Yes.
436. Is it likely the Maoris would burn that swamp with the view of digging gum out of it?—Yes. They did burn the whole of the swamp for the purpose of digging gum as they went along. They burnt both sides. They have repeatedly set fire to the swamp.
437. Witnesses have told us the swamp is too damp to work in?—Well, I can satisfy you that the camp was full of Maoris. That is their principal place for getting gum—at the 52-mile post.
438. When they dig in these swamps they make deep holes, do they not?—Not unless they strike gum, and then they could get it out with spears that they use. They hook it up.
439. But they would dig round the edges of the swamp?—They usually get out as far as they can.
440. At the 52-mile post are there any traces of gum-digging?—I do not think I could find traces now.
441. The gum-diggers' spades will leave a monument for twenty years, will they not?—Yes; but they do not dig with the spade.
442. There is a ridge where the fire started, and there is no sign of digging on it. Have you seen the gum-diggers on the east side?—Yes.
443. At the 52-mile post?—Yes.
444. Can you show me any marks made by the spades?—I might if I went into the swamp, but they never leave a big hole, and the soft stuff works into the small holes again and fills them up.
445. Do you think the Maoris fired the swamp on that day to get the gum out of the ground?—Yes, I believe that is so.
446. You do not think the train set fire to the swamp at all?—I do not think the train started that fire.
447. Engine-driver Wildermoth reported the fire on the 15th to the gangers. Were you among them?—I do not remember Wildermoth reporting anything about the fire.
448. Do you remember putting out a fire on the 15th?—No.
449. He says he saw the gangers putting out a fire on the 15th. Were you among them?—

I do not remember it. He may have dropped me a note, telling me there was a fire, but I do not remember that he did so on that particular date.

450. You saw the Maoris fire this side of the line about the time of the big fire, did you?—I did not actually see the Maoris set fire to it, but they were there. I saw one particular Maori noticing the train, and there were several others with him, and after the train had passed the place took fire. I said, "Very likely our men will be blamed for that"; but, as a matter of fact, if a spark had come from the engine it would have gone to the other side of the line.

451. Did you speak to the Maoris about it?—No, but I had spoken to them before.

452. But not on this occasion?—No. I had previously told them not to light fires, and they said they did not, and that it was the train.

453. Hiow far were the Maoris from the railway?—About half a chain.

454. And how far were you from the Maoris?—About half a mile away.

455. And you said nothing to the Maoris?—Not at that time. I did afterwards.

456. How long afterwards?—It might be on the morning I went down to see about this big fire.

457. Was that the 16th?—My report will show that.

458. The fire was all out on the day you went there?—Yes.

459. There was no fire in the plantation?—I could not see that, because I could not see so far.

460. It is only three-quarters of a mile?—If it was a big fire I could have seen it, but I could not see a small fire.

461. This was a big fire, that crossed nearly 500 acres?—Well, it was not burning when I was present.

462. You have been a ganger here for—how many years?—I have been a platelayer and ganger for about nine years. For about two years I was away from here.

463. If a number of witnesses have sworn to-day that fires often occur after a train passes, and that they attribute these fires to the engine, would you say they were telling untruths?—No, I could not.

464. It is a common occurrence to find a fire after an engine passes?—It is a common thing for the engines to be blamed, but I think it is difficult for any person to say the engine does it.

465. What causes the fires, then? Your evidence goes in the direction of stating that the engine never causes a fire?—No, I could not say so, nor could I say the engine did not cause it.

466. But you do not admit the engine has ever caused a fire here?—I cannot admit it, becaues I have never seen it.

467. Have you seen this coincidence of the engine passing, and shortly afterwards a fire takes place near the line?—Yes.

468. That is the most you can say?—Yes.

469. And that has happened when no one else was about—no Maoris or trespassers?—Yes, I have seen fires occur when no trespassers were about.

470. How often have you reported about fires in your section?—I could not say, but it is several times. Unless the Inspector has a record of my reports I could not say how often I have reported. We usually report any fire that occurs, no matter where it is.

471. Have you ever had occasion to put out a fire on the Government plantation?—Yes, all round at times.

472. But near the railway?—Yes.

473. Many times?—Several times.

474. And no one was trespassing at the time? Could you blame it on any one?—No.

475. No one else but the engine?—No, we could not. There was no one about.

476. *Mr. Cooper.*] It might have been caused by some one throwing a match out of the train?—Well, I have stated already that I have picked up a cigar that caused a fire. You could, of course, account for a fire in many ways.

JAMES BENNETT, sworn.

477. *Mr. Cooper.*] What are you, Mr. Bennett?—Inspector of Permanent-way.

478. Do you know anything about the occurrence on the 15th and 16th December?—No; I came after the fire was over. I went over the ground with Mr. Macdonald.

479. You have certain regulations for the guidance of gangers on the line with reference to fires?—Yes.

These are the regulations I refer to, are they not?—

190. When practicable, notice must be given to the occupier of adjoining lands before burning is begun, and the time of burning arranged with him.

191. As far as possible, the burning should be done before the grass is so dry as to be dangerous.

192. When it is necessary to burn the grass, and it is so dry that the risk of spreading is too great, it should be done in the evening, when the dew is falling.

193. As much burning as possible is to be done in the spring.

194. Fires are never to be lighted on both sides of the railway at the same time.

195. Always burn against the wind.

196. Men are not to leave the ground after burning till the fire is completely extinguished.

197. When grass or rubbish is tall and thick an open space must be cut by mowing, digging, or ploughing before lighting the fire, so as to restrict the range of the fire.

198. The greatest care must be exercised, and no precaution neglected.

Have these regulations been carefully carried out?—Yes, at all times.

480. By the men on your section?—Yes.

481. And your section includes this particular piece of land?—Yes.

482. Have you ever known fires to occur on the side of the line through passengers throwing out matches or cigars?—That is hard to say.

483. You do not know of an instance?—No.

484. *Mr. Oliphant.*] You went over the ground with Mr. Macdonald?—Yes, over part of it. Mr. Macdonald and Mr. Young were riding, and I was on foot. I went part of the way.

485. Could you trace that fire as extending from the railway to the plantation?—No, I did not.

486. Did you go far enough along to see it cross the swamp?—No, I only went part of the way into the plantation.

487. You are aware that the fire commenced about the 52-mile post?—Yes.

488. On the day you came up did you see any trace of fire?—I was not there that day. It was some days afterwards that I arrived.

489. And you saw evidence of the fire?—Yes.

490. And it extended in the direction of the plantation?—Yes.

491. Have you ever seen a fire arise after a train went past? Witnesses have said that it frequently occurs that a fire is seen after the train goes past. Have you ever noticed that?—I am riding about pretty well every day, and I could not state any particular case of that kind that I have seen.

492. How long have you been an Inspector of Permanent-way?—Seven years.

493. And in the whole course of that time you have not seen a fire that you could attribute to sparks from engines?—No, I have not.

494. On the occasion of this fire did you see the Government plantation on fire?—I did not see any of the fires; they were extinguished before I arrived on the ground.

495. There would be considerable talk among the people as to the fires: was there no suggestion as to how the fire originated in the Government plantation?—Are you speaking of the fire at Young's?

496. Yes, and at the Government plantation?—The Government plantation was burnt, but I could not say when it was.

497. What was the cause of the Government plantation fire?—I could not say.

498. It is alongside the line?—Yes, the plantation adjoins the railway. Of course, after a fire starts it burns against the wind and with the wind, and one really cannot tell where it started.

499. Have you no cause to assign for these frequent fires?—I could not say how they happen. I could not say whether it is from engine-sparks, or from lighted matches thrown out of carriages, or from cigars thrown out. I know there were a lot of Maoris on the ground at the time. They sometimes want to burn off the ground, and they are cunning enough to do it after a train passes.

500. But they would not burn the Government plantation?—No, of course not.

501. You think it might have been caused by people smoking on the train?—Well, I could not say that.

502. And, as an Inspector of Permanent-way, you have no theory, even after some years' experience, as to how the two fires occurred?—I could not say. I was not there, and, of course, I came after the fire was out.

503. The remains of the fire showed that it had started near the line?—I cannot prove that. It might burn against the wind or with the wind, and you could not say that it started on the railway boundary.

JOHN JAMES CURBY HACKETT, sworn.

504. *Mr. Cooper.*] What are you, Mr. Hackett?—A porter at the Auckland Station.

505. What were you in December, 1896?—I was a platelayer in Mr. Farrell's gang.

506. Do you recollect the fire on the 15th December?—Yes.

507. Did you see the fire on that day?—I saw it in the middle of the swamp that evening, and next morning there was no sign of it.

508. About what time in the evening?—About half-past 5 or a little more.

509. Where was it then?—In the middle of the swamp.

510. How far from the railway-line?—A good distance off. I could not say exactly.

511. That fire burned for some time, I think?—Yes.

512. Were you there next morning?—Yes, I went over the length the next morning.

513. Was the fire out then?—Yes.

514. You are sure?—Yes, there was no sign of any fire.

515. Did you see the fire in the afternoon of the 16th?—Yes; I saw it strike up about midday.

516. Where?—Over in the forest.

517. You assisted to put it out?—Yes.

518. Did you see the fire on the other side of the line on the 15th?—No.

519. Do you know anything about the Maoris being about that place?—There were a few Maoris camped along the line. They had been hooking gum out of the swamp where the fire occurred.

520. You know that they had been hooking gum out of the swamp where the fire occurred?—Yes.

521. Up to how near the day of the fire had you seen those Maoris there?—I saw them there the day before, and I think I saw them afterwards.

522. Do you know what Maoris they were?—I knew a few of them.

523. Where did they go to afterwards?—I do not know.

524. Have you known the Maoris, in digging for gum along the line, to set fire to any place?—I have seen fires on the hills.

525. Near to the line?—Yes.

526. Started by the Maoris?—Supposed to have been started by the Maoris. They were the only people about.

527. It is the practice, if they want to get the gum, to set fire to the swamp first?—Yes.

528. *Mr. Oliphant.*] You saw a fire in the middle of the swamp on the evening of the 15th December? Where were you standing?—I was down the line.

529. You were not so far down as the 52-mile post?—No.

530. Where did the fire start?—It was impossible to find out.

531. Did you go down to see whether it started from the edge of the line?—Yes.

532. And it started from the edge of the line, did it not?—No.

533. Did it not start in the swamp close to the edge of the line?—I do not think so.

534. Where did it commence, then? Was it not near the railway-track?—I do not think so.

535. Next day you assisted in putting out the fire in the plantation? Did you see whether the fire in the plantation was connected with the one on the swamp on the previous evening?—I could not say whether they were connected or not.

536. Have you any theory as to what caused the fire in the plantation on that day?—Not unless it is that the Maoris were burning off to get at the gum.

537. But there were no Maoris in the plantation?—I did not see any.

538. Have you seen Maoris working on the east side of the line?—Yes; I have seen Maoris working on both sides of the line in the summer.

539. We have had evidence of very numerous fires along the railway-track: can you say how those fires occur? You are aware they occur frequently along the railway-track?—I could not say. Sometimes passengers may throw out cigars or cigarettes.

540. You are not sure that the engine never lit any of them?—I would not like to say it did not light some of them.

541. How long were you employed on this section as platelayer?—Close on three years.

542. What years were they—about 1896?—I was here then.

543. You remember the Government plantation being on fire?—Where?

544. Near to the railway. Do you remember any fire on the Government plantation?—Not that I am aware of. I do not remember seeing any. It is a good while ago.

545. Have you seen fires along the lines frequently after the trains have passed?—No; I have never been near one when it started.

546. *Mr. Cooper.*] During the time you were in Farrell's gang the regulations as to burning were carefully carried out?—Yes.

THOMAS SLADE, sworn.

547. *Mr. Cooper.*] What are you, Mr. Slade?—A platelayer.

548. Were you a platelayer in 1896?—Yes

549. In Farrell's gang?—Yes.

550. You recollect the wattle plantation being burnt?—Yes; it was on the 15th December.

551. On the 16th December?—Yes; and the fire in the swamp was on the 15th.

552. When did you first see the fire in the swamp?—When I arrived home, about twenty or twenty-five minutes to 5. I was with Hackett.

553. Where was the fire?—In the swamp.

554. Was there much of the swamp burning?—I could not tell at the distance.

555. You did not go down?—I went three-quarters of a mile to it. I then got on the high ground to see it.

556. It was then in the swamp?—Yes, about half a mile in the swamp. It seemed to be in a line, and it would be a hard matter to say which way it was travelling at the time.

557. Were you there next morning?—No.

558. Nor in the afternoon?—No.

559. You were on another part of the line?—Yes; I was at the other end.

560. Do you know of Maoris who came digging about that time?—There was a Maoris' camp. It was right opposite where the fire was supposed to have started. There were two or three tents, and there were more Maoris half a mile this way.

561. There was a camp right opposite?—Yes; on the rise.

562. Have you ever known of the Maoris digging gum out of this particular swamp?—Yes.

563. In the Messrs. Young's property?—Yes; for twelve or eighteen months they had been digging, but they dwindled down to a few.

564. They hooked the gum out?—Yes, with hooks 10 ft. or 12 ft. long, and some of them 14 ft. long.

565. So far as you are concerned the regulations as to burning have been carried out?—We could not do better than we are doing.

566. And the same was done in 1896?—Yes; and has been done ever since.

567. You did not see the fire originate, so you cannot give evidence as to the cause of it?—No.

568. *Mr. Oliphant.*] You saw the fire in the swamp?—Yes.

569. And you went to within a mile of it?—I went three-quarters of a mile, and was within half a mile of it.

570. Where had it started?—About the 52-mile peg. I would say at 52 miles 10 chains.

571. It started at the edge of the railway-track, did it not?—I could not say. It was a few days afterwards that I passed.

572. But you would see the remains of it?—Yes.

573. You saw the commencement of the fire?—Yes.

574. What way would the wind take the fire?—From the west, I believe.

575. So that it would start near the railway and go in the direction of the centre of the swamp? That is where you saw it?—Yes, but it does not always travel straight. It might sweep round, and back, and all ways.

576. Next day you did not see the big fire in the plantation?—No.

577. Is that swamp not too wet for any person to cross?—Yes; it was at that time. It was full of holes.

578. What kind of holes?—You might cross in places if you picked your way.

579. But it would not be safe for a man to cross the swamp?—Well, I would not care about it.

580. And there would be no object in the Maoris burning the swamp if they could not enter it?—It would be a convenient time to burn the rushes.

581. But the Maoris would not fire the swamp unless they meant to dig for gum?—Yes, I think they would.

582. At any rate, they could not dig it?—But they do not dig: they draw the gum up.

583. But it is too soft, is it not?—In some places it is hard.

584. We have had a number of witnesses to-day who have referred to numerous fires along the railway-track. You have been a platelayer for some years in Mr. Farrell's gang: what is your experience—are they frequent?—We had a big fire only five or six weeks ago. It started from the south road.

585. Not from the railway?—No; it burnt to the railway, and there it burnt itself out.

586. Do you know the boundaries of the wattle plantation—it comes to the railway, does it not?—Yes.

587. And fires have occurred there frequently?—Yes.

588. Alongside the railway?—Yes.

589. How do you account for those fires?—I could not say. I do not think there is any accounting for them.

590. Do you think the engine might be guilty?—I could not say that. I have never seen a spark come from an engine that would set the swamp on fire.

591. Have you not seen a fire get up after the train passes?—Well, in that case anybody might throw out a match from the train.

592. You think the fires are caused by matches, then?—It might be that they happen that way.

593. But you would not blame the engine in those cases?—I do not blame any one.

594. Well, it is like this: you say the fire is caused by matches?—It might be.

595. I suppose the engine would never do it?—It might, and it might not.

596. You admit the engine might cause a fire?—I do not admit anything, because I do not know.

597. There is no such thing in your experience as fires being caused by sparks from engines?—I could not say.

598. You have never seen diggers digging in that big swamp where the fire was?—I have seen hundreds of Maoris there. About twelve or eighteen months ago there were three hundred Maoris camped about the hills. They were taking gum out of the swamp.

599. You have no theory to account for the fire on the 15th December at all?—No.

600. *Mr. Cooper.*] The fire might have been caused by the Maoris as well as by the engine?—Yes.

601. In the summer of 1896 the Maoris were gum-digging. In the three succeeding summers have the Maoris been about?—I believe they all cleared out two or three days after the big fire. They have not been back since. There is not a single Maori who has been digging from that time to now.

602. *Mr. Oliphant.*] Are there not other diggers besides Maoris?—They are all Maoris. I have never seen a white man digging there.

603. Practically the gum-digging ceased after the big fire?—Yes. I have not seen a Maori since.

604. And yet fires have since occurred along the railway-track?—Yes; one occurred about six weeks ago. It came from the road, and the sparks crossed over the line and set the swamp on fire. Some time ago there was another fire, about two miles and a half from here. It also came from the south road.

605. But there have been no fires alongside the railway-track for the last three years?—Only the one I have mentioned.

606. And it came from the road?—Yes.

607. Your length extends over—how many miles?—Seven miles.

AUCKLAND.

FRIDAY, 2ND MARCH, 1900.

JAMES WALLACE, sworn.

1. *Mr. Brookfield.*] What are you, Mr. Wallace?—A farmer, residing at Papatoitoi.

2. You own a farm?—Yes, I own two—in fact, three.

3. There is one particular farm, is there not, on which fires occur?—That is the homestead of 113 acres.

4. How long have you lived there?—Since 1851.

5. What is the homestead farm used for?—Grazing.

6. It is all clear?—Yes.
7. Down in grass, or what?—Down in grass.
8. Does it adjoin the railway-line?—Yes.
9. Have you been troubled with fires on that farm?—Yes.
10. Lately?—Yes.
11. From the end of December have there been many fires?—There have been seventeen or eighteen. In addition, my neighbours have put out fires on the farm that I knew nothing about.
12. Where did the fires occur?—Alongside the railway. Some of them are as far in as a chain and a half from the centre of the railway.
13. That is speaking as to this year. In former years, say for the last five or six years, have you been troubled with fires?—Yes.
14. In the same locality?—Yes. There was not so much damage done on the farm as there was on one nearer Auckland.
15. It is alongside the railway, too?—Yes. A great quantity of oats in stook were burnt. I put in a claim, and the Government paid so-much, and I was advised by Mr. Brookfield, senior, to accept it rather than go to law.
16. Is it at any particular time in the day that fires have occurred this year?—It has either been by the Rotorua train passing at twenty minutes to 9 in the morning and at twenty minutes past 4 in the afternoon, or by the Waikato train passing at a quarter past 10 in the morning and at a quarter to 2 in the afternoon. Those are the two trains that are the greatest transgressors. We have been obliged to keep a strict watch when those trains pass.
17. Either you or some members of your family are always on the watch?—The women folk are always on the watch when those trains are passing.
18. And except just after the passing of trains have you had fires?—Occasionally the goods-trains have caused fires. The last fire was caused by the Mercer train passing Papatoitoi after 5 o'clock. It set fire to two places, and two of my girls ran with buckets and put the flames out. I happened to be on the train that day, and just as the train was going out of sight over the hill some one happened to say "Hullo, there's another fire."
19. There is a hollow about that part?—Yes, a valley. It is like a funnel, and it carries the sparks a long distance.
20. *Mr. Poynton.*] Do you allege much damage by recent fires?—Yes.
21. *Mr. Brookfield*]. Now, as to the fire three or four years ago, into which inquiry is being made by the Commissioner, were you present when it occurred?—One of my neighbours told me the oat-field was on fire.
22. How many acres of oats were there?—About 3 or 4 acres were burnt.
23. What was the date?—I cannot say, but it will be shown in some of my books.
24. *Mr. Poynton.*] Will you keep to the claim that came before Parliament: I cannot inquire into any other case?—Very well, sir.
25. *Mr. Brookfield.*] Where is this grass paddock, then, that was burnt two years ago—on the 13th January, 1898?—It is not on the homestead farm. It is a quarter of a mile on the Auckland side of the Papatoitoi Station.
26. What was in the paddock at the time?—Grass.
27. What damage was done?—It had to be resown. It was not ploughed, but it got bonedust along with the seed to encourage it.
28. Would that have been necessary if no fire had occurred?—No.
29. Would it have been done?—No.
30. Would that fire do any damage to the grazing for any time?—Yes.
31. What loss of grazing would there be?—It was a good many months before it was fit for grazing again.
32. And you lost the use of it, for how long?—About four months.
33. What do you estimate the damage at?—Mr. Cooper says I put in a claim for £20, but I would not like to do the work for that money.
34. Do you know how that fire occurred?—It was caused by railway-sparks.
35. How do you know?—A train went past and the fire followed.
36. You know that yourself?—Yes. I have sometimes been standing on the platform of a carriage, and it was dangerous to do so with the sparks.
37. Where did this fire start?—About 10 yards inside the railway fence. I may say that the platelayers take precautions and burn between the railway fence and the rails.
38. It occurred in this case about 10 yards inside the fence near the railway-line?—Yes.
39. Had any train passed about that time?—Yes, the 10 o'clock train—the Te Aroha train.
40. Was it only the grass that was damaged?—It ran through the wire fence and got into another paddock, but not much damage was done, as it was put out with water and wet branches.
41. Did you help to put it out?—Yes.
42. And members of your family?—No. There were three of my neighbours and one of my men.
43. Was there anybody about who could have set fire to it?—No; I have a witness to state that there was no one about.
44. Could the fire have occurred through a match being thrown from the train?—No.
45. Why?—There is no such thing as throwing a lighted match a chain from the railway-line.
46. Was the stuff burning between the railway-line and your fence?—No; the men had been burning along the line. The fires only occur when there is a high wind. The sparks are carried along by it.
47. Speaking generally of fires caused by engines, you told us in the first part of your evidence about a number of fires that have occurred: do you say that they have invariably occurred when

there is wind to carry the sparks?—I do not know of any fires that have occurred in calm weather.

48. Have you travelled on those trains yourself?—Yes.

49. Can you speak as to sparks falling?—Yes, at night. You cannot see sparks in the daytime.

50. You do not notice them to the same extent?—During the day I have felt sparks alight on my hands—that is when I have been standing on the platform; and I have especially felt it when the train has been going against the wind.

51. You have seen sparks coming from the engine?—Yes. I have seen a perfect blaze of sparks all along the side of the train.

52. Were there any fires last year?—Only paltry ones. It was a wet season, and no damage to speak of was done. We never needed to whip a fire out.

53. Anything that caught burned out of itself?—It smouldered for a time and went out.

54. It was an exceptionally wet season?—Yes, the grass was never withered.

55. The season before—the time the paddock was burnt—were there many fires that year?—There was one on the paddock that was burnt, and a few small ones.

56. *Mr. Cooper.*] You had taken a crop of hay off the paddock just before the fire?—Yes.

57. There was no growth then, was there?—Yes, very thick growth.

58. How long was it before the fire that you had cut the paddock?—It would have been stacked about the first week in December.

59. About five weeks, then?—Yes.

60. It was a dry season, was it not?—Yes, a very dry season.

WILLIAM FERGUSON MASSEY, sworn.

61. *Mr. Brookfield.*] You are a farmer, Mr. Massey?—Yes, at Mangare.

62. Do you know Mr. Wallace's place?—Yes.

63. The one on which the fire occurred two years ago?—Yes. I know the whole of Mr. Wallace's properties.

64. And you know the particular part that was burnt at that time?—Yes; I saw the place. I did not see the fire.

65. You know the property generally?—Yes.

66. What would be fair compensation to Mr. Wallace for his loss?—For the damage done on that occasion?

67. Yes?—I have heard Mr. Wallace's evidence, and I know he claimed £20 for 17 acres of grass destroyed, and I think that is a very moderate estimate, because when a fire runs over the grass it practically destroys the best of it. It kills the ryegrass and the clover, and I would not like to put the paddock into its former state for £20. I think it is a very moderate estimate.

68. Did you see the place after the fire?—I saw it a few weeks ago. I did not see it at the time.

69. You did not see it shortly after the fire to enable you to say where the fire occurred?—No.

70. You do a good deal of travelling on that line, do you not?—Yes. I live out that way.

71. Can you tell us anything about sparks coming from engines on that line?—So far as Mr. Wallace's property is concerned the line runs almost north and south. Mr. Wallace's farm is on the east side of the line, and the prevailing winds come from the south and the west; consequently nearly all the time the wind is blowing the sparks on to Mr. Wallace's land. It is more subject to sparks than the land on the other side of the line.

72. Are the fires caused by sparks?—Most certainly. I have no doubt in my mind about that.

73. Why do you think so?—In travelling about the line I have very often seen fires start just after the engine had passed. Of course, it is almost impossible for any one to say he has seen a spark in the daytime as it was leaving the funnel of the engine, but I have no moral doubt about the fires being caused by sparks from the engines.

74. In travelling at night-time have you seen sparks?—Yes, showers of them.

75. There is no doubt the engines do throw out sparks?—There is no doubt about it.

76. The engines are supposed to be fitted with spark-catchers?—Yes, I believe so.

77. Is it a spark-catcher?—No; it does not keep the sparks in.

78. *Mr. Cooper.*] You did not see the paddock until quite recently?—No.

79. And you base your estimate on what you have heard from Mr. Wallace?—Yes.

CHRISTOPHER BAILEY, sworn.

80. *Mr. Brookfield.*] Where do you live?—At Papatoitoi.

81. Close to Mr. Wallace?—About half a mile away.

82. Part of Mr. Wallace's property is close to your house?—Yes.

83. Do you remember a fire occurring on Wallace's place about two years ago?—I do.

84. Did you see it start?—I did.

85. What started it, can you tell us?—I put it down to a spark from the engine of the train that was passing.

86. How long before that fire occurred had the train passed?—Immediately. When the train passes you can see the smoke rising.

87. Did the fire occur on the line or in Mr. Wallace's place?—In Mr. Wallace's paddock.

88. It started in the paddock?—I would not say whether it was started in the paddock or outside the line or the fence.

89. Did you see the train pass?—Yes.

90. Was there anybody about who could have set fire to the place?—I think not.

91. You saw nobody about?—No, there was no one near the place.

92. Did you go down when the fire occurred?—Yes, I went down immediately. I went to a tree and got a green bough and took it with me.

93. *Mr. Poynton.*] What do you know about the 17 acres of grass that were burnt?—That fire was started in the same way. The train passed and smoke came up, and away it went.

94. *Mr. Brookfield.*] You went to that fire too?—Yes.

95. You know what was in the paddock and how it was sown?—Yes.

96. How much of the paddock was burnt?—I suppose there were 17 acres.

97. What would be fair compensation to Mr. Wallace for the damage the fire did? Would it be necessary to resow?—Mr. Wallace has resowed since.

98. What would be fair compensation?—I could hardly say.

99. Being a farmer, you can give us an idea?—Well, I would say £2 an acre.

100. Would £20 be an unfair estimate?—I do not think so.

101. It would not be excessive?—I do not think so.

102. On this land of Mr. Wallace's—either that or close to it—have other fires occurred to your knowledge within the last few years?—One occurred on the 22nd of January of this year.

103. But have other fires occurred to your knowledge?—One took place at my own corner. A train went down at a quarter-past 2, and I saw a fire immediately afterwards. It burnt the whole of that corner, but, fortunately, there was a gully that stopped it.

104. What set fire to that?—It must have been the train.

105. Have many fires occured after the passing of trains?—I have seen two this year, at any rate.

106. And except just after the passing of trains do these fires occur?—No. We have never such a thing in the place. On the 22nd and 23rd of January of this year there were two fires on Mr. Wallace's. The first one took about 20 acres of grass, and the second I put out myself after it had been burning for some time.

107. *Mr. Cooper.*] You have known the paddock for a long time?—Yes, for eleven or twelve years.

108. It was always in grass?—No.

109. When was it last in grass?—It is in grass now; it has been, I think, for two or three years.

110. You have not examined it, have you, for the purpose of giving a particular estimate?—No. I saw the fire, and I have been down since.

WILLIAM MCLAUGHLIN, sworn.

111. *Mr. Brookfield.*] You are a farmer at Papatoitoi?—Yes.

112. You have been there for—what?—Thirty-seven years.

113. You know something of Mr. Wallace's property?—Yes.

114. Do you remember the fire that occurred there about two years ago?—Yes, I remember the fire Mr. Bailey spoke of, but I did not see it. I know one did occur.

115. And you know the paddock?—Yes; it has been set on fire since.

116. Can you give us an idea of what would be fair compensation to Mr. Wallace for any damage done by that fire?—It is difficult to say that, because I have not been over the paddock to see where the ryegrass and the cocksfoot has been killed out. I have had fires myself.

117. Mr. Wallace says he resowed and had to put in bonedust, but he had not to plough. Would the loss to his feed be great?—I think that if he put on bonedust £2 an acre would not be out of the way.

118. Would £20 be a fair estimate?—Yes, I think so.

119. Can you say whether trains do set fire to places?—I can swear to it. I was on the platform of a carriage from Ann's Bridge, a mile this side of Otahuhu, and between that point and Remuera I saw eleven fires started by the one train.

120. Was there anything except the train to start those fires?—No; I was watching, and I saw fires start 2 chains from the fence. The fire was about the size of your hand. In the paddock next the Ellerslie Hotel it started in three distinct places in the paddock. I was at the station on the following day when the Rotorua train came up. I said to the driver, "What sort of coal have you"? He said, "We have hard coal"; and he also said, "I have set nine fires going since I left Auckland this morning."

121. What was the name of the driver?—I do not know. He is the man who drives the Waikato train. It was on the Thursday that I saw the fires, and on the following Saturday I spoke to the engine-driver.

122. *Mr. Poynton.*] Could you tell us the day?—It is either three or four weeks ago. I told Mr. Maxwell about it on that same day.

123. *Mr. Brookfield.*] You reported the matter to Mr. Maxwell?—Yes. Then, some years ago I remember a fire starting in my paddock. I went to look at it, and found little bits of coal there. In one place there were three or four bits of coal about the size of beans.

124. How far from the railway?—About half a chain. I have seen fires start nearly 2 chains away. The railway runs through my place for a mile, and we have had a good deal of trouble.

125. You have had some trouble in your own place?—Yes; so much so that I will not bother with it. I have let the land, and my tenants have been burnt out time after time.

126. The fact of fires starting alongside the railway-line depreciates the value of a farm, does it not?—Yes; decidedly. I would not work a farm alongside the line. My house was too far away, and I could not watch it. The tenant, on the other hand, is alongside the line, and may see any fire. This year one of my tenants had a lot of firewood burnt in spite of all he did.

127. It would mean a considerable depreciation of property, then?—Yes; certainly. I would not work a farm alongside the line. No precautions are taken. The spark-catchers are perfectly

useless. If they had anything like a wire-gauze net to let the steam go through it would stop all the big sparks.

128. Whatever they use it does not stop them?—No; it is perfectly useless. I know what it is. On a threshing- or a traction-engine nobody would dream of not having a gauze cover.

129. Do you mean to say that a traction-engine or a threshing-engine does not throw out sparks?—No; and we have them standing between two stacks. Of course, they have not the same draft as an engine. I have seen the cap taken off a threshing-engine, and the stack was set on fire.

130. *Mr. Cooper.*] Can you fix the time when you saw this engine-driver?—I told Mr. Maxwell, and he has the date. It is either four or five weeks ago.

131. You only reported verbally?—That is so. He took a note of it.

132. *Mr. Brookfield.*] Did you tell him what you had seen and what you had been told?—I told him what I saw, but I do not know if I told him what I had been told.

133. You are a farmer?—Yes; but I served my time in a locomotive foundry. I have also been in a civil engineer's office, although I have not practised in this country. I have also been the resident engineer on a railway in England, and I have driven locomotives time after time.

FANNY WALLACE, sworn.

134. *Mr. Brookfield.*] You are a daughter of Mr. James Wallace, living at Papatoitoi?—Yes.

135. Is it a fact that you and other members of the family are continually watching for fires from the engine?—Yes.

136. What particular time do you watch?—When the trains pass.

137. On the trains passing do fires occur?—Yes.

138. Often?—Yes.

139. Can you give me any idea how many have occurred within the last two months?—I have a statement here taken from my diary. It is as follows: 1899—30th December, one fire in railway paddock; 1900—12th January, two fires in Buttle's; 17th January, one fire in railway paddock; 22nd January, one in Buttle's; 22nd January, one in railway paddock; 23rd January, two in railway paddock; 24th January, two in Buttle's; 27th January, one in back paddock; 29th January, one in railway paddock; 30th January, one in paddock below orchard; 1st February, one in railway paddock; 1st February, one in back paddock; 2nd February, two in Buttle's.

140. These fires have occurred on your father's place?—Yes.

141. Have you personally put out fires?—Yes.

142. You and your sisters and other members of the family?—Yes.

143. In fact, I think you keep appliances on hand?—Yes.

144. What do you keep?—Branches, bags, and a broom.

145. You can speak, I think, as to other years besides this year: have many fires occurred on other occasions?—Yes.

146. In the summer or the winter?—In the summer.

147. What causes those fires?—The engines.

148. Sparks?—Yes.

149. You have gone out time after time: has there been anything else except the engine that could have caused the fires? Has there been anybody about?—No, nobody.

JAMES GREY, sworn.

150. *Mr. Brookfield.*] What are you?—A farmer, living at Papatoitoi.

151. Do you live near the railway-line?—About a mile and a half from it.

152. Do you know anything about fires that have occurred at Wallace's place?—Yes.

153. What can you tell us about recent fires?—I was coming past there about a month ago, and I saw a fire that was likely to take possession of his whole place. I went in and worked hard for upwards of a couple of hours.

154. Where had the fire come from?—It had come from the railway. I had no doubt of that.

155. Is that the only one you know of?—I have known of plenty, but I had no cause to put out any of the others.

156. Do you know of other fires occurring along the railway?—I did not actually see any others.

157. Except this particular fire you did not see others?—They have passed my memory now. I may have seen others.

158. Have you seen other fires on Wallace's or the adjoining property?—I remember one, about two years ago, that nearly carried away a haystack belonging to Mr. Wallace.

159. Where did it come from?—It came from the railway.

ROBERT CARRUTH, sworn.

160. *Mr. Brookfield.*] You are a farmer?—Yes, at Papatoitoi.

161. Near Mr. Wallace's?—Yes, my land adjoins Mr. Wallace's.

162. Do you know anything about fires occurring on Mr. Wallace's or your own place?—Frequently I have had to send men to assist in putting them out.

163. Have you gone down yourself?—No; I have not been able to attend to fires for the last sixteen or seventeen years through ill-health and lameness, but I have always sent help.

164. Have you seen fires as they started or shortly afterwards?—Immediately after they started I have seen them, or perhaps not until they were half-way across Mr. Wallace's field.

165. In what direction do they come?—As a rule, from the west. I have also known fires to go to the east when the wind was in the other direction: that is on Mr. Wylie's place.

166. Do you say the fires are caused by sparks from engines?—I am pretty well certain of it. I have been travelling and I have been burnt myself, though not seriously. In travelling along the railway I have seen fires lighting here and there, principally in the scoria ground, after the engine had passed.

167. On the line?—Not on the line, but outside, and not through smokers throwing matches away, but from sparks from the engine. I have seen them in other people's ground across the boundary.

168. Do you know the paddock that is called Buttle's paddock?—Yes.

169. Do you remember that about two years ago that paddock was burnt?—Yes.

170. You know what that paddock was up to that time?—Yes; it was in good grass—ordinary pasture.

171. Mr. Wallace says he had to resow that and put bonedust in. What would be fair compensation to him, now, through that fire—loss of paddock and expense of resowing?—I should say about £2 an acre.

172. Is £20 an overestimate for the 17 acres?—It is an underestimate. As to provisions for spark-catching, I may say I have been in the habit of working engines for the last twenty or twenty-five years.

173. What do you think could be done to stop the sparks?—The funnels at the top are copious, and I would suggest a wire cage of a very strong character. It would need a wire screen or cage, and it would have to be strong, as the engine works at a very high pressure, although we work at as high a pressure between the stacks.

174. Are you working at as high a pressure?—120 lb. to the square inch.

175. *Mr. Poynton.*] What sort of coal do you use?—Newcastle or Westport.

176. You do not use Taupiri?—We once did, and we had a fire, so we do not use it. I have owned a threshing-machine for twenty-five years, and I have had a traction-engine which we work up to 120 lb. pressure.

177. *Mr. Brookfield.*] Does it throw any sparks?—It throws sparks of little importance, yet we have no spark-arrester.

THOMAS WYLIE, sworn.

178. *Mr. Brookfield.*] You are a farmer, living on the opposite side of the line from Mr. Wallace?—Yes.

179. Can you tell us about the fires that have occurred on Mr. Wallace's land, and the cause of them?—The cause of them, I am certain, is the engine. I have proof positive of that. They all thought I was escaping pretty well on my side of the line, and that Mr. Wallace was getting all the fires, but when the wind changed I got them. Three or four times I had to go and put fires out. My man and I have sat for a whole day watching the trains to put the fires out. One fire burned 6 acres of splendid grass.

180. Which way is the prevailing wind?—The wind generally went towards Mr. Wallace's, but when it changed the fires came to my place. I have seen Mrs. Wallace and her daughter running out to beat the fires, and getting other people to help, Mrs. Wallace carrying a bag in her hand; and many is the time I have pitied her.

181. Did that often happen?—It sometimes occurred twice a day.

182. After the train had passed, have you seen fires start on Mr. Wallace's place?—Yes, it was shortly after the train passed that the fires started.

183. And that has always been the case?—Yes.

184. With reference to the value of the property itself, does it appreciate these farms, as farms, to be alongside the railway-line?—Undoubtedly it takes away from their value.

185. Could Mr. Wallace safely put a green crop into any of the paddocks alongside the railway-line?—Not if the wind was blowing to his land and the engines are running as they are now.

186. A good deal of grain is grown in the district, is there not?—Yes.

187. What would he have to do—plant potatoes, or use it for green stuff or feeding?—I suppose he would have to do that.

188. There would be nothing else left to do?—No.

189. *Mr. Cooper.*] I suppose, with all its faults, you like the railway?—Yes.

190. You would not like to be without it?—No; but I think they should put something on the funnel to keep down the sparks. They should not be allowed to blow out as they do now, and so take away from the value of our land.

AUGUSTUS VANZANT MACDONALD, sworn.

191. *Mr. Cooper.*] What are you, Mr. Macdonald?—Locomotive Engineer, Auckland Section of the New Zealand Railways.

192. Were you so in 1896?—In 1896 I was what is now called District Engineer. I was transferred to the department Mr. Biss is in from 1895 to 1897.

193. During 1896, then, you were District Engineer?—Yes.

194. But both as District Engineer and Locomotive Engineer you can speak to the precautions taken by the department in reference to sparks?—Yes.

195. Taking it generally first: you have studied the question very closely, I think?—Yes.

196. With the view of getting the best system introduced into the locomotives here?—Yes.

197. Dealing, first of all, with the appliances you had in 1896, can you say whether you had the best-known appliances?—Yes.

198. At work on the locomotives?—Yes.

199. Can you describe the appliances you had in 1896?—Yes, I have a diagram to show them. There is a brick arch, and a baffle-plate which deflects everything under the arch, and therefore there is a more perfect combustion. All the gases have to pass through the opening between the baffle-plate and the brick arch, and also through the tubes, which are about 120 in number. They then go into the smoke-box and are dashed against the door and up the chimney, where they meet with the deflector. They are then thrown down into the side portion. Since then there has been an improved arrangement, which brings the ashes down into the smoke-box again. The ashes eventually find their way into the atmosphere, and anything heavy will drop back into the outer casing. With the soft-coal appliances attempts have been made by the department to keep down the exhaust. We have tried to soften it by keeping the blast-pipe as large as possible, and by introducing petticoat-pipes which are moved up and down according to the requirements of the engine. This improvement, which is called an ash-shoot, is a late improvement.

200. It is the latest improvement in operation, is it not?—Yes.

201. Can you say whether those appliances are the present best known appliances for spark-arresting on locomotives?—Yes, to the best of my belief.

202. I think you take in and study the leading up-to-date papers on locomotive engineering?—Yes. We all have them through the colony. I may say the engines have also a steel band on top of the funnel, which is brought down as far as possible without stopping the engine from steaming.

203. With the exception of this ash-shoot, which has been an experiment since, that was the system in use in December, 1896?—Yes.

204. From your knowledge of engineering, and from the inquiries you have made, can you suggest any further improvement at the present time?—No, not at present.

205. You heard it suggested this morning by Mr. McLaughlin that you should put a gauze spark-catcher over the top of the funnel?—That is not possible.

206. Why not?—It would simply stop the steaming of the engine, and it would not last. Attempts have been made with gauze. Experiments have been tried with various kinds of it, and they have not succeeded.

207. So far as you are aware, is there any system yet invented which would act as a complete and perfect spark-arrester?—No.

208. Is it not known to science?—No.

209. You can only minimise the escape of sparks?—Yes. I may say that I belong to the Royal Master Mechanics' Association of America and to the Institution of Civil Engineers of England. I was at one time a member of the Institution of Mechanical Engineers, England.

210. This question of spark-arresters is a question that is still occupying attention?—Yes. We closely watch any proceedings in that respect.

211. The statute permits you to burn certain classes of coal on the locomotives: there are three or four classes allowed? You do not burn anthracite, do you?—No.

212. Bituminous coal?—No.

213. Brown coal?—Yes.

214. And you do not burn wood or coke?—No.

215. You burn brown coal only?—Yes.

216. Where do you get it?—Taupiri coal, at Huntly.

217. Can you speak to the effect of the coal producing sparks? We have had a suggestion that Newcastle or Westport would be better to burn on this section. Can you speak to the respective values of the two classes?—As regards consumption?

218. Yes, and as regards spark-throwing?—We have been trying some hard coal, but the experiments have hardly extended long enough to enable me to speak definitely as to results, because we do not know how much to put down to the coal or to the fact of the dangerous parts of the country having already been burnt off. We use mostly soft coal.

219. Do you find that there would be any less danger of sparks being thrown with hard coal than with soft coal?—Possibly there might be less danger.

220. You cannot speak definitely?—No, not yet.

221. Are your locomotives fitted with appliances for burning hard coal?—No. We have been using the hard coal with the soft-coal appliances. That would be less liable to cause sparks, though from our point of view it would be harder on the engine. If we were burning all hard coal we would not put in so much apparatus in the smoke-box and chimney. We would burn more hard coal by using soft-coal appliances.

222. What is the relative cost of burning soft and hard coal?—In the experiments we were making I reckoned we were burning 14 lb. of soft coal per mile more than hard coal, and the cost to us of the hard coal would be quite 2d. per mile. In other words, taking last year's running, it would cost £2,000 a year more to use hard coal than it would to use soft coal.

223. On the Auckland Section?—Yes.

224. There is no hard coal obtainable in this district?—No. It is all seaborne. We pay £1 7s. a ton, but by contract it might be got for £1, as against 5s. 5d. which we now pay for the soft coal.

225. If you used hard coal you would have to import it?—Yes.

226. Either from Westport or from Australia?—Yes. We burned three thousand pounds' worth of soft coal last year—that is, up to the 31st March, 1899.

227. And to do the same working with hard coal it would cost you £5,000?—Yes.

228. That would be £2,000 a year extra?—Yes.

229. On this question of spark-arresting apparatus have you any suggestions to make?—Not yet; but experiments are continually being made in the winter season.

230. Is the contrast of a traction-engine and a locomotive a fair test of the efficiency of the spark-arresting apparatus?—No.

231. I would like you to explain that?—A traction-engine may be working possibly at 40- or 50-horse power with not such a heavy draft as a locomotive, and with less chance of throwing anything out, whereas a locomotive may be running at 200- or 300-horse power with 180 tons behind it. The traction-engine is soft in its exhaust, though possibly noisy; but the locomotive, running at high speed, will probably be running at 300- or 400-horse power.

232. A traction-engine never goes at high speed?—No. The traction-engine pressure was given this morning at 160 lb., but I do not know about that. We go up to 160 lb. to the square inch.

233. The circumstances are so entirely different it would be impossible to contrast the one with the other?—It would be impossible.

234. And with a threshing-machine?—That is easier still. It is ordinary, steady work, and there is nothing to lift the fire. In some of the threshing-engines they burn straw.

235. Have you anything else to say on the general nature of the spark-arresting appliances?—I think a false impression exists in the minds of the public on the question of what are called sparks. They see them coming out at night from the chimney, but what they see is not all of the nature that will set fire to a country. Some of it is simply fluff and flame that will not set fire to anything. Anything to set fire to the country must be cinder. There is a great deal of stuff that comes through that has no life in it.

236. You could not use on the locomotive the same chimney that there is on the traction-engine?—No.

237. Occasionally when there are severe grades the engine works heavier than at other times, does it not?—Yes.

238. And there may be a propensity to throw out sparks?—Under some conditions.

239. Can it be guarded against in a better way than you guard against it at the present time?—No, it cannot.

240. Coming to the question of the wattles, you examined the locality shortly after the fire took place in 1896?—Yes.

241. Can you say whether or not there is an unbroken connection between the fire in the swamp and the fire in the plantation?—No, I cannot.

242. Can any one say that at the present time?—No.

243. I think you went over the ground with Mr. Young senior on the 29th December, 1896?—It was a short time after the fire.

244. One object was to see if you could trace an unbroken connection?—Yes.

245. And you could not get through the swamp far enough to do so?—I tried it for a short distance, but dared not do it.

246. Did you form an estimate of the acreage that was damaged?—It spread over an area of 400 acres.

247. You could not form any idea of the value of that area?—No.

248. Have you in your own personal knowledge known of fires caused by gum-diggers in the swamps along the line?—Not from my personal knowledge.

249. So far as the regulations for the prevention of fires are concerned, can you say that, as far as you know, they are carried out on the Auckland Section?—Yes, we have strict regulations on the point.

250. I may take it, then, that everything the department can do, consistent with the efficient working of the railway, has been done to prevent injury to property?—Yes. I may also say that the waste water from the injectors is led into the ash-pan to drown the ashes.

251. Is there anything further you would like to say on the matter?—No.

252. *Mr. Oliphant.*] Can you remember about the year 1896 whether it was not stated publicly by the Public Works Department that the engines had run down—had been worn out—and that a great many of them were not fit for work? The Minister said £200,000 would be required for new engines. Is it not a fact that the engines were run down?—I believe if such a statement was made it did not refer to the actual working of the engines, but to the fact that the colony was short of locomotive-power.

253. Did the Minister not apply for £200,000?—If so, it was to get extra engines. I remember that.

254. To get good engines?—To get extra engines. I know the circumstances. On account of the rush ahead of the settlement of the country and the increase of traffic more locomotives were wanted than the shops could turn out.

255. Did you get any of those new locomotives on the Auckland Section?—No.

256. You have received no new locomotives?—No.

257. You know that some were bought?—Yes. They were distributed on other sections. We did not get any.

258. You are still using the locomotives you had in 1896?—Yes, with others sent to us from different parts of the colony.

259. Locally made?—No, not necessarily. As other sections received new engines they sent some of their engines to us. Some of the engines in use in other parts of the colony would be too heavy for this section.

260. You are using the old class of locomotives, then?—Oh, no. The general efficiency of the engines is not impaired at all. As parts wear out they are renewed. They are kept up to the state of efficiency in which they were originally.

261. As to the question of coal, is it not a fact that if the hard coal were used there would be less danger from sparks?—Possibly there would be.

262. You state that the extra cost of using the hard coal would be £2,000 a year?—Yes.

263. If you use that hard coal in the dangerous period—say, from November to March inclusive—it would be less than £2,000, would it not?—Yes.

264. It would mean £1,000 of difference?—Yes.

265. Is that not a suggestion you would make to the department? You say it would possibly prevent sparks, and that the expense would not be a very large item in excess?—Possibly it would decrease, but it would not altogether stop the chance of sparks, because I know that there have been cases of sparks from hard coal in England.

266. Yes, but the chances are reduced to a minimum by the use of the best coal and the use of the best-known apparatus to stop sparks? In America they universally use the hood. Are you aware of that?—We have it here too. We have the same thing in the deflector.

267. The wire gauze is used in some places, is it not?—No. You may see it in some threshing-engines, but you will not find any statement made before a society by any engineer that he has been able to use it for locomotives.

268. Now, I would like to read a letter sent to you by Mr. Young. It refers to matters that you might explain. It is as follows:—

DEAR SIR,— Remuera Road, Auckland, 28th December, 1898.

On Monday last, 26th instant, I noticed a fire spread out after the passenger-train passed north past Whangamarino Station, about a mile and a half north of the station, and near where we are stripping bark. I examined the source of the fire, and found it had started from the line, but close up to the line—within 2 ft. or 3 ft. of the rails. The wind was easterly, and the fire spread westward, and went through the plantation; but what particularly struck me was the fact that the fire sprung from the line not from one point alone, but as if it had spontaneously done so from the line and close to the rails along a considerable distance of the line, showing that it could not have been from the locomotive sparks, nor from a match thrown out. The fact that the fire originated along the line close to the rails for such a distance proves, I think, conclusively that the fire was caused by ashes being thrown out from the locomotive. At the time there were only two strippers on the place—Messrs. Green and Stretten—though I do not know if they examined the spot where the fire originated. Where this occurred is not on my property, and I am only reporting the matter to you, but I have long been of opinion that ashes thrown out are often the cause of these fires. As we have now large quantities of bark stripped and lying in the plantations it is very important that all precautions should by taken by the locomotive drivers, and I do not think this is being done.

To the Locomotive Superintendent, Auckland. WILLIAM YOUNG, Junior.

That letter was written from an actual fact he saw. How can you explain that? Had they dropped ashes from the engine?—They have no occasion to do it. If a man does that he is liable to punishment.

269. At different places along the line you see burnt coal on the line, do you not?—That might be so. The engine may have been ballasting. But what you mention would amount to a flagrant breach, and any man who committed such an act would be punished.

270. The man actually saw this fire, and you say such a thing might occur?—I say it would be a most flagrant thing for a man to do.

271. Flagrant on the driver's part?—It would be the fireman who would do it, but both the fireman and the driver would be liable to punishment. It would be an outrageous thing to do, and, as I have said, there would be no occasion for it. They have their stipulated places where, if desired, they may clean their fires.

272. Have you had any offences of that kind before you?—Many years ago I dropped on a young fireman doing it, but that was before they got into burning the Taupiri coal.

273. You speak about examining the wattle plantation in 1896 after the fire. You say you could not see an unbroken connection between the fire and the swamp and the wattle?—Yes.

274. Do you wish to suggest that the wattle fire was a separate fire from the one in the swamp?—Possibly it was. I tried in Mr. Young's presence to satisfy myself if there was an unbroken connection—a contention which had been strong on his part—but he will tell you that I could not go further than I did.

275. It was an impassable swamp?—If I could have traced an unbroken line it would have satisfied us more that the fire had come from the railway, but I could not swear that it was an unbroken connection. I told Mr. Young that if I had had planks or a man with me I might have made the attempt.

276. You know for a fact that a fire might run on the top—along the rushes?—Possibly it would in a dry season.

277. When there were you not informed that a fire had been caused the same day on the Government plantation?—I do not remember that. I know there was a fire about that time. It was on the Government plantation, but I do not remember the date.

278. Some witnesses said yesterday that the four men who assisted the wattle-planters said they had just been putting a fire out that was caused by the same engine on the Government plantation?—There must be some mistake about that. I remember that Farrell and his gang were on the Mercer side of that fire, some distance away, and they went to put the fire out, but whether it was on that day or after I do not know. I know there was a fire about that time on the Government plantation on the Rangiriri side.

279. What caused it?—I do not know. I know the gang went to help the Government men on the plantation to put the fire out.

280. Is Mr. Clifton up there?—Yes; but Mr. Clifton is not in immediate charge of the plantation—Mr. Kensington is in immediate charge.

281. Is Mr. Kensington coming as a witness?—Yes, I hope so. He has been written to, and is expected to come here at half-past 2 to-day.

282. It would be the duty of Mr. Kensington or Mr. Clifton to report these fires?—Yes.

283. Would your department get notice of the fire?—Not necessarily. I know I heard about the fire, but how I got that information I do not know. I know the men went there to help the Government men to put the fire out. There may have been some correspondence.

284. Do you remember that yesterday when you went to the swamp where the fire started you did not see any signs of gum-digging?—I am certain that I saw marks of gum-digging on the point of land after the fire, because it struck me at the time that the whole place had been burnt clean. I cannot swear as to that point, or as to the one on the other bend, but on that side of the line I saw marks where they had turned the ground over.

285. But you saw none yesterday?—The ground is covered with fern now. I saw that there were turns-over of the spade—one spit in each place turned over. I think it was when I was returning from Mr. Young's place that I saw the marks.

286. *Mr. Brookfield.*] You have heard the statement by Miss Wallace that there have been seventeen fires on Mr. Wallace's place since the 30th December?—Yes.

287. How do you suggest they took place?—I do not know.

288. Each of them occurred just after the train had passed?—Yes, that may be so.

289. Do you say they could be caused in any other way than by a locomotive?—Some may have been. The public will not believe it, but we know from actual proof that some fires have been caused by matches thrown from a train.

290. Some of these fires were a chain away, and a match would not travel that distance. Can you say then how they occurred?—No.

291. Miss Wallace says an engine would pass, and immediateiy after a fire would occur. Can you suggest any other way except sparks from an engine in which those fires could have happened?—Not under those circumstances.

292. Mr. McLaughlin says that between Ann's Bridge and Remuera he counted eleven places on fire. Can you make any suggestion about the cause of those fires?—No. You cannot say anything one way or the other.

293. Is what he says quite correct—that they must have occurred from the engine?—No, I do not think so. I know a case in which a man blamed the engine for a fire that occurred about eight miles from the line.

294. What is the distance between Ann's Bridge and Remuera?—About four miles.

295. Do the best appliances of the world still allow fires to occur at that rate?—That would depend on circumstances, because it might possibly happen that there was deleterious matter in the coal that we knew nothing of. It is possible there might be some hot points or centres that may have caused a fire as an exceptional circumstance, but to have a case like the one we have heard of is very rare. You might hear of a fire here or there, but not of a continuous chain in a country like that.

296. Then you have the statement made by Mr. McLaughlin that one of your drivers said there had been eleven fires?—Well, I would like to bring that driver and Mr. McLaughlin together.

297. Mr. McLaughlin is a well-known man. He would not make a statement of that kind unless it occurred, nor would he report it?—The statement was too general.

298. Mr. McLaughlin is a well-known man, is he not?—Yes; but if a man has told him that, let us have the man.

299. How do you account for the fact that with the best appliances fires still occur on Mr. Wallace's property?—I do not know why they should specially attack Mr. Wallace's property.

300. But there is the fact?—We do not say that the appliances can absolutely stop every spark. That is acknowledged everywhere.

301. Mr. McLaughlin says he was himself a locomotive engineer, and it is not likely he is making a mistake when he says he has seen sparks while standing on the carriage-platform?—It would be possible for a man like Mr. McLaughlin to make that mistake, because the fact of his having served his time in a workshop and then being away from the shops for years would not make him well acquainted with the various matters of detail that we are acquainted with who are always in the work.

302. But he said he had been in charge?—That was many years ago, and under different circumstances from those that exist now.

303. But he would know the difference between soft coal and sparks?—Yes.

304. It would not be the sparks or the soft flame that would cause the eleven fires Mr. McLaughlin counted?—No.

305. Have you tried the gauze catcher?—Yes. Speaking from memory, we tried the gauze appliance some years ago, and it had to be taken out.

306. Why?—Because it choked the engine.

307. How long ago is that?—I forget now. It was put on the engine between here and Waikomiti, and the mesh choked. If you made the meshes large enough to prevent choking, the sparks would go through.

308. What size of mesh did you use?—We brought the size down to stop anything going through, but it simply choked up. We could not keep it clean, although all sorts of appliances were used.

309. What distance was there between the mesh and the top of the funnel?—I forget now, but I think the mesh was underneath the external chimney.

310. Would not a screen above stop the sparks?—It is not small enough to stop them coming through.

311. Could you not put on a cap of some sort?—No, it chokes up. This man I spoke of, when going to Waikomiti, nearly brought his train up, and had to remove the netting. We tried another thing that came out with one of the engines. It had a net that was larger than the ordinary smutting-net, but anything would come through it. It was tried between here and Newmarket one night.

312. Do the cinders of the Taupiri coal not smoulder?—My experience of the coal is that the

true Taupiri coal does not smoulder. It is not a hard cinder, and the life is beaten out of it, so that it is merely fluff that comes away. Some of the coal—some that came from the South—had a hard glow in the centre that would remain when it fell on anything. That was not so with the Taupiri coal, which seemed to burn clean away. When an engine returns to the shed there is very little to turn out. The coal is so clean it burns right away.

313. But if it does go out in cinders, will it not smoulder?—But it does not go to cinders: it goes to dust.

314. *Mr. Oliphant.*] Will the cinders of the Taupiri coal not live for hours in a box?—No, not if they are properly put out. The action of householders is similar to what we do when we bank a fire. If they throw water on the ashes on the top they probably leave a lot of live ashes underneath, and hence the trouble. When we bank a fire we put green coal on top, and let it remain till morning, when by stirring a good fire is obtained.

315. *Mr. Brookfield.*] But there must have been cinders falling on Mr. Wallace's to cause the fire. Assuming them to be Taupiri-coal cinders, is it not more dangerous than hard-coal cinders?—The soft-coal cinder is lighter than hard-coal cinder, and there is more chance of it being dragged through.

316. And there is more chance of it smouldering?—We find, as I have said, that the coal goes to dust.

317. The reason for using Taupiri coal has been from cheapness only?—Yes, and the cry always to encourage local industry. It is the best class of brown coal I have seen, and I have seen most of the brown coal used in the colony.

318. Your experience with the hard coal up to the present has been rather in favour of the hard coal?—Yes. The country has been burned off, or a great deal of it, and I cannot say how much is due to the coal, or to the fact of there being no more rubbish to burn.

319. But, whatever the cause has been, there have been less fires?—Yes.

320. And the cost would be £1,000 a year more?—Reckoning for six months in the year, that would be about it.

321. But if there is more traffic in the summer it would keep up the cost, would it not?—Yes. There is really no dead season in Auckland, as there is in the South. We are busy all the year round. In the winter there is coal to carry, and in the summer the wool and general harvest.

322. The cost would be proportional, then?—Yes.

323. Mr. Wallace, like Mr. Young, also noticed cinders lying near the Papatoitoi Station the other day. Where do you say those cinders or ashes came from?—The ashes are thrown out at the station where the engine stops. What he saw was the cinder from the hard coal mixed with soft. I dare say the fireman had been cleaning his fire there.

324. That would be a proper place to do it?—Yes, at the station; and the man is supposed to put a bucket of water on the cinders.

325. Mr Oliphant spoke to you of the locomotives in use in 1896. He asked whether you got any of the new ones. Were the new locomotives, so far as the spark-catching apparatus is concerned, an improvement on the engines you are using here?—I do not think so. I have not seen them, but from what I have heard they are not.

326. *Mr. Oliphant.*] How does it happen that it is generally as the engine is running up a hill that the sparks come more into evidence than at any other time?—Because she is working hard then.

327. *Mr. Poynton.*] How often are the appliances examined?—Every day.

328. At the end of the day?—Both at the beginning and at the end of the day. The ash-pans are also examined. We have special regulations in regard to that matter. They are these:—

322. The ash-pans and dampers of all locomotives must be maintained in a perfectly safe condition, so that live ashes cannot fall on the permanent-way.

323. The chimneys in spark-arresters of all locomotives must be kept perfectly clean. Enginemen neglecting this must be reported.

324. The apparatus used for preventing the emission of sparks must be kept in perfect order. All cases of defect must be reported and immediate action taken to remedy them.

329. Does the soot accumulate sometimes above the plate?—Yes, and they take it out when they come to the shed.

330. Some of that would ignite at times and be carried out, would it not?—It might be lifted, but an improvement has been brought in that would bring it back into the smoke-box.

331. Have you tried any of the new spark-arresters on this line? They are experimenting with them in Dunedin?—No, we have not.

332. If you were using hard coal for some part of the year you would have to put a screen in the locomotives?—Yes, we would have to put in a perforated plate.

333. The cost would not be heavy?—No, it would not be heavy.

334. What would it cost for a locomotive?—A few pounds for each engine.

335. How many engines are you using on this section?—About thirty-five. At present we are burning hard coal, at a disadvantage to ourselves, because the engines are baffled with soft-coal appliances.

336. Do you find in your experience that the regulations are observed?—Yes. We are always on the lookout for that, and at the beginning of the season a warning is given to all the men to see that the appliances are in good order.

337. What about surfacemen: are they instructed to report on any fires?—Yes.

338. *Mr. Brookfield.*] How many complaints do you get in a season about fires?—Over what period?

339. Say, for the last five years?—I could not give any idea.

340. *Mr. Poynton.*] You will prepare a report to show the number?—Yes, I will do so.

341. *Mr. Cooper.*] I have here the report of Ganger Farrell to Inspector Day, about the fire in the wattle plantation. It is as follows .—

SIR,— 17th December, 1896.

I have to report that a fire occurred at 52 miles on Tuesday, the 15th instant, some time through the day, on the east side of the line. A south-west wind was blowing at the time. The fire travelled across a large swamp, and into Mr. Young's plantation, burning several acres of wattle. There are several Maori camps close where the fire took place. The Maoris are in the habit of burning-off for the purpose of gum-digging. Since the fire the Maoris have left the place. I am inclined to think they are the cause of the fire.

Inspector Day.

—Yes, that is the report.

DENNIS HOGAN, sworn.

342. *Mr. Cooper.*] You are a ganger in the employment of the Railway Department?—Yes.

343. And you were so in 1898?—Yes.

344. Do you recollect a fire taking place on the 13th of January, 1898?—I have a remembrance of a fire.

345. It was at Mr. Wallace's place?—Yes.

346. Your report is as follows:—

Auckland Section: Maintenance Department.
Date of fire: 13th January, 1898.
Time first noticed: 5.7 p.m.
Mileage: 10 m. 55 ch., main line.
Started inside or outside railway boundary: Outside.
Left- or right-hand side of line going from Auckland: Left.
Direction of wind: Westerly.
Last train to pass: No. 45; time, 5.7 p.m.
Extent of damage done: To private property, 15 acres of paddock that hay had recently been made off.
Owner of property: J. Wallace.
Extent of damage done to railway property: Nil.
Origin of fire (if known): Don't know.

D. HOGAN, Ganger.—14th January, 1898.

—Yes, that is my report.

347. You did not see the fire originate?—No.

348. You know the regulations, 190 to 198, as to the prevention of fires: are they faithfully carried out?—Yes.

349. And, so far as you and your men can do, they take all steps to put out fires?—Yes. We burn off the grass inside the railway boundary.

350. That was so in 1898, and is so still?—Yes.

351. I think you are specially careful during the dry season?—Yes.

352. *Mr. Brookfield.*] Is it a fact that there are a considerable number of fires during the dry season alongside Mr. Wallace's place?—I have noticed several.

353. Just after trains passing?—I could not swear that to a certainty.

354. Have you noticed any at other times than when a train was passing?—Yes; I saw one at Otahuhu.

355. But have you not seen fires at Wallace's, and always after the passing of a train?—I have seen Mr. Wallace setting fire himself on a road between Mr. Yates's property and his own.

356. But have not a lot of fires occurred on Wallace's property just after the passing of a train?—Yes, that is quite true.

357. Have you on any occasion been able to discover any other reason for those fires except sparks from the engines?—On one occasion I noticed a fire on the Mangare Road. It was started on a Sunday by somebody passing throwing a spark, and if I had not known the cause of that the engine would have been blamed. A man who saw it put it out at once.

358. You know that Mr. Wallace has complained?—Yes.

359. Have you ever discovered any other reason except sparks from engines for Mr. Wallace's fires?—I could not prove it.

360. Is it not a fact that several of the fires have occurred at some little distance from the railway-line itself, starting inside Mr. Wallace's fence?—The majority of them have, because it has been burnt between the centre of the track and the fence.

361. *Mr. Cooper.*] Burnt by the department?—Yes.

362. *Mr. Brookfield.*] Then you have every reason to believe that Mr. Wallace is correct when he says fires are caused by sparks?—Well, I suppose that is a reasonable conclusion to come to if there is no one about at the time.

363. Do you remember this fire?—Yes, perfectly well.

364. Did you estimate the damage at all?—I am not a practical farmer, but I have a fair idea of what the damage would be.

365. What do you think the damage was?—£3 or £4. It was grass land. The hay had been mown off.

366. Suppose the effect is to kill the grass, and that it has to be resown?—I have never seen it killed. Mr. Wallace lays his grass every two or three years. The crop is the same this year, pretty well.

367. Do you mean to say that Mr. Wallace resows his paddocks every two years?—Yes, I have noticed it. I have noticed that he ploughs his paddocks more often than other farmers.

368. Do you mean to say that he sows grass on his grass paddocks every two years?—He ploughs them up.

369. These practical farmers have said the damage would be £2 an acre. I suppose you have had no experience in the matter?—Well, after a shower of rain it is about the same as it was before. If you look at it now you would not see much difference.

ALFRED CARMEL HUCKSTEP, sworn.

370. *Mr. Cooper.*] I think you are employed in the Railway Department, in Mr. Hogan's gang?—I am in Mr. Russell's gang.

371. You were with Hogan in 1898?—Yes.

372. Are you a platelayer?—Yes.

373. You were in the railway employment in 1898, and are so still?—Yes.

374. So far as your experience goes, have the regulations with regard to precautions to prevent fires been adhered to?—Yes, strictly.

CHARLES SMITH, sworn.

375. *Mr. Cooper.*] What are you?—An engine-driver.

376. I notice by the reports that you drove No. 13 and No. 30 on the 13th January, 1898?—I could not recollect it, except from the records.

377. *Mr. Poynton.*] Did you notice any fires?—I could not say.

378. What was the condition of the spark-arrester?—In very good order. They have always been looked after.

379. *Mr. Cooper.*] So far as you know, are the spark-arresting appliances carefully looked after by the men in charge? I suppose you locomotive men pay some attention to other men's engines?—Yes; I can say the appliances are always in good order.

380. You speak specially for yourself and generally for the others?—Yes.

381. Each morning and evening?—Yes.

382. And when necessary during the day?—Yes.

383. *Mr. Brookfield.*] In spite of the arresters, do the engines throw out many sparks?—No; they might throw out a few sparks.

384. One witness said that from Ann's Bridge to Remuera he counted eleven fires?—Yes; he thought they were set fire to by the engine.

385. Mr. McLaughlin told us so. You know him, do you?—Yes.

386. And he said he watched?—The surfacemen might have been burning off at the time.

387. *Mr. Poynton.*] They are continually burning off, are they?—Yes, they are continually burning.

388. *Mr. Brookfield.*] Do you drive past Mr. Wallace's place?—Yes, four days in the week.

389. Lately?—Yes.

390. Mr. Wallace's daughter and Mr. Wallace say that since the 30th December they have put out seventeen fires after engines have passed?—I cannot say anything about that.

391. Do you still say that no sparks fly?—Well, of course, a fire might occur in a good many ways.

392. But this was just after the passing of a train?—There are any number of people in a train who throw out matches.

393. But these fires occur as much as a chain away from the line?—I do not know anything about that.

THOMAS UNDERWOOD, sworn.

394. *Mr. Cooper.*] You are an engine-driver in the employment of the Railway Department?—Yes.

395. I think you have been so for some years?—I have been a driver for seventeen years.

396. Do you look carefully after your spark-arresting apparatus and generally after the engine?—Certainly.

397. You know the regulations?—Yes.

398. Do you carefully and thoroughly attend to the engine?—Yes, it is part of our duties.

399. Do the other engine-drivers do the same?—They can hardly avoid it. There are certain duties a man has to do on putting his engine away. He has to open his smoke-box and clean it out at the end of the day, and if there is anything wrong he cannot help seeing it.

400. The engine-drivers on this section are careful men?—Yes. They are as careful a body of men as I have been among.

401. Every other engine-driver obeys the regulations as you do?—Yes.

402. Do you recollect the fire at Mr. Wallace's in December, 1898?—Yes.

403. When a freshly mown paddock was destroyed?—Yes, the fire was being extinguished as I passed.

404. *Mr. Oliphant.*] You say you examined the smoke-catcher every day? How long have you run the present engine without having any repairs or innovations in the spark-catcher? Have you had the same spark-catcher from, say, the 1st December?—It has been the same all the time.

405. It has not been repaired or renewed?—No, there has been nothing to repair.

406. Do the corrugations not wear?—Yes, but as a rule they last as long as the engine is out of the shop without repairs. If the engine goes two years without repair the deflector will last for that time. If there is anything wrong you immediately detect it. Immediately these things give way the engine makes steam so quickly that you cannot help noticing it.

407. And in that worn state the danger for fires would be great?—Yes.

408. And they sometimes run eighteen months without being renewed?—Yes, without being touched. I have run an engine for three years without renewing it.

409. In the last month of that time would the spark-arrester be as perfect as it was in the first month?—Yes; it might wear thinner, but it would not get through. The constant action gradually makes it thinner.

410. *Mr. Poynton.*] Do you find that the supports of the deflector ever gave way?—They do sometimes, but immediately they get loose we detect it by the sound made by the deflector.

411. *Mr. Oliphant.*] I suppose you frequently notice fires caused by sparks being emitted?—We often notice fires, but it is a question as to how they were caused.

412. You admit that sparks do come out and set fire to the country?—I believe there are instances where engines do throw sparks, but at the same time it is a question whether half the fires, or anything like a fair percentage of them, occur from sparks. The sparks are really so small that from the time they are emitted from the funnel to the time they land their danger is greatly diminished.

413. One day a train in which I was travelling stopped suddenly, and on going to ascertain the cause I found the engine-driver had gone back to throw a bucket of water on some timber that had taken fire?—It must have been on fire, then, before the engine came along.

414. *Mr. Poynton.*] Have you been driving on other lines?—I have been all through the South Island.

415. Are fires more frequent here than in the South Island?—Yes.

416. Has the coal anything to do with that?—Yes; the coal we use is lighter than the coal used in the South Island.

417. It is more likely to emit sparks?—Yes.

418. Have the cinders a tendency to remain alive longer than the cinders from other coals?—Yes, the lignite remains alive longer than any of the West Coast coals. For instance, if you put ashes of the lignite coal in a bucket in the back yard you will find it alight next day.

419. *Mr. Oliphant.*] What would be the best coal to use?—The heavier the coal the stronger the blast it will stand without ejecting sparks. That is my experience. Any of the West Coast coals do not throw sparks like the lighter coals do.

420. You think the Waikato coal is a source of danger in running on the line?—I have never seen any actual loss on the lines yet where I have been running through fires—nothing to speak of. I have never seen any great damage done.

421. Would the fires be less if the use of the Waikato coal were discontinued?—That means, I take it, that the sparks make the fires; but I am pretty well convinced that a good many of the fires originate from some other cause than sparks.

422. You said the Waikato coal throws more sparks than the West Coast coals, did you not?—Yes. I mean this: If you run the engines in the same condition as you run them with the West Coast coal you set fire to everything you come in contact with. Using the West Coast coal you do not require the same amount of mufflers that you do with the Waikato coal.

423. That shows that the light coal is easily blown out, and you use special mufflers?—Yes.

JOHN THOMPSON, sworn.

424. *Mr. Poynton.*] What are you, Mr. Thompson?—A bootmaker, residing at Ellerslie. I wish to say that my vinery and orchard of young fruit-trees were destroyed by fire on the 11th February, 1897. My place is beside the railway-line.

425. At what time during the day was the fire?—Between 10 and 11 o'clock. I am a shoemaker, and I was working in the house at the time. About 9 o'clock a fire occurred at the side of the house. It burnt a section of grass, but after a considerable amount of labour I beat it out. It did not come to my house.

426. Had the train anything to do with the fire?—I did not see a train pass. A little girl came in and told me the railway was on fire. Later on the Waikato train came from Penrose. It was a heavy train, and was throwing out a big volume of smoke, and after it had passed some fern inside the railway fence took fire. The fire blazed up and my grass was set on fire too. I tried to put the fire out, but the wind was strong at the time and the flames gained. Two men on the railway came to my assistance, but we could not put it out, and we could not prevent it reaching my vinery. It was a new vinery, with the vines growing on terraces. The terraces all caught fire. The fire then spread to the orchard, in which there were three rows of peach-trees with twenty-five trees in each row. The grass, which was ready to cut for hay, was burnt, and the trees were destroyed. I saw that fire directly set by the train.

427. What was your loss?—I put in a claim for £40. I had the damage valued by an expert. All the trees were destroyed.

428. Have you any knowledge of other fires?—Fires frequently occur about this quarter, but as a rule they work themselves out.

429. To what do you attribute them?—I notice that most trains after leaving Penrose and coming up to my section put coal on. It is uphill.

430. You think that some of the fires are caused by sparks?—Yes.

431. *Mr. Cooper.*] Your own letter says the fire occurred on the 9th January, 1897?—Yes, that may be so. You have the papers, and I am only speaking from memory.

432. *Mr. Brookfield.*] Do you say that opposite your place fires often occur after trains pass?—Yes, all the way from Penrose to Ellerslie.

433. Do you say you have constantly seen fires occur after trains pass?—Frequently.

434. Can you see any other reason except that they have come from the engine?—No; and invariably the trains that set fire are the trains that are emitting great volumes of smoke.

435. They are some of the heavier trains?—Yes. At this time all the inside of the railway-line was full of fern and long grass, which has been all burnt since.

436. *Mr. Cooper.*] The report made at the time says the railway property was cleared of the fern and grass, and that it was Mr. Thompson's land that was full of grass?—That is not so.

437. The report of Mr. Day, made on Mr. Thompson's complaint, is as follows: "There is nothing to prove that engine caused the fire. There was a good quantity of fern and dry grass near the railway boundary on his side: no rubbish on the line. No negligence on the part of any one else. I estimate his damage at £10"?—When that gentleman came out to inspect it there was not a green blade on my section. It had all been burnt black.

SATURDAY, 3RD MARCH, 1900.

EDMUND CLIFTON, sworn.

438. *Mr. Cooper.*] Do you know anything of the fires in the wattle plantation at Wairangi?—I know nothing of the origin of the fire.

439. You know Mr. Young's plantation that was partly destroyed?—I know his plantation generally.

440. Can you speak to the value specifically of the plantation, and the damage?—I cannot speak specifically to any part or to value.

441. Can you give us general evidence as to the value of the wattle plantation?—I am only the supervisor of the Government wattle plantation.

442. When do the trees become productive? You have to strip them once and then they are done?—Yes, strip them once and then they are done. It takes nine years before they are matured for stripping.

443. Can you say what the return would be for a well-planted acreage per acre?—The averages are rather wide. They will vary from 2 tons to 4 tons of dry bark to the acre. I think one might fairly put it at 2 tons of dry bark. I make the difference between dry and the other because there is a shrinkage of between 50 and 60 per cent.

444. What was the value of the dry bark in 1896?—In 1896 it was sold in the bundle—that is, the rough bark. It was dry and ready for grinding. The value would be about £5 to £5 10s. a ton.

445. What would be the net return per ton? There is the cost of stripping, is there not?—That is the price in Auckland. I might, indeed, say it is £5 15s.

446. That would be the gross return?—Yes.

447. What would be the net return?—I average it at about 50 per cent. as the cost of production. That is rough, of course. In that I am including the cost of putting it in, the attendance on it in its growth, and so on.

448. It is like waiting ten years for a crop, is it not?—Yes.

449. It never grows a second time?—Yes. That particular crop does not, but it has seeded for the second time.

450. But the tree does not grow?—No, the tree is done when you have stripped its bark.

451. You think a fair deduction would be 50 per cent. from £5 15s.?—Yes.

452. That is all you can say?—I think so.

453. *Mr. Oliphant.*] I suppose, if a plantation is in its prime, as a great deal of this was when destroyed by fire, it will be very valuable? What would you estimate the production of a plantation of that kind?—I said it would be from 2 tons to 4 tons. There is such a wide margin that it will actually run from under 2 tons to over 4 tons.

454. I think Mr. Young said the price per acre was £6?—Well, I am speaking of a definite area in a definite condition. I am speaking of the unground article.

455. You were then living in Auckland?—I live in Auckland.

456. Were you frequently in Auckland at the time?—Yes. This plantation has been under my supervision since 1894.

457. Have you had any difficulty in the matter of fires from railway-engines?—We have had no fires on the Government plantation from the engines. I should qualify that by saying I put in a certain length of fire-breaks to prevent anything of the sort.

458. How frequently do these fire-breaks check a fire?—The position of a fire-break is this: It is in the nature of a protection to the plantation, so that, having this fire-break to start on, wherever one sees danger a small fire is put in on the side nearest the part likely to take fire, to prevent a bigger or unexpected one spreading.

459. You burn the growth next the railway?—It might be next the swamp, or perhaps next the part where you might anticipate a fire.

460. Were you not troubled with fires before that?—I do not think so; I cannot speak of one.

461. Were you there at the time of the big fire on the 15th December, 1896?—I was in Auckland.

462. Had you been made aware of the fact that a fire had occurred on the same day on the Government plantation?—I could not speak of that.

463. You would have no record of such a fire?—No, I have no record.

464. You did not hear the men say they had a fire on that date?—No; they did not speak of it. A man is resident there in charge of the plantation who would probably know.

465. It would be Mr. Kensington's duty to report fires?—Yes, if it was a fire of any extent. If it was a fire that had done damage he would have reported it.

466. At any rate, your experience of the management of the plantation is that it is necessary to have fire-breaks as against the engines?—The greater length of the fire-breaks is not on the railway-line at all.

467. It is between the railway-line and the plantation, is it not?—Part of the way only.

468. And it is to prevent the sparks setting the trees on fire?—No. The idea is to have protection against fires generally, and to confine such a fire if it took place.

469. On the railway?—The railway is only part of it; in fact, I anticipate quite as much danger from the dry swamps in the vicinity of the plantation as from the railway.

470. You only go there and come back the same day, do you?—I am generally there the greater part of a day, and then return to Auckland.

471. Has there never been any fire whilst you were there?—I cannot speak of it.

472. I suppose Mr. Kensington will say that?—He is resident there.

473. *Mr. Cooper.*] We are told this plantation of Fairlie and Patterson's was planted without a fire-break: was that not careless?—They do not adjoin the railway anywhere.

474. Would a fire-break be a reasonable precaution against fires in the vicinity?—Really, the thing that made me put in the break was this: I heard of fires everywhere, and I simply took up the position that it was better to be on the safe side than to run the risk of a fire sweeping the plantation out. It was better to spend the money than to have the discredit of having the whole thing burnt down.

475. There are a good many gum-diggers about there, are there not?—Not near us. They are chiefly Maoris.

476. They dig in the swamp?—Yes.

THURSDAY, 8TH MARCH, 1900.

JOHN GERRAND, sworn.

477. *Mr. Poynton.*] What are you, Mr. Gerrand?—I am a miner at Waihi.

478. *Mr. Oliphant.*] You have been subpœnaed this morning to give evidence about a fire?—Yes.

479. In the year 1896 you were a labourer and ploughman with the Glasgow plantation people, were you not?—No; I was in the employ of the Government at that time.

480. At the time of the big fire?—Yes.

481. You remember the occasion of the fire—I believe it was on the 15th December, 1896?—Yes.

482. Where were you on that day?—I was working about a mile and a half from the fire. I was on top of a hill.

483. You saw a train go down just before that?—Yes; it was the 4.30 train to Auckland.

484. The fire started alongside the railway?—Yes.

485. How long had the train gone past before the fire started?—I noticed it twenty minutes or half an hour after the train had passed.

486. The fire spread into the swamp, I understand?—Yes.

487. Into what is known as the big swamp?—Yes; it crossed the swamp.

488. Did you see anything of the fire later on that night?—Yes; I saw the flames at night.

489. And next morning what happened?—Between 11 o'clock and 12 o'clock the fire went up a gully near Mr. Young's plantation, and went into the plantation.

490. That was the same fire?—Yes, it was the same fire.

491. Did the wind rise at this time?—Yes; it turned out windy that day.

492. And the fire was swept over the plantation, I believe?—Yes.

493. To a large extent?—Yes.

494. Have you any idea of the number of acres destroyed?—I suppose there were 200 or 300 acres that the fire went through.

495. You went to fight the fire, did you not?—No; I did not go.

496. Are you aware that some of the Government men went?—Yes; my brother assisted.

497. He was also in the employ of the Government?—Yes.

498. How many men went from the Government plantation with your brother to assist at the fire?—Four altogether.

499. Can you mention their names?—Caseley and Andrews went, and I fancy the other's name was Maidens. I think Mr. Kensington went too, but I would not like to swear that he did. I have an idea that he did go.

500. Had they a fire at the Government plantation on the same day as this fire?—Yes; a fire commenced there that day.

501. Alongside the railway?—Yes.

502. From what cause?—To the best of my knowledge, it was caused by the train.

503. By the same train?—Yes. There were no fires through the day. Every care was taken to have no fires there during the day, and after the train passed the fire was there.

504. *Mr. Cooper.*] Did you see it?—Yes.

505. *Mr. Oliphant.*] You did not assist in putting it out?—No; I got home about half-past 5, and the men were then away putting the fire out. I had a distance to come, and I had six horses.

506. Did you go down and see where the big fire had first started?—I suppose a week after that I went along in the train to Auckland, and then I saw where the fire had started. I heard there was likely to be some trouble over it.

507. Did you see any Maori gum-diggers about where the fire started that day?—There were gum-diggers at the Wairangi Station—several camps.

508. But you saw no gum-diggers in the vicinity of where the fire started?—Of course, there were gum-diggers at Wairangi Station, which is about a mile away, but where the fire started there were no gum-diggers.

509. You have no doubt it was started by the train?—In my own mind I think it was started by the train.

510. Speaking generally of fires, you were a considerable time in the district, and what was your experience of fires from the railway?—I have seen fires from the trains, I suppose, a dozen times while I was working there. I was there for two or three years working alongside the railway.

511. What do you think occasions the fire from the railway?—I think it is sparks from the engine.

512. *Mr. Cooper.*] On this occasion you were a mile and a half away?—Yes.]
513. With a team?—Yes.
514. And you did not notice the fire until twenty minutes after the train had passed?—About twenty minutes.
515. So you cannot say whether any one was there to set fire to it?—Well, of course, a man might have been there and set fire to it with a match.
516. You were as far from it as from Auckland to Newmarket?—Yes.
517. The fire on the Government plantation was on the other side of the line, was it not?—No; it was on the same side of the line. I was further away from it. It was up above Wairangi Station about a mile—between Wairangi and Rangiriri.
518. Maori gum-diggers have been digging all along there between Rangiriri and Whangamarino?—They have been digging about Wairangi in the swamps.

NORRYS KENSINGTON, sworn.

519. *Mr. Cooper.*] You are in charge of the Government wattle plantation near Wairangi, are you not?—Yes.
520. And you were so during the whole of 1896?—Yes.
521. Do you recollect a fire occurring on the Glasgow plantation?—I recollect that there was a fire.
522. Have you been over the property for the purpose of estimating the damage?—Yes; I rode over it with Mr. Clifton once.
523. Can you give us any indication of the damage done?—I could not say. It is too vague. The fire is all in patches. I could not give an idea unless the ground was surveyed.
524. Can you say what price wattle-bark was in 1896?—I could not say positively. Mr. Clifton has the selling of the bark. Of course, the price varies.
525. The whole of the trees were not burnt off the two sections?—Yes, where the fire went through.
526. But did it sweep the sections clear?—It swept right through the swamp and on to another swamp, burning in patches.
527. And you think it is impossible to estimate the patches unless a survey was made?—Yes, I should decidedly say so.
528. *Mr. Oliphant.*] How long have you been manager of the Government plantation?—Thirteen years altogether.
529. Since it first started?—Yes.
530. From the time the seed was put in?—Yes.
531. When did it commence: in 1886, was it not?—Yes.
532. About fourteen years ago?—Yes.
533. In that time I suppose you have seen a good many fires from the railway?—Yes.
534. And it is difficult to remember any one fire, seeing there are so many?—I have seen three or four on the Government plantation this year.
535. Started from the railway?—I do not know where they started from, but we had to beat them out.
536. They commenced near the railway-track?—Yes.
537. It is in evidence that some men were kindly sent by you to the big fire in 1896. You went yourself, did you not?—Yes.
538. How many men did you take?—Three or four, I think.
539. Do you remember that the day previous to the big fire you had a fire in the Government plantation? It was shortly after the afternoon train had passed down?—I have no recollection of it.
540. It would be a minor fire, and you would take little notice of it, I suppose, seeing fires are so numerous?—I do not remember it.
541. Can you say that these fires start from the ashes or from sparks, or from both causes?—I could not say.
542. Have you not been near enough on any of the occasions to see whether the fires were caused by sparks or by ashes?—It might or it might not be for all I know.
543. You are aware that ashes are thrown from the train along the line?—Yes.
544. Frequently? In fact, it is a common occurrence, is it not?—I could not say whether it is common. I have seen it done once only.
545. At what point was that done?—It was going through a portion of the Government plantation. It was in the cutting.
546. It was not near any water-stand for an engine?—No.
547. Did a fire arise from the ashes on that occasion?—Yes.
548. On an average, how many fires did you have to put out in a year—we will not say the causes, but I refer to fires alongside the railway-line?—I could not say. Of course, the Natives might have been the cause of some of the fires. They walk up and down the line, and they might set a fire going.
549. How many were there, on the average, that you have had to put out near the railway-line?—There might be two or three.
550. How many were there in 1896?—I do not know.
551. You had a big fire last Saturday in the district, had you not?—I do not remember.
552. Did you see any remains of it near the Whangamarino Station when you were coming down in the train?—I do not remember seeing any fire. There are fires all over the country. It has been enveloped in smoke lately. At every point of the compass there is smoke.
553. And you did not see a fire on Saturday, covering about 1,000 acres? You do not know if it commenced at the railway?—No.

554. I suppose you have given the question of fires considerable attention?—Yes.

555. Have you any suggestion to make as to what would lessen these fires? Do you think if the growth on the chain width at the side of the railway was kept down it would minimise the fires?—I could not say if it would.

556. I suppose the danger of throwing ashes from the engine must be very great?—It all depends on where the ashes go. Of course, if ashes land among some inflammable stuff a fire will start.

557. You have had to erect a considerable number of fire-breaks on your plantation, have you not?—Yes; we have had breaks round portions of sections to guard against any fire. We burn off ourselves, and we have to prevent our fires from spreading where they are not wanted.

558. You have fire-belts as against the railway, too?—Well, we have certainly cleared away, but it is more for the look of it than for anything else.

559. A good deal has been said about the Glasgow people not making fire-breaks: is it not the fact that their plantation does not come near the railway at any point?—That is so: it does not come near the railway.

560. How far distant is it?—I suppose it is about 40 chains.

561. And much of the boundary is impassable swamp, is it not?—You can walk across the big swamp anywhere now. I have seen cattle on it.

562. Did the cattle get across it?—I could not say that, but a man could walk across it.

563. Mr. Clifton, your superior officer, said the bark was sold at from £5 to £5 15s. a ton: would that afford a large number of men to make fire-breaks? Could private enterprise afford such an expenditure as that?—It depends on circumstances—how it is put in, and so on. Sometimes the trees are put in cheaper than at other times.

564. How many men have you employed at your plantation?—Sometimes five or six, or perhaps seven. The number varies.

565. How many have you in the off season?—If the mill is working we employ five or six. The mill takes two extra hands, and sometimes one extra.

566. *Mr. Cooper.*] In the class of country from Mercer to Rangiriri are there not continuous fires in the dry season apart from the railway?—Yes.

567. Incited by various things—people burning off, men throwing lighted matches on the ground, gum-diggers, and other causes? It is very inflammable country, is it not?—Yes.

568. Under those circumstances, would it not have been a proper precaution for the Glasgow people to take to provide fire-breaks?—The Government people have done so, but we are told the Glasgow people have provided no fire-breaks at all against the danger of fire from any cause. Would it not have been a proper precaution?—Decidedly it would be a precaution against fire, but whether it would pay I do not know.

569. On that stretch of line between Whangamarino and Rangiriri you say there were often Maoris who trespassed by travelling up and down the line?—I was speaking of through the plantation.

570. Well, on the stretch of line through the plantation?—Yes.

571. You have seen them going up and down the line?—Yes.

572. And we have evidence that there were Maori gum-diggers about in 1896?—Yes, there were.

573. Their custom is to hook the gum out of the swamps?—Yes.

574. And they sometimes fire the swamps for that purpose?—Yes.

575. So that it is impossible for you to say whether or not this fire was caused by a spark from an engine, or from Maori gum-diggers, or from a casual smoker who might have been trespassing on the line?—I could not say, because I did not see the fire originate.

576. And you cannot give any opinion about other fires concerning which you have been questioned?—I could give no positive opinion, because I did not see them.

FRANCIS FOSTER, sworn.

577. *Mr. Oliphant.*] What are you, Mr. Foster?—I am a farmer at Rangiriri.

578. How long have you resided there?—About sixteen years.

579. You were for some time with Mr. Potter, farmer, at Rangiriri?—Yes, for two years.

580. I believe the railway runs through his farm?—Yes.

581. Have you seen firemen throwing ashes from their trains in passing?—Yes.

582. Fires are very frequent in your district, are they not?—Yes, I have seen a good many fires.

583. Do you trace them to the railway?—I could not say that.

584. Not always to the railway?—I could not say how they originated, but I have seen fires.

585. In the two years you were with Mr. Potter you could trace them to the railway, could you not?—Yes; I did not see them start, but I have seen them on the railway-banks. They apparently started from the railway.

586. They were frequent?—Yes, there were several fires.

587. In the dry weather?—Yes.

588. There was a large fire on Saturday, was there not?—Yes. It was in the Whangamarino Swamp.

589. Where did it commence?—I saw where it commenced.

590. You knew the direction of the wind and so forth: have you any doubt that the fire of Saturday arose alongside the railway-track?—It has burnt right up to the ballasting and through the swamp and into some grass. It has burnt as far up to the railway as possible. It has burnt right up to the gravel, and has cleared away all it could.

591. A good deal has been said about Maori gum-diggers setting fire to the district. What do you say to that?—I have never seen a Maori raise a fire. I employ Maori labour myself, and

I have never seen one raise a fire yet. I think they are pretty careful. I live only a short distance from a Maori settlement, and I know of only one fire accident they had, when a whare was burnt down. I have lived there for about fourteen years.

592. Your experience of the Maoris, then, is that they do not set up fires?—I have never seen them set up a fire.

593. You are an old railway-man yourself, are you not?—Yes. I was for many years in the service of the Midland Railway Company in England.

594. Do you think that in this country the danger from fires is great on account of the narrow track?—Yes. I have never heard of fire from an engine in England.

595. They throw the ashes on the space beside the line?—Yes. Of course, the space is wider than it is here. It is 4 ft. or 6 ft.—a space the men here have not got to work with.

596. But they do throw the ashes out here?—Yes.

597. *Mr. Cooper.*] When was it that you were working with Mr. Potter?—Sixteen years ago.

598. When did you leave him?—I stopped with him for two years.

599. Then it is fourteen years ago when you saw the ashes thrown out?—Yes.

600. Have you ever seen a Maori smoking?—Yes, most decidedly.

601. And you say they are careful not to set their whares on fire?—Yes.

602. Have you ever seen a Maori set the scrub on fire?—No.

603. Have you not seen them fire the scrub when they are clearing?—No; they are clearing four miles of scrub up in my district now, and they are not burning.

604. But they will burn it next season?—No, I do not think so.

605. Have you had any experience of Maori gum-diggers?—No.

606. In what capacity were you employed in the service of the Midland Railway Company?—I was the horse-keeper—I was manager of the stables; and for four years I was in the traffic branch.

607. Were you a guard?—No.

WILLIAM YOUNG, Jun., recalled.

608. *Mr. Oliphant.*] Have you stripped 100 acres recently of a similar growth to that destroyed in 1896?—Yes, an exact 100 acres.

609. And what does the bark yield?—114 tons, in addition to a small quantity a year or two previously in the way of thinning. The 100 acres is of mixed quality—about two-thirds fairly good and one-third very bad with scarcely any trees on it.

610. Would it compare as an average with that destroyed?—I think it would fairly do so. I think the bad part on this plantation would be worse than any part planted on the other, and that the good part would be about as good as we have.

WELLINGTON.

MONDAY, 12TH MARCH, 1900.

HENRY PENN, sworn.

1. *Mr. Poynton.*] What are you, Mr. Penn?—Inspector of Permanent-way.

2. You were in charge of the permanent-way at Rakaia and Hinds when certain fires occurred?—Yes.

3. Do you remember the fire by which Mr. Gardiner's sheep and other property were destroyed?—Yes, I remember it well.

4. Where were you then?—When I heard of the fire I was at Ashburton.

5. Did you see the fire during its progress?—After getting a telegram that there was a fire at Rakaia I went there, but it had by that time, practically speaking, burnt out.

6. Can you give any idea of the damage that was done?—I think you will find that in my report. My report is as follows:—

Memorandum for Resident Engineer, Christchurch. Ashburton, 4th January, 1897.

SIR,— In re *Fire at 42½ Mile.*

I beg to report that a fire started on the railway at or about 12.30, at above-mentioned place. It started on the dry grass or fence on the land leased by Mr. Elliott from the department. It burnt about a mile wide, and went as far as Mr. White's and the Acton Station, about three miles and a quarter from the railway. As far as I can learn at present, Mr. Gardiner, living near Rakaia, has lost about three hundred ewes and lambs, and 40 acres of oats. I will go to Rakaia by the first train this morning, and will report any further damage that I hear of. I may state that the wind was blowing a strong nor'-wester at the time.

7. You went over the ground next day, did you?—Yes.

8. And can you give any idea as to the damage done?—Mr. Gardiner lost three hundred ewes and lambs, and about 40 acres of oats.

9. Any fences?—Yes, the fences were burnt—gorse fences.

10. You had not seen them before, and you could form no idea as to their value, I suppose?—That is so.

11. With regard to the regulations for the preventing of fires in the way of burning off loose inflammable material, how were they observed on that section?—We always burnt off everything when we could get the chance.

12. Do you remember whether there was any dry grass about that particular place?—There was inflammable material on the land at the time. It was land leased to Mr. Elliott by the Railway Department, and there was some dry grass on it. I think the fire started in that grass or in the gorse fence.

13. Having leased the land you had no power to burn his grass?—No, we had no power.

14. How long have you been in the employment of the department?—About nineteen years.
15. And during that time have you seen many fires that were supposed to be started by sparks?—A good many.
16. Can you suggest anything that would lessen the liability to fires from such a cause?—I think that everything is done in the engines at present to save sparks from coming out.
17. You can form no idea as to how this particular fire occurred?—No; I could form no idea at all.
18. On what sections of railway have you been working in New Zealand?—I was on the Auckland Section for several years, and I was on the Canterbury Section. I have been in Wellington about eight months.
19. The Auckland Section has a good many fires in the summer, has it not?—We used to have a good many in the Waikato, through the swamps.
20. Do you think there were more than in Canterbury?—No, I think we had as many in Canterbury.
21. Have you many fires on the Wellington Section?—We have had nothing to speak of since I have been here.
22. From your experience, do you find that the men—gangers and platelayers—exercise proper care?—Yes. They try to burn off all they can, and if they see a fire start they go immediately, according to instructions, to try to prevent it from spreading. All care is taken that we can possibly take.
23. You have had experience in other countries, have you?—I was in Canada for some years.
24. Employed on the railways?—Yes.
25. Do fires occur there?—Oh, yes; just as much as they do here. In fact, I have seen heavier fires there when we got into the new bush country.
26. What precautions are taken there for preventing fires?—I have heard the enginemen talking about the spark-catchers in their engines.
27. You could not give details?—No.
28. Do you know anything of the fire at Hinds?—Yes, I remember it. It started after the express passed. My report on it is as follows:—

Memorandum for Resident Engineer, Christchurch. Ashburton, 4th March, 1898.

Sir,— In re *Fire at Mr. J. Moore's Property, Hinds.*

I saw Mr. Moore to-day, and he showed me over where the fire ran on his property. It has burnt about 50 or 60 acres of tussock-grass, and about 70 chains of gorse fence, and about 25 chains of stakes from a wire-and-stake fence. The fire must have crossed a chain road on to Mr. Moore's land. Half the road is bare, with heavy tussocks on sides.

I went over it afterwards to see what was burnt, and I found there were 315 stakes (the price at Hinds was £1 1s. a hundred), nine straining-posts (at 2s. each), and that it would take two men nearly a week to repair the fence. I cannot tell anything about the value of the tussock-grass burnt. Some had averaged it at 5s. an acre.

29. Your estimate of the damage, apart from the grass, was—how much?—About £10 1s. The 60 acres of grass would be worth about £9. I see by the report that Mr. Burnett has added that as the value of the grass.
30. The estimate made by you and Mr. Burnett, then, would be £19 1s. altogether?—Yes.
31. From the appearance of the area burnt, do you think it started near the railway?—Yes, about 2 chains from the railway-line. The wind at the time was blowing a heavy nor'-wester, and would carry sparks to the point where the fire started.
32. And it occurred shortly after the express train had passed?—Yes, shortly after the mail train had gone down.
33. Was there any loose material where this fire started?—It started in the plantation. We had land ploughed in front of the plantation—between the railway and the plantation—and the fire started among the young trees and grass.
34. On land not belonging to the Railway Department?—It was all railway land. The Government have some 14 or 15 acres planted there.
35. Under what department was the care of that land?—Under the Railway Department; it was all railway land.
36. Do you know whether the material was cleared away from that land?—There was grass and inflammable stuff among the trees. We generally plough a strip to prevent fires, but in this case the fire started beyond the ploughed strip.
37. You can say nothing of the origin of the fire beyond that it was seen after the passing of the express, and that it started outside the ploughed strip?—That is all.
38. I suppose it is only during the summer months that fires occur in Canterbury?—Yes, that is so. When it is a wet season there are never any fires there. Of course, it is possible that any of these fires was started by some one setting a match to the grass, or from some other cause like that, but it is not possible to tell the origin.

THOMAS FORTH ROTHERAM, sworn.

39. *Mr. Poynton.*] What is your position, Mr. Rotheram?—I am the Locomotive Superintendent for the New Zealand Railways.
40. How long have you been in that position?—Since 1888.
41. What was your experience previously in the same line?—I was Locomotive Engineer of the Hurunui–Bluff Section from 1885 to 1888, and I was General Manager of the West Coast railways—the Wanganui Railways—from 1878 to 1885. I started in the Railway Department in the colony on the 1st January, 1875, and I have been connected with the railways ever since.
42. I want you to state what, in your opinion, are the best means for preventing sparks on the railways, and to say if you have the necessary appliances on your railways here?—It has been

my business to get the best appliances known. With that end in view I am in frequent communication with all parts of the world on the subject of fire-appliances. In the same way other parts of the world communicate with me for my experience. We interchange ideas; and I think it would be stated in Australia and in India that the appliances we have in New Zealand are the best known.

43. Does the department try experiments with any new methods?—Unfortunately, or fortunately, patentees come along with all sorts of ridiculous ideas, and in every case we try them. We tell them to begin with that it is folly, but they go on.

44. And the department is continuing to try in the same direction?—Yes, and so far as I am aware we shall continue to do so.

45. There is a natural antagonism between spark-arresters and locomotive efficiency?—Distinctly.

46. Is it a fact that the ash-pan is used only in New Zealand?—The ash-pan perforated damper is used only in New Zealand and New South Wales. Of course, it may more recently have been introduced in other places, because they have been in communication with me.

47. You say that it is not controlled by the driver?—The driver cannot touch it from the foot-plate.

48. In your opinion, is that sufficient to drown all sparks?—In my opinion, it it is ample to stop all sparks from getting out from the ash-pan.

49. You do not attribute any of the recent fires in New Zealand to sparks from the ash-pan?—No.

50. How long is it since this particular appliance was adopted in New Zealand?—Fourteen or fifteen years ago.

51. Are all the locomotives in New Zealand fitted with that ash-pan?—Yes.

52. As to the spark-arrester, you have the deflector and the perforated plate?—We have the deflector for soft coal, and the perforated plate for hard coal.

53. What are the objections to using the perforated plate for the soft coal?—The intention of the deflector for soft coal is this: that the coal is so very light and full of water that immediately it is subjected to heat it disintegrates into very small particles. The object then is to drive it with a great velocity against the deflector, and break these already small particles of carbon into smaller particles, and so destroy them.

54. Could they not be sent through a perforated plate?—No; because it would be a constant stream of fire, as they are so small.

55. The hard coal can be prevented from sparking by means of the plate?—Yes; hard coal does not disintegrate into such small particles as soft coal.

56. And therefore in going through a perforated plate it is sufficiently reduced to be consumed?—Yes, anything that will go through there has very little vitality.

57. And being reduced it is oxidized by the air?—Yes.

58. If coal is impure and red-hot particles of fireclay are sent through by the draught they are, of course, more dangerous than particles of carbon?—In going through the perforated plate they would be, and also in going against the deflector they would be, because although they would be broken up by the deflector, and partially by the perforated plate, yet a particle such as fireclay would retain its vitality.

59. It would not be oxidized?—It would not be so easily killed by exposure to the air and to the hot steam as pure coal.

60. And it would not be reduced by oxidization?—No.

61. Therefore, it is important to have coal pure?—Yes.

62. Do you find that the coal supplied to the railways in New Zealand is comparatively free from impurities?—It is fairly good coal. It is as good as we can get within the colony. Of course, it is largely impregnated with sulphur.

63. The sulphur does not add to the sparking?—No.

64. On the railways of Europe, and India, and the United States, what are the spark-arresters? Some of them, I believe, use no spark-arresters?—In some places in the States they use none, but where they burn wood or inferior kinds of coal they sometimes use the deflector, but principally what they call the wire-mesh.

65. Have you had any experience of fires being caused by sparks from engines?—Yes; they were said to have been caused by sparks, but of course I denied it.

66. You admit, of course, the possibility of sparks causing fires?—Oh, yes, no one denies it.

67. On the Auckland Section, which appears to be more subject to fires than other sections, and which some people attribute to the soft coal, what would it cost to alter for the summer months the locomotives used there from the deflector to the perforated plate, so that hard coal could be used for three or four months? What would it cost to change each locomotive, and to afterwards return it to its original condition of the deflector-plate? Can you form an idea?—Yes, I think I can give you a fair idea. I will give you an estimate, always presuming, of course, that the chimneys and exhaust-pipes were there in the first instance, and that we were simply changing. It would be quite a nominal expenditure.

68. Mr. Macdonald, of Auckland, has said it would be £3 or £4 for each engine?—Yes; it would be quite a nominal outlay.

69. The greater cost would be in the price of the coal?—Yes.

70. It might be tried for a year to see if the fires diminished, because people think that many of the fires are due to the coal?—We tried it this year, and I had a telegram on Friday: "House burnt down, said to be from sparks from engine; burning hard coal."

71. It seems to be the opinion of many of those who gave evidence in Auckland and other places that the coal was at fault. If an experiment could be made in a dry year, and the whole section burned hard coal for four or five months, and the fires did not diminish, it would show that

the coal was not at fault?—Yes; we are doing that this year. On the Rimutaka Incline, which is 1 in 15, we have absolutely no provision for spark-arresting. Most of the fires there come from the operation of the brake appliance on the centre rail. We run water on the centre rail, but it does not put the fire out in all cases.

72. Have you had experience on other railways than those in New Zealand?—Yes; I had experience of the North British Railway, the Edinburgh–Glasgow Railway, and the Manchester–Sheffield–Lincolnshire Railway, now known as the Great Central Railway.

73. I suppose hard coal is burnt on those lines?—Yes.

74. And they ran through thickly populated districts?—Yes.

75. What were the provisions there for spark-arresting?—Just the ordinary brick arch.

76. No spark-arresters?—No, not at that time. We have that brick arch in addition to the spark-arrester. The brick arch insures better combustion, and also prevents any of the softer particles lifting up.

77. Have you any suggestions to make for additional precautions that might be taken?—No; I cannot suggest anything further towards stopping the emission of sparks. I am constantly experimenting, but all my experience comes to this: that when I absolutely stop sparks I stop the engine too. It will do no effective work. Throughout the world it is the same thing. Even in India it comes to the same.

TUESDAY, 13TH MARCH, 1900.

JAMES BURNETT, sworn.

78. *Mr. Poynton.*] What is your position, Mr. Burnett?—I am Inspecting Engineer, New Zealand Railways.

79. You were in the Canterbury District at one time, were you not?—I was District Engineer for eleven years, and it was during that time that certain fires occurred.

80. Can you tell us anything about the fires?—My personal knowledge of the fires was gained after they were over. I have no personal knowledge of the origin of the fires.

81. You visited the ground?—Yes; I went to Rakaia on the 5th January, and went over the ground.

82. You saw the remains of the fire?—Yes.

83. Can you say anything of the extent of the damage? Different estimates were made, were they not?—Yes, different estimates were made. At the time I estimated the damage at nearly £900. I estimated Mr. Gardiner's damage at £442, and the damage to the Acton Estate at £379.

84. Did you make a careful estimate?—No; I made it from a cursory examination of the ground. I afterwards employed Mr. Coster to value the amount of damage done.

85. Can you say anything about the precautions taken by the department to prevent fires?—I can only say in a general way that the grass is always cut. Dry grass is not allowed to remain about the line. In this case the fire started on leased land.

86. Is there much land leased along the railway-line?—Yes, a good deal.

87. Do you think that tends to prevent fires, or does it tend to the accumulation of rubbish?—Generally, it tends to prevent fires. The ground is largely used for root-crops, and at this particular place the man had cut the grass for hay. At that time the whole country was like tinder.

88. The department sometimes ploughs a strip, does it not?—Yes.

89. Why do they plough at some places and not at others?—On account of the risk of fire spreading being more in some places than in others; and there has always been a reluctance to plough on leased land. You would have to get the consent of the leaseholder.

90. You think, then, it would not tend to diminish fires if the letting was abolished?—I do not think it would have much effect that way.

91. It would cost a lot of money, of course, to plough?—No strip such as was ploughed on this land would have stopped the fire that damaged Mr. Gardiner's property. It jumped over a road that was 40 ft. wide.

92. Have you had experience on other railways?—Only on the New Zealand railways.

93. On what sections?—Christchurch, Dunedin, Invercargill, Wanganui, and Wellington–Napier. I was only Inspector on the latter two.

94. I suppose you have complaints of fires every dry year?—Yes; whenever it is unusually dry there are complaints.

95. Can you say anything about the appliances used in the locomotives?—Not from personal knowledge. I have, of course, looked inside a locomotive.

96. How long were you in charge of the Christchurch Section?—About nineteen years, with intervals.

97. Could you form an idea as to the number of claims made in that time?—It is rather a difficult question to answer, but, speaking offhand, I should say it would average four in the year. All fires are reported.

98. Do you think that anything else could be done to prevent fires?—No; I think everything in reason is done at present.

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